cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

CULTURAL AND PALEONTOLOGICAL RESOURCES ASSESSMENT FOR THE WELL 28 PROJECT, CITY OF ORANGE, ORANGE COUNTY, CALIFORNIA

Prepared for:
Konnie Dobreva, E|P|D Solutions, Inc.

Authors:
Shannon Lopez, MA, Kim Scott, MS

Principal Investigator for Archaeology:
John Gust, PhD., RPA

Principal Investigator for Paleontology:
Kim Scott, MS

Date
October 2020

Cogstone Project Number: 4549
Type of Study: Cultural and Paleontological Resources Assessment
Sites: Within Old Towne (Orange) Historic District
USGS 7.5' Quadrangle: Orange (1981)
Area: 0.36 acres
Key Words: City of Orange, Old Towne Historic District; Pleistocene older alluvial fan, low potