

**CULTURAL AND PALEONTOLOGICAL RESOURCES INVENTORY FOR THE
MILL CREEK OFF-SITE IMPROVEMENTS PROJECT,
PLACER COUNTY, CALIFORNIA**

Prepared For:

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USGS 7.5-Minute Quadrangle: Citrus Heights 1992

Cultural and Paleontological Resources Survey; negative;
Turlock Lake Formation; Modesto Formation; Placer County

Final – January 2, 2018

Archaeological and other heritage resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. This document contains sensitive information regarding the nature and location of archaeological sites that should not be disclosed to the general public or unauthorized persons.

Information regarding the location, character, or ownership of a cultural resource is exempt from the California Public Records Act under Government Code Section 6254.10.

ABSTRACT

Purpose and Scope: Natural Investigations Company, Inc. (Natural Investigations) was retained by Meritage Homes to provide cultural and paleontological resources services for proposed Off-Site Improvements Project associated with the company's planned Mill Creek residential development in southern Placer County. Two off-site sewer alignment alternatives are being considered, located within four parcels west of Atkinson Street, between PFE and Booth roads, and outside the boundaries of the planned residential development.

The services by Natural Investigations include a cultural resources literature search, Sacred Lands File search, paleontological records search, intensive-level pedestrian survey, and this report. Placer County is the State Lead Agency for the Project and is responsible for compliance with the California Environmental Quality Act (CEQA).

Dates of Investigation: The cultural resources literature search was completed by Natural Investigations at the North Central Information Center on December 4, 2017; a Sacred Lands File search by the Native American Heritage Commission (NAHC) on December 4, 2017; and a search by Natural Investigations of the University of California Museum of Paleontology (UCMP) database on November 6, 2017. The NAHC indicated their search failed to indicate the presence of Native American sacred lands within the immediate Project vicinity. Natural Investigations conducted an intensive-level pedestrian survey within the 27.2-acre Project area on December 14, 2017.

Investigation Constraints: Ground visibility within a majority of the Project area was excellent. The field survey was minorly constrained by the presence of modern commercial and residential buildings and graveled surfaces.

Findings of the Investigation: Prior cultural work includes 15 studies within a 0.25-mile search radius, five of which included portions of the Project area. No cultural resources were previously recorded within the Project area, while two historic-era resources and one modern bridge were previously documented within the search radius. No archaeological or built environment resources were identified or recorded during the survey. Existing residential and commercial buildings are modern and will be avoided.

UCMP database records indicate no fossils are known from the Project area. While the Project area is underlain by the Pleistocene-age Turlock Lake and Modesto (lower member) formations, which were deposited prior to the presence of humans in this region, no fossils, unique geologic features, or alluvial deposits attributable to these rock units were observed. The Project area has been disturbed by grading and construction of roadways, residences, commercial businesses or storage areas, former agricultural practices, or historic flooding of Dry Creek.

Recommendations: Completion of a cultural resource training session prior to initiation of ground-disturbing activities is recommended due to the sensitivity of the Dry Creek drainage, but construction monitoring of ground-disturbing activity is not recommended as the potential for discovery is low for both cultural and paleontological resources. In the event resources are discovered during Project activities, work in the immediate area must be halted and a qualified specialist (archaeologist or paleontologist) notified, who will then evaluate the resource and consult with the property owner, County of Placer, and any other relevant regulatory agency, as appropriate.

Disposition of Data: This report will be filed with Meritage Homes; the North Central California Information Center, California State University, Sacramento; and Natural Investigations Company, Sacramento, California. All field notes and other documentation related to the study are on file at the Sacramento office of Natural Investigations.

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INTRODUCTION

Natural Investigations Company, Inc. (Natural Investigations) was retained by Meritage Homes to provide cultural and paleontological resources services for the Mill Creek Off-Site Improvements Project in southern Placer County. Construction of the company's planned Mill Creek residential development requires development of utilities outside the boundaries of that development. For the Off-Site Improvements Project, this report covers two off-site sewer alignment alternatives located within four parcels west of Atkinson Street, between PFE and Booth roads.

The resources services by Natural Investigations include a cultural resources literature search, a Sacred Lands File search, a paleontological records search, an intensive-level pedestrian survey, and this report. Placer County is the State Lead Agency for the Project and is responsible for compliance with the California Environmental Quality Act (CEQA).

PROJECT DESCRIPTION AND LOCATION

The planned Mill Creek single-family residential development and proposed Off-Site Improvements Project are located in the southeastern corner of the Dry Creek-West Placer Community Plan Area. The planned residential development is located immediately south of PFE Road and north of the Placer County/Sacramento County line between Cook Riolo Road and a point 1,500 feet east of Antelope Road. To implement construction of the planned Mill Creek residential development, the Off-Site Improvements would entail construction of a 6-inch sewer force main from the on-site sewer lift station. From the sewer lift station to the east boundary of the Mill Creek development, the force main would be located within an existing public utility easement on the north side of PFE Road. From the east Mill Creek development boundary east to the beginning of the Atkinson Street bridge over Dry Creek, the force main would be located within PFE Road/Atkinson Street, as shown in Figure 1.

Two sewer alignment alternatives are being evaluated for the proposed Off-Site Improvements (Figure 1). The first sewer alignment alternative runs north from PFE Road to the Dry Creek Wastewater Treatment Plant (WWTP) via jack-and-bore under Dry Creek (labeled as "Alternative 2" in Figure 1). The alternative would run along three contiguous parcels. From north to south between Booth and PFE roads, the contiguous parcels are: Assessor Parcel Nos. (APN) 473-080-006 (4.8 acres), 473-090-007 (14.3 acres), and 473-090-003 (4.9 acres).

The second sewer alignment alternative runs up Atkinson Street to the Atkinson Street bridge over Dry Creek, where the pipe would be suspended under the bridge for 180 linear feet, and then connect to an existing City of Roseville manhole to the northwest of the bridge (labeled as "Alternative 4" in Figure 1). The existing manhole along the 33-inch main just north of the bridge is located within APN 473-070-015 (3.2 acres).

The proposed Off-Site Improvements Project, comprising the four parcels listed above and totaling 27.2 acres, is located in Section 10 of Township 10 North, Range 6 East, as depicted on the 1992 Citrus Heights USGS 7.5-minute topographic map (Mount Diablo Base and Meridian) (Figure 2).



Figure 1. Off-Site Sewer Alignment Alternatives

REGULATORY SETTING

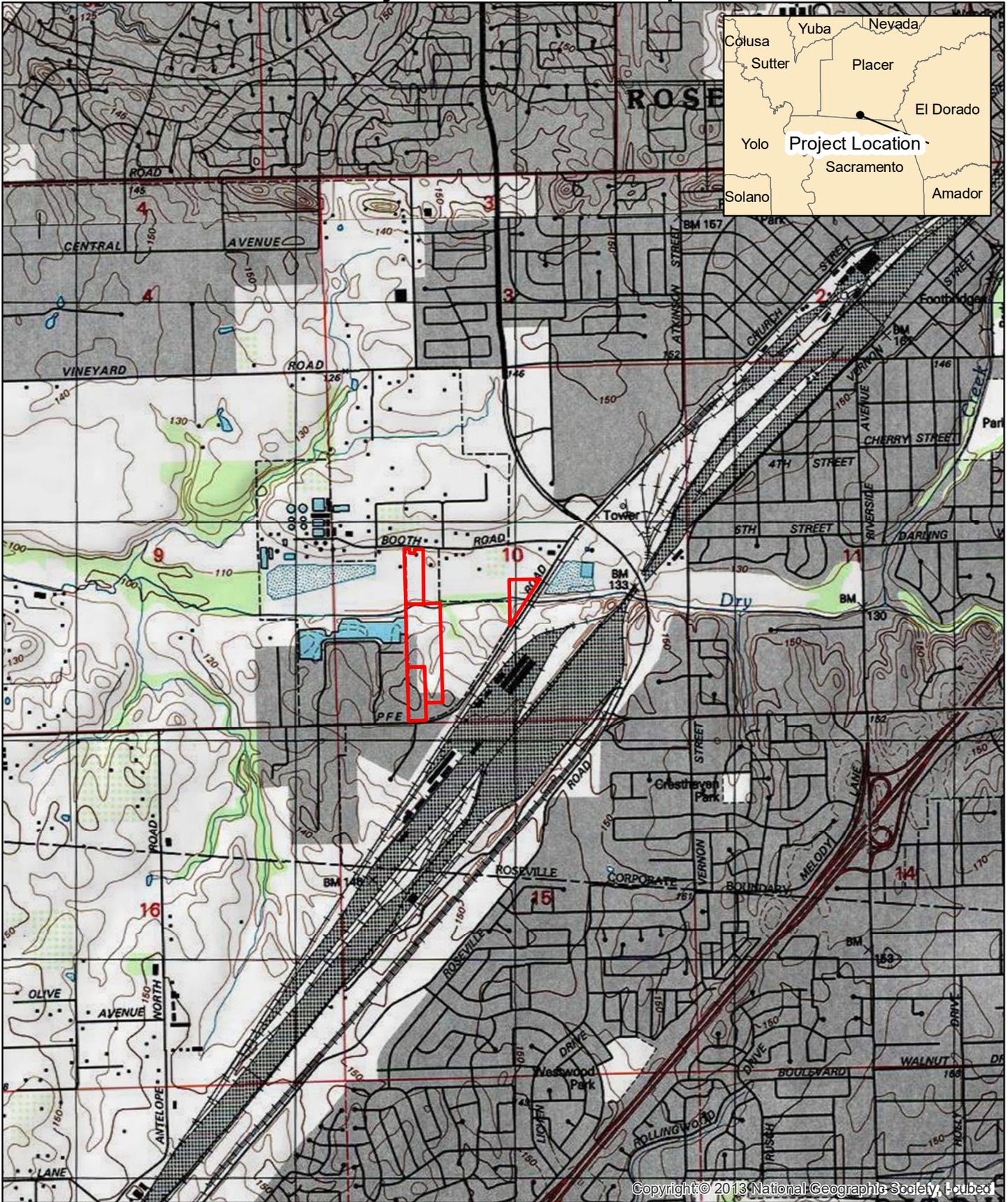
The current study for cultural and paleontological resources was completed under the provisions of CEQA. CEQA is the principal regulatory control addressing whether a project will have a significant effect on the environment, including impacts on historical resources, unique archaeological resources, tribal cultural resources, human remains, and paleontological resources in California.

Cultural Resources

Section 21083.2 of the statute and Section 15064.5 of the CEQA Guidelines provide instructions for a lead agency to consider the effects of Projects on historical resources, unique archaeological resources, tribal cultural resources, and human remains. A *historical resource* is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (Public Resources Code [PRC] Section 21084.1), a resource included in a local register of historical resources (PRC Section 15064.5[a][2]), or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (PRC Section 15064.5[a][3]).

PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing in the CRHR. The purpose of the register is to maintain listings of the State's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources in the CRHR were expressly developed to be in accordance with previously established federal criteria for listing in the National Register of Historic Places (NRHP).

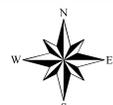
Project Location Map



 Project Location

0 0.5 1 Kilometers

0 0.5 1 Miles



1:24,000

Mill Creek
Off-Site Improvements
Figure 1 - Project Location



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According to PRC Section 5024.1(c)(1–4), as well as Section 15064.5(a)(3)(A–D) of the revised CEQA guidelines, a resource is considered historically significant if it meets at least one of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. It is associated with the lives of persons important in our past;
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. It has yielded, or may be likely to yield, information important in prehistory or history.

In order to be listed in the CRHR, historical resources must meet at least one of the significance criteria. Resources that do not meet any of these criteria are viewed as not significant. In addition to meeting at least one of the significance criteria, historical resources must possess the quality of *integrity* (location, design, setting, materials, workmanship, feeling, and association). Historic resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance.

Impacts to significant cultural resources from a proposed Project are considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource that contribute to its significance, or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

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

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

Should a site qualify as a unique archaeological resource, it is protected under CEQA. If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (PRC Sections 21083.2[a], [b], and [c]). If the agency determines the site does not qualify, then the site merits no further consideration.

A “historical resource” as defined in PRC Section 21084.1, a “unique archaeological resource” as defined in PRC Section 21083.2(g), or a “nonunique archaeological resource” as defined in PRC Section 21083.2(h) may also be a *tribal cultural resource* (TCR). As defined under PRC Section 21074, TCRs are “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe” that are either: (1) included or determined to be eligible for inclusion in the CRHR;

included in a local register of historical resources as defined in PRC Section 5020.1(k); or (2) determined by the lead agency to be significant pursuant to the criteria for inclusion in the CRHR set forth in PRC Section 5024.1(c), if supported by substantial evidence and taking into account the significance of the resource to a California Native American tribe. TCRs were established by Assembly Bill 52 (AB 52), effective July 1, 2015, as a new category of resource under CEQA.

Paleontological Resources

Paleontological resources are limited, non-renewable resources of scientific, cultural, and educational value that are explicitly afforded protection by CEQA, specifically Appendix G. Section V(c) of Appendix G addresses the potential for adverse impacts to unique paleontological resources, sites, or geological features, and requires that impacts to such resources must be considered in the project review process. While CEQA does not precisely define unique paleontological resources, the treatment of paleontological resources on non-federal lands is usually conducted in accordance with guidance from the criteria established by the Society for Vertebrate Paleontology (SVP 2010). Treatment usually consists of identification, assessment, and mitigation for potential impacts to significant paleontological resources.

PRC Section 5097.5 states that no person shall “knowingly and willfully” excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Public lands includes those “owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.” If paleontological resources are identified within a given project area, the lead agency must take those resources into consideration when evaluating project impacts. The level of consideration may vary with the importance of the resource in question.

In accordance with guidelines established by the SVP (2010), assessments of the scientific significance of fossilized remains are based on whether they can provide data on the taxonomy and phylogeny of ancient organisms, the paleoecology and nature of paleoenvironments in the geologic past, or the stratigraphy and age of geologic units. Because most vertebrate fossils are rare, they are considered important paleontological resources. Conversely, marine invertebrates are generally common, the fossil record is well developed and well documented, and they would generally not be considered an important paleontological resource. Substantial damage to or destruction of significant paleontological resources as defined by the SVP (2010) would represent a significant impact.

REPORT PREPARATION

Nancy E. Sikes, Ph.D. was the Principal Investigator for this cultural resources project and co-authored this report with Dylan Stapleton, M.A. and Cindy Arrington, M.S. Dr. Sikes and Ms. Arrington each have more than 20 years of archaeological experience in California and exceed all requirements of the *Secretary of Interior’s Qualifications Standards* (36 CFR Part 61; National Park Service 1983). Mr. Stapleton, who performed the pedestrian survey, has over 15 years of experience in California archaeology and is cross-trained in paleontology, with more than five years experience.

The format of this report follows the *Archaeological Resource Management Reports: Recommended Contents and Format* by the Office of Historic Preservation (1990).

ENVIRONMENTAL SETTING

GEOLOGY, HYDROLOGY, AND SOILS

The Off-Site Improvement Areas are located at elevations ranging between 100 and 140 feet (30–43 meters) above mean sea level within the lower Sacramento Valley, in the northern half of the Central Valley geomorphic province. The landscape of central California is dominated by the Central Valley, which is surrounded by the Sierra Nevada, Coast Ranges, Siskiyou Range, and Tehachapi Range. The northern half of the valley (Sacramento Valley) is drained by the Sacramento River, while the southern half (San Joaquin Valley) is drained by the San Joaquin River. The two rivers converge at the Sacramento–San Joaquin Delta and then flow westward into Suisun Bay.

The sedimentary geologic formations in the Central Valley province vary in age from Jurassic (199 to 144 million years ago) to Quaternary (200 million years ago to present) (Norris and Webb 1990). The older deposits are primarily marine in origin, while the continentally derived, younger sediments, which are mainly sourced from the Sierra Nevada Range, typically were deposited in fluvial, alluvial, and lacustrine environments. In the Central Valley, the thickness of sedimentary deposits that fill the Sacramento and San Joaquin valleys to their present elevations varies. Along the eastern valley edge, the deposits are relatively thin, but range to more than 20,000 feet (6,096 meters) in the south central portion of the valley (Page 1986). In the southeastern Sacramento Valley, the deposits range from 300 to 2,100 feet.

Review of recent geologic mapping prepared by Gutierrez (2011) indicates the portion of the Off-Site Improvement Areas within the Dry Creek floodplain are underlain by the alluvial deposits of the Modesto Formation lower member (Qm₁), which dates to the early Late Pleistocene, approximately 40,000–29,000 years ago (Busacca et al. 1989). These floodplain deposits are bounded on the north and south by the alluvial sediments of the Early Pleistocene-age Turlock Lake Formation (Qtl), estimated to be 730,000–500,000 years old (Marchand and Allwardt 1981).

Due to age, the presence of buried archaeological deposits in older Pleistocene (~1.9 million to ~22,000 years) alluvium, such as the Modesto and Turlock Lake formations, is very low. This conclusion was also reached by a comprehensive geoarchaeological study prepared for the California Department of Transportation (Caltrans), District 3, which includes Placer County (Meyer and Rosenthal 2008:162, Table 30, Map 1). The Turlock Lake Formation was formed over 500,000 years ago, and the lower member of the Modesto Formation over 29,000 years ago, long before the entry of humans in this area approximately 11,000 years ago. Further, subsequent to human entry, buried archaeological deposits dated to older than 4,000 years are rare in the Sacramento Valley, and none are known from the immediate Project vicinity (Meyer and Rosenthal 2008:149, Figure 60).

The proposed Off-Site Improvements Project is located within the lower reaches of the Dry Creek watershed, within the Sacramento River Basin. Historically, maps indicate flow within the creek was intermittent, as illustrated on the 1911 Antelope and later USGS quadrangles. Due to the expanse of its 101 square-mile watershed and coupled with irrigation runoff, Dry Creek presently flows year-round. The stream courses some 15 miles southwestward to the Sacramento River via the Natomas East Main Drainage Canal. Traversing east-west through three of the four Project parcels (APNs 473-080-006, 473-090-007, and 473-070-015; see Figure 1), the creek's summer flow consists primarily of irrigation return and excess flow, with some groundwater discharge (Placer County Planning Department 1990:102). Historically, Dry Creek and its tributaries have an extensive record of flooding, especially in the Roseville area, which has generally occurred from October through April (Placer County 2011:12-13). The 1967 Citrus Heights USGS 7.5-minute quadrangle shows the initial construction of levees on either side of Dry Creek near the contiguous, off-site improvement parcels.

Soils within the Project area outside the Dry Creek floodplain are mapped as the Cometa-Fiddyment complex (California Soil Resource Lab 2017; Soil Survey Staff 2017). These sandy loam soils formed in alluvium or material weathered from consolidated sediments of mixed rock sources. The soils are moderately deep, typically well-drained with slow permeability, and have an increasing clay content with depth. An argillic (Bt) horizon is present in both series. In Fiddyment soils, the Bt horizon overlies a duripan (Bqm horizon), with the depth to the duripan ranging from 28 to 40 inches. A paralithic contact (Cr horizon) immediately underlies the duripan in the Fiddyment series. In the Cometa series, a weakly stratified C horizon at a depth of 27 to 60 inches underlies the Bt horizon.

CLIMATE, CURRENT LAND USES, AND FLORA/FAUNA

The project region is characterized by hot, dry summers and warm, moist winters. Annual precipitation in this region averages 25 inches, with most of the rain falling between November and April. High winter temperatures reach approximately 57 degrees Fahrenheit, with summer temperature highs of around 100 degrees Fahrenheit. The current Mediterranean climate is dryer and hotter than the conditions present at the time of California's initial occupation (Major 1988).

The proposed Off-Site Improvements Project is located in eastern extent of the Sacramento Valley west of the Sierra Nevada foothills. Interstate 80 lies less than 2 miles east of the Project, and the Sacramento-Placer County line less than 0.5 mile south. West of the Roseville railroad yard and surrounded by the City of Roseville, the landscape in the Project vicinity has undergone substantial change and is best characterized as a suburban residential setting, while noting that the Dry Creek-West Placer Community Plan Area remains more open than the urbanized communities of Roseville and Antelope. A planned residential community from the late 1980s, the northern border of Antelope is the Sacramento-Placer County line.

The Project vicinity was historically characterized by vegetation communities near permanent drainages, such as Dry Creek, including grasslands, oak savannah/oak woodlands, riparian scrub/forest along drainages, with grasslands and oak woodlands in valley foothill areas to the east. Seasonal wetlands would have commonly occurred within the grassland habitat areas. This mosaic of ecological communities would have provided a very productive environment. Based on the ethnographic descriptions of the Nisenan who historically occupied this region, their hunting-gathering economy was supported by a variety of large and small mammals, edible plant species, fish, and waterfowl (Kroeber 1925, 1929; Wilson and Towne 1978).

CULTURAL SETTING

PREHISTORIC OVERVIEW

A recent summary by Rosenthal et al. (2007) of the prehistory of California's Sacramento Valley, Sacramento-San Joaquin Delta, and San Joaquin Valley is based on a compilation of previous research (e.g., Heizer and Fenenga 1939; Heizer 1949; Fredrickson 1973, 1974, 1994; Moratto 1984). As devised by Rosenthal and others, and with the timeframes adjusted for modern calibration curves for radiocarbon dates, the chronological sequence for the Central Valley is: Paleo-Indian (11,500–8550 cal [calibrated] B.C.), Lower Archaic (8550–5550 cal B.C.), Middle Archaic (5550–550 cal B.C.), Upper Archaic (550 cal B.C.–cal A.D. 1100), and Emergent or Late Prehistoric Period (cal A.D. 1100–Historic Contact).

There is little evidence of the Paleo-Indian and Lower Archaic periods in the Central Valley (Rosenthal et al. 2007:151; Dillon 2002). As shown by geoarchaeological studies (e.g., Meyer and Rosenthal 2008; Rosenthal and Meyer 2004a, 2004b; White 2003), large segments of the Late Pleistocene landscape throughout the central California lowlands have been buried or removed by periodic episodes of deposition

or erosion. Periods of climate change and associated alluvial deposition occurred at the end of the Pleistocene (approximately 9050 cal B.C.) and at the beginning of the early Middle Holocene (approximately 5550 cal B.C.). Earlier studies had also estimated that Paleo-Indian and Lower Archaic sites along the lower stretch of the Sacramento River and San Joaquin River drainage systems had been buried by Holocene alluvium up to 33 feet (10 meters) thick that was deposited during the last 5,000 to 6,000 years (Moratto 1984:214). The formation of the Sacramento–San Joaquin Delta began during the early Middle Holocene (Atwater and Belknap 1980; Goman and Wells 2000). After approximately 1,000 cal B.C. during the Late Holocene, there were renewed episodes of alluvial fan and floodplain deposition (Rosenthal et al. 2007:155-156).

The archaeological evidence that is available for the Paleo-Indian Period is comprised primarily by basally thinned, fluted projectile points. These points are morphologically similar to the well-dated Clovis points found elsewhere in North America. In the Central Valley, only three archaeological localities (Woolfsen Mound [CA-MER-215] in Merced County, Tracey Lake in San Joaquin County, and Tulare Lake basin in Kings County) contain fluted points, which were recovered at each from remnant features of the Pleistocene landscape.

In the Central Valley, the Lower Archaic Period is mainly represented by isolated finds as the early landscape was buried by natural alluvial fan and floodplain deposition (Rosenthal et al. 2007:151-152). Cultural material dating to this period has been found at only one site in the Central Valley proper. CA-KER-116 is located in today's Kern County on the ancient shoreline of Buena Vista Lake. Stratified cultural deposits at the site have yielded a stemmed projectile point, chipped stone crescents, and the remains of fish, birds, and shellfish. Although abundant milling slabs and handstones have been recovered from Lower Archaic Period foothill sites in eastern Contra Costa County (CA-CCO-637; Meyer and Rosenthal 1998) and Calaveras County (Skyrocket site CA-CAL-629/630; LaJeunesse and Pryor 1996), no milling tools or plant remains have been found at the valley floor site.

The cultural framework within the greater project region subsequent to the Paleo-Indian and Lower Archaic periods is further divided into three regionally based "patterns." Specific to the Central Valley prehistory and the current project region, the regionally based patterns defined by Fredrickson (1973, 1974) are the Windmill, Berkeley, and Augustine. The patterns mark changes in distinct artifact types, subsistence orientation, and settlement patterns, which began circa 5,550 cal B.C. and lasted until historic contact in the early 1800s. They were initially identified at three archaeological sites: the Windmill site (CA-SAC-107) near the Cosumnes River in Sacramento County; the West Berkeley site (CA-ALA-307) on the east side of the Bay in Alameda County; and the Augustine site (CA-SAC-127) in the Sacramento–San Joaquin Delta. In general, the patterns conform to three temporal divisions: Middle Archaic Period/Windmill Pattern, Upper Archaic Period/Berkeley Pattern, Late Prehistoric Period/Augustine Pattern.

Middle Archaic Period/Windmill Pattern (5550–550 cal B.C.)

For the first 3,000 years of the Middle Archaic, archaeological sites on the valley floor are relatively scarce, in part due natural geomorphic processes, unlike the foothills where a number of buried sites have been found (Rosenthal et al. 2007:153). On the valley floor, sites are more common after 2550 cal. B.C. The archaeological record in the valley and foothills indicates the subsistence system during this period included a wide range of natural resources (e.g., plants, small and large mammals, fish, and waterfowl) that indicate people followed a seasonal foraging strategy (Fredrickson 1973; Heizer 1949; Ragir 1972; Moratto 1984). Some researchers (e.g., Moratto 1984:206) suggest populations may have occupied lower elevations during the winter and shifted to higher elevations in the summer. Others (e.g., Rosenthal et al. 2007:153) also suggest there was increasing residential stability along Central Valley river corridors during the Middle Archaic.

Excavations at Windmill Pattern sites have yielded abundant remains of terrestrial fauna (deer, tule elk, pronghorn, and rabbits) and fish (sturgeon, salmon, and smaller fishes). Projectile points with a triangular blade and contracting stems are common at Windmill Pattern sites. A variety of fishing implements such as angling hooks, composite bone hooks, spears, and baked clay artifacts, which may have been used as net or line sinkers, are also relatively common. The points are classified within the Sierra Contracting Stem and Houx Contracting Stem series (Justice 2002:266, 276). The presence of milling implements (grinding slabs, handstones, and mortar fragments) indicate acorns or seeds were an important part of the Middle Archaic diet (Moratto 1984:201; Rosenthal et al. 2007:153, 155). In the foothills, pine nut and acorn remains have been recovered from sites in Fresno (CA-FRE-61) and Calaveras (CA-CAL-629/630 and CA-CAL-789) counties.

The variety of artifacts recovered from Windmill Pattern sites includes shell beads, ground and polished charmstones, and bone tools, as well as impressions of twined basketry. Baked clay items include pipes, discoids, and cooking “stones” as well as the net sinkers. Burials in cemetery areas, which were separate from habitation areas, were accompanied by a variety of grave goods. The presence of an established trade network is indicated by the recovery of *Olivella* shell beads, obsidian tools, and quartz crystals. Obsidian sources during the Middle Archaic included quarries in the North Coast Ranges, eastern Sierra, and Cascades (Rosenthal et al. 2007:153, 155).

Upper Archaic Period/Berkeley Pattern (550 cal B.C.–cal A.D. 1100)

Better understood than any of the preceding periods (Rosenthal et al. 2007:155-157), the Upper Archaic is characterized by a shift over a 1,000-year period to the more specialized, adaptive Berkeley Pattern. Excavated archaeological sites signal an increase in mortars and pestles, as well as archaeobotanical remains, accompanied by a decrease in slab milling stones and handstones. Archaeologists generally agree mortars and pestles are better suited to crushing and grinding acorns, while milling slabs and handstones may have been used primarily for grinding wild grass grains and seeds (Moratto 1984:209-210). The proportional change indicates a shift during the Berkeley Pattern to a greater reliance on acorns as a dietary staple (Fredrickson 1974:125; Moratto 1984:209; Wohlgemuth 2004). Innovations such as new types of shell beads, charmstones, bone tools, and ceremonial blades are additional evidence of the more specialized technology present during this period.

The artifact assemblage in Berkeley Pattern sites demonstrates that populations continued to exploit a variety of natural resources. In addition to seeds and acorns, hunting persisted as an important aspect of food procurement (Fredrickson 1973:125-126). Large, mounded villages that developed around 2,700 years ago in the Delta region included accumulations of habitation debris and features, such as hearths, house floors, rock-lined ovens, and burials (Rosenthal et al. 2007:156-157). The remains of a variety of aquatic resources in the large shell midden/mounds that developed near salt or fresh water indicate exploitation of shellfish was relatively intensive.

Berkeley Pattern artifact assemblages are also characterized by *Olivella* shell beads, *Haliotis* ornaments, and a variety of bone tool types. Mortuary practices continue to be dominated by interment, although a few cremations have been discovered at sites dating to this period. Trade networks brought obsidian toolstone to the Central Valley from the North Coast Ranges and the east side of the Sierra Nevada Range.

Late Prehistoric Period/Augustine Pattern (cal A.D. 1100–Historic Contact)

The comprehensive archaeological record for the Emergent or Late Prehistoric Period in the Central Valley shows an increase in the number of archaeological sites associated with the Augustine Pattern in the lower Sacramento Valley/Delta region, as well as an increase in the number and diversity of artifacts (Moratto 1984:211-214; Rosenthal et al. 2007:157-159). The Emergent Period was shaped by a number of cultural

innovations, such as the bow and arrow and more elaborate and diverse fishing technology, as well as an elaborate social and ceremonial organization. Dart and atlatl technology was effectively replaced by the introduction of the bow and arrow. Additionally, the cultural patterns typical of the Augustine Pattern as viewed from the archaeological record are reflected in the cultural traditions known from historic period Native American groups (Rosenthal et al. 2007:157).

The faunal and botanical remains recovered at Emergent Period archaeological sites indicate the occupants relied on a diverse assortment of mammals, fish, and plant parts, including acorns and pine nuts. Hopper mortars, shaped mortars and pestles, and bone awls used to produce coiled baskets are among the variety of artifacts recovered from Augustine Pattern sites. The toolkit during this period also included bone fish hooks, harpoons, and gorge hooks for fishing, as well as the bow and arrow for hunting. Small, Gunther barbed series Projectile points have been found at sites dating to the early part of the period, while Desert-side notched points appear later in the period (Rosenthal et al. 2007:158). The Stockton serrated arrow point also appears in archaeological assemblages dating to this period and in some parts of the lower Sacramento Valley, Cosumnes Brownware is present. The appearance of ceramics during this period is likely a direct improvement on the prior baked clay industry.

During the Late Prehistoric Period, numerous villages, ranging in size from small to large, were established along the valley floor sloughs and river channels and along the foothills sidestreams. House floors or other structural remains have been preserved at some sites dating to this period (e.g., CA-CAL-1180/H, CA-SAC-29, CA-SAC-267) (Rosenthal et al. 2007:158). The increase in sedentism and population growth led to the development of social stratification, with an elaborate social and ceremonial organization. Examples of items associated with rituals and ceremonials include flanged tubular pipes and baked clay effigies representing animals and humans. Mortuary practices changed to include flexed burials, cremation of high-status individuals, and pre-interment burning of offerings in a burial pit (Fredrickson 1973:127-129; Moratto 1984:211). Currency, in the form of clamshell disk beads, also developed during this period together with extensive exchange networks.

In her Master's thesis, which was completed in 1966, Patti Palumbo (now Johnson) focused on the archaeology of the Dry Creek drainage. She analyzed artifacts from 32 prehistoric archaeological sites between Rio Linda on the west and Roseville on the east. Palumbo concluded four of the sites were permanent village sites with well-developed middens, each of which was located at the eastern extent of her study area. She classified the remainder as temporary occupation sites since there was little or no accumulation of habitation debris except for milling implements, projectile points, cores, or other miscellaneous artifacts (Palumbo 1966). Diagnostic artifacts found at the Dry Creek sites (e.g., shell beads, projectile points) indicate occupation occurred mainly during the Late Prehistoric Period. One of the village sites (CA-PLA-41) is mapped adjacent to the main Dry Creek channel in the southeast quadrant of Section 9 over a half-mile west of the proposed Project. No prehistoric sites were found by Palumbo within the section in which the Off-Site Improvements are located (Section 10).

ETHNOGRAPHIC OVERVIEW

The Project is located in lands historically occupied by the Nisenan (also known as the Southern Maidu) (Kroeber 1925, 1929; Wilson and Towne 1978). Prior to Euro-American contact, Nisenan territory included the southern extent of the Sacramento Valley, east of the Sacramento River between the North Fork Yuba River and Cosumnes Rivers on the north and south, respectively, and extended east into the foothills of the Sierra Nevada Range. Neighboring groups included the Plains Miwok on the south, Southern Patwin to the west across the Sacramento River beyond the Yolo Basin, and Konkow and Maidu to the north. Three Maidu languages, Konkow, Maidu, and Nisenan are regarded as a subgroup of Penutian stock.

Ethnographers have also distinguished three Nisenan dialects (Northern Hill, Southern Hill, and Valley) (Kroeber 1925:393).

Ethnographic Nisenan established central villages and smaller satellite villages along the main watercourses in their territories (Kroeber 1925:831; Moratto 1984:172-173; Wilson and Towne 1978:388-389). Valley Nisenan villages were generally on low, natural rises along streams and rivers or on gentle, south-facing slopes and Hill Nisenan villages on ridges and large flats along major streams. The semi-permanent or winter villages, as well as seasonally occupied campsites were used at various times during the seasonal round of subsistence activities associated with hunting, fishing, and gathering plant resources. Historically, a Nisenan village known as *Pitsokut* or *Pich-u-gut* was located in the Roseville area, and may have been at the location of a prehistoric site recorded along Dry Creek (Kroeber 1925:394, Plate 37; Palumbo 1966:9).

Village population varied and is reported as ranging from 15 to over 500 individuals with the number of residences ranging from 40 to 50 in larger villages, and only three to seven in smaller villages (Kroeber 1925:831; Maloney 1944; Wilson and Towne 1978:388). Traditional village structures included semi-subterranean or aboveground conical, circular, or dome-shaped houses, as well as acorn granaries, winter grinding houses, ceremonial or dance houses, and sweathouses. Nisenan mortuary practices included cremation and burial in a separate cemetery area (Wilson and Towne 1978:392).

Like the majority of Native Californians, the Nisenan relied on acorns as a staple food, which were collected in the fall and then stored in granaries (Wilson and Towne 1978:389-390). These seasonally mobile hunter-gatherers also relied on a wide range of abundant natural resources that were available in their territories. Large and small mammals, such as pronghorn antelope, deer, tule elk, black bears, cottontails, and jackrabbits, among other species, were hunted by individuals or by communal groups. Game birds, waterfowl, and fish, particularly salmon, were also important components of the Nisenan diet. In addition to acorns, plant resources included pine nuts, buckeye nuts, hazelnuts, fruits, berries, seeds, and underground tubers.

Similar to other California Native American groups, the Nisenan employed a variety of tools, implements, and enclosures for hunting and collecting natural resources (Wilson and Towne 1978:389-392). The bow and arrow, snares, traps, nets, and enclosures or blinds were used for hunting land mammals and birds. For fishing, they made canoes from tule, balsa, or logs, and used harpoons, hooks, nets, and basketry traps. To collect plant resources, the two groups used sharpened digging sticks, long poles for dislodging acorns and pinecones, and a variety of woven tools (seed beaters, burden baskets, and carrying nets).

Foods were processed with a variety of tools, such as bedrock mortars, cobblestone pestles, anvils, and portable stone or wooden mortars that were used to grind or mill acorns and seeds (Wilson and Towne 1978:389-390). Additional tools and implements included knives, anvils, leaching baskets and bowls, woven parching trays, and woven strainers and winnowers. Prior to processing, the acorns were stored in the village granaries.

The Nisenan and neighboring groups participated in an extensive east-west trade network between the coast and the Great Basin (Wilson and Towne 1978:391). From coastal groups marine shell (*Olivella* and abalone) and steatite moved eastward, while salt and obsidian traveled westward from the Sierras and Great Basin. Basketry, an important trade item, moved in both directions.

The traditional culture and lifeways of the Nisenan who inhabited the fertile plains between Sacramento and the Sierra foothills, were disrupted beginning in the early 1800s. Although Spanish explorers entered Nisenan territory as early as 1808, there is no record of the forced movement of Nisenan to the missions (Wilson and Towne 1978:396). During the Mexican period, native peoples were affected by land grant settlements and decimated by foreign disease epidemics that swept through the densely populated Central

Valley. An epidemic that swept the Sacramento Valley in 1833 caused the death of an estimated 75 percent of the Valley Nisenan population, wiping out entire villages (Cook 1955:322).

In the heart of Nisenan territory, the discovery of gold in 1848 at Sutter's Mill on the American River near Coloma had a devastating impact on the remaining Nisenan, as well as other groups of Native Americans in the Central Valley and along the Sierra Nevada foothills (Chartkoff and Chartkoff 1984:296). By 1850, with their lands, resources and way of life being overrun by the steady influx of non-native people during the Gold Rush, surviving Nisenan retreated to the foothills and mountains or labored for the growing ranching, farming, and mining industries (Wilson and Towne 1978:396). Nisenan descendants reside on the Auburn, Berry Creek, Chico, Enterprise, Greenville, Mooretown, Shingle Springs, and Susanville rancherias, as well as on the Round Valley Reservation (BIA 2015; California Indian Assistance Program 2011).

HISTORIC OVERVIEW

Spanish, Mexican, and American Periods

Post-contact history for the State of California generally is divided into three specific periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present). Although there were brief visits by Spanish, Russian, and British explorers from 1529 to 1769, the beginning of Spanish settlement in California occurred in 1769 at San Diego. Between 1769 and 1823, 21 missions were established by the Spanish and the Franciscan Order along the coast between San Diego and San Francisco. The Spanish expeditions into the Central Valley in 1806 and 1808 led by Lieutenant Gabriel Moraga explored along the main rivers, including the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, San Joaquin, and Stanislaus. He is said to have named the lower Sacramento River and the valley region “Sacramento” (“the Holy Sacrament”) (Hoover et al. 2002:301). In 1813, Moraga led another expedition in the lower portion of the Central Valley and gave the San Joaquin River its name (Hoover et al. 2002:369). The abundance of wildlife, such as waterfowl, fish, and fur-bearing animals, within or along the banks of the rivers attracted immigrants to this region. The last Spanish expedition into California's interior was led by Luis Arguello in 1817 and traveled up the Sacramento River, past the future site of the city of Sacramento to the mouth of the Feather River, before returning to the coast (Beck and Haase 1974:18, 20; Gunsky 1989:3-4).

After the end of the Mexican Revolution (1810–1821) against the Spanish crown, the Mexican Period is marked by an extensive era of land grants, most of which were in the interior of the state, as well as by exploration by American fur trappers west of the Sierra Nevada Mountains. Most of the land grants to Mexican citizens in California (*Californios*) were in the interior since the Mexican Republic sought to increase the population away from the more settled coastal areas where the Spanish settlements had been concentrated. The largest land grants in the Sacramento Valley were awarded to John Sutter who had become a Mexican citizen. In 1839, he founded a trading and agricultural empire called New Helvetia that was headquartered at Sutter's Fort near the divergence of the Sacramento and American rivers in today's City of Sacramento (Hoover et al. 2002). Only a small portion of the 48,839-acre New Helvetia land grant was located in Sacramento County; the majority was located in today's Sutter and Yuba counties on the east and west sides of the Feather River (Beck and Haase 1974:28).

The first American trapper to enter California, Jedediah Smith, explored along the Sierra Nevada in 1826 and in 1827, he entered the Sacramento Valley, traveling along the American and Cosumnes rivers. In 1827, Smith also traveled through the San Joaquin Valley. Other trappers soon followed, including employees of the Hudson's Bay Company in 1832 (Hoover et al. 2002:370). Between 1830 and 1833, and again in 1837, diseases introduced by the non-indigenous explorers, trappers, and settlers, as well as relocation to the

missions, military raids, and settlement by non-native groups, decimated native Californian populations, communities, and tribes in the Sacramento and San Joaquin valleys (Cook 1955).

The American Period was initiated in 1848 with the signing of the Treaty of Guadalupe Hidalgo, which ended the Mexican–American War (1846–1848), and California became a territory of the United States. Gold was discovered at Sutter’s Mill on the American River in Coloma the same year, and by 1849, nearly 90,000 people had journeyed to the gold fields. In 1850, largely as a result of the Gold Rush, California became the thirty-first state. Four years later, the bustling boomtown of Sacramento became the state capital. In contrast to the economic boom and population growth that enabled statehood, the loss of land and territory (including traditional hunting and gathering locales), malnutrition, starvation, and violence further contributed to the decline of indigenous Californians in the Central Valley and all along the Sierra Nevada foothills (Chartkoff and Chartkoff 1984:296; Gunsky 1989).

Local History

Placer County was organized in 1851 from parts of neighboring Sutter and Yuba counties, and named after its principal economy at that time, placer mining (Hoover et al. 2002:271). The City of Auburn, one of the earliest mining towns in California (first known as Woods Dry Diggings, then North Fork Dry Diggings), was designated the seat of justice when the county was created. Auburn continues to be the county seat today.

The earliest settlers in the general Project vicinity arrived in the late 1840s, as miners poured into the region in search of placer deposits. By the mid-1850s the area was sparsely settled and dotted with small-scale ranches. By the mid-1860s, the construction and development of the railroad industry played a significant role in the region’s development. The Central Pacific Railroad (CPRR) had incorporated in 1861 to build the western portion of the First Transcontinental Railroad. The tracks of the CPRR (later Southern Pacific Railroad [SPRR]; now Union Pacific Railroad [UPRR]) reached Roseville, Rocklin, and Newcastle in 1864 (Hoover et al. 2002:277). A designated California Historical Landmark (No. 780), the First Transcontinental Railroad has a marker in Old Town Roseville. Roseville prospered as a principal rail head that provided the frontier towns with goods and services. When the SPRR moved its major locomotive terminal from Rocklin to Roseville in 1908, that town expanded to one of the largest railroad centers in the country.

The presence of the railroad also contributed to the growth of Placer County’s agricultural industry, mainly fruits and nuts, since the rail line provided access to a large market east of the Sierra Nevada (Lardner and Brock 1924:228-237). Incorporated in 1906, the Pacific Fruit Express Company (PFE) was a joint SPRR and UPRR enterprise (Online Archive of California 2009). The company operated a number of ice plants and docks, as well as car and repair shops throughout the west, and shipped produce in ice refrigerated railcars. The first units of the Pacific Fruit Express Ice Plant were erected in 1909, and by 1920, it was known as the world’s largest artificial ice plant (Placer County 2007a). The name of present-day PFE Road, whose unnamed precedent is shown on the 1911 Antelope (1:31,650) USGS quadrangle, is derived from the company, which is now a UPRR subsidiary.

The town of Antelope on the SPRR route between Sacramento and Roseville in north-central Sacramento County was initially settled in the 1860s by many of the transcontinental railroad workers. The area west of the tracks remained rural with scattered residences between the railroad and PFE Road until significant growth occurred during the 1980s. The Antelope Community Plan and the East Antelope Specific Plan were adopted in 1985 and 1995, respectively, and together include capacity for over 13,000 residential units between Dry Creek on the west and the railroad on the east (Sacramento County Planning Department 1995). The northern border of the community is the Sacramento-Placer County line.

Immediately north of the Sacramento-Placer County line is the Dry Creek-West Placer Community Plan Area, which includes the planned Mill Creek residential development and proposed Off-Site Improvements Project. The approximately 9,200-acre plan area is bounded by Baseline Road on the north, Sutter County to the west, Sacramento County to the south, and the City of Roseville to the east (Placer County Planning Department 1990). Since the Community Plan was adopted in 1990, a separate Placer Vineyards Specific Plan was approved in 2007 for the 5,230 acres west of Dry Creek (Placer County 2007b). The Specific Plan area thus excludes the planned Mill Creek development and proposed Off-Site Improvement Areas. As indicated in the two plans, the primary land use in the area has historically been agricultural, with rice lands, vineyards, orchards, grazing land, and areas devoted to field crops, and some areas lying fallow for decades. Cultivated fields are shown in this area on the 1856 General Land Office (GLO) Plat for Township 10 North, Range 6 East, which also names Dry Creek. While some neighboring land uses in the area include agricultural grazing, farming, and large rural-residential lots, the Dry Creek-West Placer Community Plan Area is “distinctly different” from the more urbanized communities of Roseville and Antelope (Placer County Planning Department 1990:119).

PRE-FIELD RESEARCH

NORTH CENTRAL INFORMATION CENTER

A cultural resources literature search was conducted by Natural Investigations Archaeologist, Cindy Arrington, at the North Central Information Center (NCIC) of the California Historical Resources Information System at California State University, Sacramento, on December 4, 2017. The records search was conducted to determine if prehistoric or historic cultural resources were previously recorded within the Project area, the extent to which the Project area had been previously surveyed, and the number and type of cultural resources within a 0.25-mile radius of the Project area. The archival searches of the archaeological and historical records, national and state databases, and historic maps included:

- National Register of Historic Places: listed properties
- California Register of Historical Resources
- Historic Property Data File (HPDF) and Archaeological Determinations of Eligibility (ADOE) for Placer County
- California Inventory of Historical Resources (1976 and updates)
- California Historical Landmarks (1996 and updates)
- California Points of Historical Interest (1992 and updates)
- Caltrans Historic Bridge Inventory (2016)

Prior Cultural Studies

The records search at the NCIC indicates 15 prior studies have been completed within the 0.25-mile search radius, five of which included portions of the Project area (Table 1). The 15 investigations were completed between 1966 and 2015.

Table 1. Prior Cultural Studies within a 0.25-Mile Radius of the Project Area			
NCIC Report No.	Report Title	Author and Year	Within Project Area?
222	An Archeological Survey for Atteberry and Associates, Roseville	Mark Basgall 1978	No
251	Dry Creek: An Archaeological Survey and Site Report (Master's Thesis, Sacramento State College) (now California State University, Sacramento)	Patti J. Palumbo 1966	Yes
368	An Archeological Reconnaissance of the Roseville - Placer County - Rocklin West Sewer Assessment District	Foster and Foster 1981	No
1720	Cultural Resources Investigation For The Sierra Crossings Project, Placer County	James Maniery 1995	No
2935	Cultural Resources Inventory Report for Williams Fiber Optic Cable System: Sacramento to CA/NV State Border	Jones & Stokes 1999	No
6244	Cultural Resources Assessment of the Union Pacific Railroads Roseville Switching Yards	Peak & Associates 1997	Yes
7650	Archaeological Inventory Survey: Proposed Dry Creek Watershed Treatment Plant levee Replacement Project, c. 2,100 Feet Along the North Side of Dry Creek, Placer County	Peter Jensen 2006	No
7745	Cultural Resources Survey of the Proposed Sacramento to Roseville Pipeline Project Contrct SPPL-1994	McCarthy et al. 1987	No
8619	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Arrington et al. 2006	Yes
9322	Phase I Archaeological Records Search and Field Survey on a +2.3- Acre Property, APN: 473-040-023-000 (TML # T20070711), Locate at 1770 Booth Road, Near Roseville, Placer County	Scott Crull 2008	No
9376	Linda Creek Sewer Crossing Project	H. Koenig 2008	Yes
9909	Proposed Dry Creek WWTP Levee Replacement Project	Sean Jensen 2008	Adjacent
10434	Central Pacific Transcontinental Railroad, Sacramento to Nevada State Line - HAER CA-196	John Snyder 1997	No
11404	Dry Creek Bank Erosion Project Booth Road Segment Cultural Resources Inventory and Evaluation	Ric Windmiller 2013	No
12122	Union Pacific J.R. Davis Yard Storm Water Drain Repair Project	Natalie Lawson 2015	Yes

Previously Recorded Cultural Resources

The records search at the NCIC indicates no cultural resources have been previously recorded within the current Project area, while two historic-era resources and one modern bridge have been previously documented within the 0.25-mile search radius (Table 2). The known resources outside the Project area include the First Transcontinental Railroad (P-31-00964), portions of which have been designated a California Historical Landmark (No. 780), and the railroad switching yard associated with building the railroad (P-31-002596), which has been found ineligible for NRHP listing through survey evaluation (status code 6Z). The modern Dry Creek bridge on Atkinson Street (19C0230) was built in 2007, has been previously evaluated by the Caltrans, and was determined not eligible for NRHP listing (category 5 bridge).

Table 2. Cultural Resources Previously Recorded within 0.25-Mile Radius of Project Area

Primary No. P-31-	Trinomial CA-PLA-	Period	Description	Recorded By/ Year	Within Project Area?
00964	841H	Historic	First Transcontinental Railroad, 1864	Jones & Stokes 1995; Norton 1998; Norton & Atchley 1999; Hair 2000; Blosser & Webb 2002; Toffelmier 2005; Melvin & Freeman 2007	No
002596	1847H	Historic	Roseville Switching Yards, historic district, Transcontinental Railroad, 1869–present; not eligible for NRHP (status code 6Z)	Gerry 1997	No
Bridge 19C0230	n/a	Historic	Dry Creek Bridge, 0.4 mile north of PFE Road, built 2007; not eligible for NRHP (category 5)	Caltrans Local Agency Bridge Inventory	No

OTHER CULTURAL ARCHIVAL SOURCES

In addition to the material accessed at NCIC, Natural Investigations staff reviewed a series of historic maps and aerial photographs, listed below. The results of our review of historic maps and aeriels are incorporated in the sections on Hydrology, Local History, and Findings.

- 1856 General Land Office (GLO) Plat for Township 10 North, Range 6 East
- 1911 Antelope (1:31,650) USGS quadrangle
- 1951, 1967, and 1992 Citrus Heights USGS 7.5-minute quadrangles
- Aerial photographs for 1947, 1957, 1964, 1966, 1993, 1998, 2002, and 2005

SACRED LANDS FILE SEARCH

Natural Investigations contacted the Native American Heritage Commission (NAHC), requesting a search of their Sacred Lands File for traditional cultural resources within or near the Project area. The reply from the NAHC, dated December 4, 2017, states that the search failed to indicate the presence of Native American sacred lands in the immediate vicinity. The NAHC letter is provided as Appendix A.

PALEONTOLOGICAL RECORDS SEARCH AND SENSITIVITY

A search of the paleontological records maintained by the University of California Museum of Paleontology (UCMP) was conducted on December 26, 2017. The UCMP database indicates 64 fossil localities have been recorded within Placer County (UCMP 2017a). Of these, only three localities have produced vertebrate fossils. A locality near Rocklin yielded a Pleistocene-age mastodon from the Mehrten Formation, while a locality near Lincoln produced three Tertiary-age vertebrates, a bony fish, a mammal, and a reptile. A cartilaginous fish from the Cretaceous was recovered from the third locality in the Sierras. The remaining localities recorded in the UCMP database have produced plant and invertebrate specimens, mainly from the Eocene Ione and Late Cretaceous Chico formations, as well as plant microfossils from Early Holocene lacustrine deposits west of Lake Tahoe. Additionally, a small outcrop of the Chico Formation, now a

residential development near Granite Bay, has produced a diverse array of Late Cretaceous fossils, including invertebrates, plants, and dinosaurs (Hilton and Antuzzi 2012).

Geologic maps indicate the majority of the Off-Site Improvements Project is underlain by the Early Pleistocene-age Turlock Lake Formation (Qt1), with a narrow east-west band of the Modesto Formation lower member (Qm₁) transecting three of the four parcels along the Dry Creek floodplain (APNs 473-080-006, 473-090-007, and APN 473-070-015) (Gutierrez 2011). Both of these formations have a high paleontological potential.

The alluvial sediments comprising the Turlock Lake Formation originated from the Sierra Nevada and are deeply weathered and dissected. Estimates place the age of the formation between 730,000 and 500,000 years before present (Marchand and Allwardt 1981). The formation is more widespread in the San Joaquin Valley than the Sacramento Valley (Helley and Harwood 1985:11-12). A series of exposures in the Turlock Lake State Recreation Area in Stanislaus County are the type site for this rock unit. As a diversity of vertebrate fossils have been recovered at a number of localities, the formation has a high sensitivity for paleontological resources. The most well-known locality is the Fairmead Landfill near Chowchilla in Madera County that has produced more than 3,000 fossil specimens from 35 different species (Dundas et al. 1996). Recovered vertebrate fossils include mammoth, saber-toothed cat, ground sloth, camel, horse, and deer, among others. In Sacramento County, both vertebrate and plant fossils have been reported from the Turlock Lake Formation from the bluffs along the American River at Fair Oaks. In Placer County, fossil fish, plant fragments, petrified wood, and ichnofossils have been found in the Turlock Lake Formation (Fisk and Butler 2005) near the Roseville railyard 5 miles south of the Project.

The Modesto Formation was deposited by rivers still existing today and forms alluvial terraces and fans of major rivers along the axis of the Central Valley, including the Sacramento and San Joaquin rivers, and is widely distributed along the rivers in the Sacramento and San Joaquin valleys (Helley and Harwood 1985). The type section for this formation is along the south bluff of the Tuolumne River south of Modesto. The upper member is composed primarily of unconsolidated, unweathered coarse sand and sandy silt; the lower member is composed of consolidated, slightly weathered, well-sorted silt and fine sand, silty sand, and sandy silt. The lower member has been dated to the early Late Pleistocene, approximately 40,000–29,000 years ago (Busacca et al. 1989; also see Atwater et al. 1986; Marchand and Allwardt 1981). The alluvial deposits assigned to the Modesto Formation are often lithologically indistinct from the underlying Riverbank Formation, but can be distinguished by stratigraphic position, degree of cementation, amount of deformation, and age. The formation has a high sensitivity for paleontological resources, as a diversity of vertebrate fossils have been recovered from sediments referable to this formation at a number of localities in the Central Valley, including Merced, San Joaquin, Stanislaus and Yolo counties, although not from Placer or Sacramento counties (UCMP 2017b). The Tranquility locality in Fresno County, for example, has yielded more than 130 Rancholabrean-age fossils from sediments referable to the Modesto Formation. Rancholabrean (younger Pleistocene and Holocene fauna) vertebrate fossils identified from this formation include mammoth, bison, horse, camel, ground sloth, elephant, antelope, elk, deer, coyote, and a variety of smaller mammals and invertebrates.

While there is no record of fossils and no unique geologic features known to exist within the four parcels comprising the Off-Site Improvements Project, considering the vertebrate fossil sensitivity of the Turlock Lake and Modesto formations, the field survey included inspection for geologic outcrops that may contain paleontological resources.

FIELD METHODS

An intensive-level pedestrian survey within the Project area was conducted by Natural Investigations archaeologist and cross-trained paleontologist, Dylan Stapleton, on December 14, 2017. Survey transects were spaced at intervals no greater than 15 meters. Where not constrained by commercial and residential buildings or heavily graveled surfaces, the entirety of the Project area was covered by the survey and carefully examined for the presence of cultural resources and geologic outcrops that may contain paleontological resources.

All visible ground surface within the four parcels comprising the Project area was examined for paleontological resources and for cultural material (e.g., flaked stone tools, tool-making debris, stone milling tools, or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics). Ground disturbances (e.g., animal burrows, unpaved access roads, driveways, storage areas, etc.) were visually inspected. A digital camera was used to take photographs of the Project area, showing ground surface visibility and items of interest. Soil color was recorded using a Munsell® color chart.

FINDINGS

SUMMARY

No prehistoric or historic-era archaeological, ethnographic, or historic-era built environment resources were identified or recorded during survey of the Project area. The existing residential and commercial buildings on APNs 473-080-006 and 473-090-003, which will be avoided by the Off-Site Improvements, are of modern construction, less than 45 years old, and do not require detailed historic review, architectural evaluation, or formal recordation at this time as none would qualify for listing in the CRHR or NRHP.

No fossils, no unique geologic features, and no alluvial deposits attributable the Turlock Lake or Modesto formations were observed during the survey.

DESCRIPTION OF PARCELS SURVEYED FOR OFF-SITE IMPROVEMENTS PROJECT

APN 473-080-006

The northernmost of the three contiguous parcels, APN 473-080-006 (4.8 acres) is bordered on the north by Booth Street, on the south by Dry Creek, on the west by the Roseville Wastewater Treatment Facility, and on the east by a residential property. Two modern residences and outbuildings are present within the northeast corner of the parcel, accessed via a driveway off Booth Road (Photograph 1). One of the two residences is shown on the 1992 Citrus Heights USGS 7.5-minute quadrangle and the 1993 aerial photograph. As proposed, after exiting the jack-and-bore under Dry Creek, the sewer alignment alternative labeled as “Alternative 2” in Figure 1 would run along the western edge of the parcel and avoid the existing, modern buildings.

West and southwest of the residences, multiple trailers, cars, and boats are distributed on a 122-foot wide by 254-foot long gravel pad with access off Booth Road (Photograph 2). The remaining portion of the parcel (approximately two-thirds) is undeveloped (Photographs 3 and 4), with some graded bare ground areas south of the residences. The 1947 aerial photograph shows historic land use in this area was for agriculture.

Dry Creek runs east-west through APN 473-080-006. Vegetation consisted of riparian species, oak trees, brush/weeds, low-lying grassy areas, and palm trees. Ground visibility within the majority of the parcel outside the residentially built area was excellent (90–100%) with ground cover comprised of low dry grass, bare earth, or graded gravel access road and pad. The brown (7.5YR 4/3 moist) sandy loam surface soil was consistent with the Cometa-Fiddymont complex.



Photograph 1. Modern residences on APN 473-080-006 (view to southeast)



Photograph 2. Storage yard and gravel pad on APN 473-080-006 (view to north)



Photograph 3. Overview of southern portion of APN 473-080-006 (view to northeast)



Photograph 4. Overview of central portion of APN 473-080-006 (view to northwest)

APN 473-090-007

The largest of the three contiguous parcels, APN 473-090-007 (14.3 acres) extends south from APN 473-080-006 at Dry Creek to the border of a residential property approximately 240 feet north of PFE Road. On the west, the approximate northern half of the parcel is bordered by light industrial businesses, and by APN 473-090-003 on the approximate southern half. To the east are residential properties.

The southeast arm of APN 473-090-007 has been graded and graveled and is presently used to store tractor-trailers, a variety of semi-trailers, older vehicles, busses, motor homes, and campers, and has outbuildings in the extreme southeast corner (Photograph 5). A portion of the northwest area of the parcel appears to have been built up with compacted dirt. It was unclear if a residential mobile home and associated outbuildings in the northeast corner of the parcel is presently occupied. An area in the northern extent of the parcel was used to stockpile construction grade sand, gravel, and dirt (Photograph 6). The remainder of the parcel is undeveloped. As proposed, after exiting the jack-and-bore under Dry Creek, the sewer alignment alternative labeled as “Alternative 2” in Figure 1 would run along the western edge of the parcel and thus avoid the mobile home and modern outbuildings.

Access to the stockpile and the equipment yard is via a dirt and gravel access road leading north from APN 473-090-003 (Photograph 7). This road is shown on the 1993 aerial photograph, but not the earlier 1966 aerial. Along the north and east property boundaries, there is a barbed wire fence with very weathered wooden fence posts and replacement metal posts. The parcel contains an abandoned concrete pad (13.5-foot long, 9-foot wide, and 10-inches high) and a pile of concrete rubble by the creek bed.

Dry Creek runs east-west along the northern border of APN 473-090-007 (Photograph 8). Vegetation consisted of riparian species along the creek, oak trees in the northeast corner, brush/weeds, and low-lying grassy areas. Except for tall, dense clusters of weeds in the southern portion of the parcel that reduced ground visibility to poor (0–5%), ground visibility within the parcel was excellent (90–100%) with ground cover comprised of low dry grass, bare earth, or graded gravel access road and storage area. The brown (10YR 3/2) sandy loam surface soil was consistent with the Cometa-Fiddymt complex.



Photograph 5. Overview of stored vehicles in southeast arm of APN 473-090-007 (view to north)



Photograph 6. Overview of northern portion of APN 473-090-007, view to south (view to south)



Photograph 7. Overview of vegetation cover and graveled road in APN 473-090-007 (view to northeast)



Photograph 8. Overview of Dry Creek along north edge of APN 473-090-007 (view to east)

APN 473-090-003

The southern boundary of APN 473-090-003 (4.9 acres), which is southernmost of the three contiguous parcels, fronts PFE Road. The parcel is bordered on the west by commercial businesses, on the north and east by APN 473-090-007, and on the southeastern extent by a residential property. The northern extent of APN 473-090-003 houses a commercial business (Auernig Auto Body) with a graded, graveled parking area, accessed via a graded, graveled road extending north from PFE Road along the eastern boundary of the parcel (Photograph 9). The road narrows and continues north to provide access to APN 473-090-007.

There is also a modern residence and outbuildings in the southern half of APN 473-090-003 (Photograph 10), accessed via a graveled driveway off PFE Road along the western boundary of the parcel. East and south of the buildings is a rectangular concrete foundation, presumably of a former residence, and another graded, graveled strip. Aerial photographs from 1947 to 1966 show there was an orchard on the parcel, with development of the auto body shop and residences by 1993. The 1993 aerial also shows the access road north to APN 473-090-007. As proposed, the sewer alignment alternative labeled as “Alternative 2” in Figure 1 would run along the eastern edge of the parcel and avoid the existing, modern commercial and residential buildings.

Vegetation in APN 473-090-003 consisted of oak and pine trees, brush/weeds, and low-lying grassy areas (Photograph 11). Ground visibility within the majority of the parcel outside the built areas was excellent (90–100%) with ground cover comprised of low dry grass, bare earth, or graded gravel areas. The brown (10YR 5/3) fine sandy loam surface soil was consistent with the Cometa-Fiddymont complex.



Photograph 9. Overview of APN 473-090-003 ground cover and auto body shop (view to northeast)



Photograph 10. Overview of modern home and concrete pad in APN 473-090-003 (view to west)



Photograph 11. Overview of vegetation cover in APN 473-090-003 (view to east)

APN 473-070-015

APN 473-070-015 (3.2 acres) is located west of and adjacent to Atkinson Street and to the Atkinson Street bridge over Dry Creek (Photograph 12), and stands alone to the east of the three contiguous parcels. This parcel was surveyed for the sewer alignment alternative, labeled as “Alternative 4” in Figure 1, where the pipe would be suspended under the Atkinson Street bridge over Dry Creek, and then connect to the existing City of Roseville manhole just northwest of the bridge.

The parcel is bordered on the north and west by commercial businesses, and on the southwest by residential property. A 6-foot high cyclone fence with a locked gate encloses the eastern edge of the parcel fronting

Atkinson Street and the residential property to the southwest. This parcel contains: the remains of a modern, wooden covered overhang shelter with associated a wooden fence remains south of the creek; a partially elevated PVC petroleum pipeline north and south of the creek; and the partially buried main sewer pipe and associated manhole north of the creek and by Atkinson Street. The parcel has not otherwise been developed (Photograph 13).

Dry Creek runs east-west through APN 473-070-015 (Photograph 12). Vegetation consisted of riparian species, oak trees, brush/weeds, and low-lying grassy areas. Except for tall, dense clusters of weeds in the northern portion of the parcel that reduced visibility to poor (0–5%), ground visibility was excellent (90–100%). The brown (7.5YR 4/3 moist) sandy loam was consistent with Fiddymont soils.



Photograph 12. Overview of Dry Creek bridge adjacent to APN 473-070-015 (view to east)



Photograph 13. Overview of vegetation cover in APN 473-070-015 (view to northeast)

CONCLUSIONS AND RECOMMENDATIONS

CULTURAL RESOURCES

No archaeological or built environment resources were identified or recorded during the survey, and no cultural resources were previously recorded within the Project area for the alignment alternatives under consideration for the proposed Off-Site Improvements. The existing residential and commercial buildings on APNs 473-080-006 and 473-090-003, which will be avoided by the Off-Site Improvements, are of modern construction, less than 45 years old, and do not qualify for listing in the CRHR or NRHP. Thus, the proposed Project does not have the potential to cause a significant impact on any resource that currently qualifies as a historical resource under CEQA, or that has been recommended eligible for listing in the NRHP or CRHR.

Cultural Resources Awareness Program

Although no archaeological resources were previously recorded or newly identified during survey within the Project area, the Dry Creek drainage is considered highly sensitive for the presence of prehistoric or ethnohistoric archaeological sites. A number of archaeological sites attributed to the Late Prehistoric Period have been previously mapped along the Dry Creek channel, including a village site (CA-PLA-41) less than one mile west of the proposed Project (Palumbo 1966).

Natural Investigations recommends that prior to initiation of ground-disturbing activities a qualified archaeologist (36 CFR Part 61) conduct a short awareness training session for all construction workers and supervisory personnel. The course would explain the importance of, and legal basis for, the protection of

significant archaeological resources. Each worker would also learn the proper procedures to follow in the event cultural resources or human remains/burials are uncovered during construction activities, including work curtailment or redirection and to immediately contact their supervisor. It is recommended that this worker education session include visuals of artifacts that might be found in the Project vicinity, and that it take place on the construction site immediately prior to the start of construction for the Off-Site Improvements Project.

No Construction Monitoring

Although the Dry Creek drainage is considered highly sensitive for the presence of prehistoric or ethnohistoric archaeological sites, the potential for the discovery of buried archaeological materials within the proposed Off-Site Improvements Project is considered to be low. Based on the results of the records search, review of archival maps and photographs, the age of underlying alluvial deposits, field survey, and assessment of potential direct or indirect Project impacts, construction monitoring of ground-disturbing activity is not recommended.

The potential for buried sites versus the probability of locating a buried site depends on a number of site-specific variables. The parcels within the Project area have been disturbed by former agricultural practices, by grading and construction of roadways, residences, commercial businesses or storage areas, or by historic flooding of Dry Creek. In addition, the presence of buried archaeological deposits in the alluvial sediments underlying the four off-site parcels is very low as the rock units (Turlock Lake and Modesto [lower member] formations) are older than archeological evidence for the presence of humans in this region. Further, older buried archaeological deposits are rare in the Sacramento Valley, and none are known from the immediate Project vicinity. The probability that intact prehistoric, ethnohistoric, or historic-era archaeological sites are present within the sewer alignment alternatives being evaluated for the proposed Off-Site Improvements is thus considered low.

Unanticipated Cultural Discoveries

Should cultural resources be encountered during ground disturbing activities for the Project, however, work must be halted in that area within 50 feet of the find and a qualified archaeologist (36 CFR Part 61) notified immediately to assess the significance of the find. Construction activities could continue in other areas. If the discovery proves to be significant, additional work, such as data recovery excavation, may be warranted and would be discussed in consultation with the property owner, the County of Placer, or any other relevant regulatory agency, as appropriate.

Although unlikely, the discovery of human remains is always a possibility. State of California Health and Safety Code Section 7050.5 covers these findings, except on federal and tribal lands. This code section states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

PALEONTOLOGICAL RESOURCES

Based on the results of the field survey and assessment of potential direct or indirect Project impacts, no additional work for paleontological resources is recommended at this time. Implementation of the proposed Off-Site Improvements Project is considered to have a low potential to uncover or damage fossils or to

cause a significant impact on any resource that currently qualifies as a significant paleontological resource. Although the Turlock Lake and Modesto formations are considered to have a high sensitivity for paleontological resources, no evidence of the rock units and no fossils were observed during the survey. Construction monitoring of ground-disturbing activity for the presence of paleontological resources is thus not recommended.

Although unlikely, should paleontological resources be discovered during ground disturbing activities for the Project, work must be halted in that area within 50 feet of the find and a qualified paleontologist notified immediately to evaluate the find. Construction activities could continue in other areas. If the discovery proves to be significant under SVP criteria, additional work, such as fossil recovery excavation, may be warranted and would be discussed in consultation with the property owner, the County of Placer, or any other relevant regulatory agency, as appropriate.

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**APPENDIX A:
Sacred Lands File Search**

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
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(916) 373-3710



December 4, 2017

Cindy Arrington
Natural Investigations

Sent by Email: cindy@naturalinvestigations.com
Number of Pages: 2

RE: Mill Creek Off-Site Improvements, Citrus Heights, Placer County

Dear Ms. Arrington:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult.** If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: Sharaya.souza@nahc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sharaya Souza".

Sharaya Souza
Staff Services Analyst
(916) 573-0168

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12/04/2017**

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This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessments for the Mill Creek Off-Site Improvements, Citrus Heights, Placer County.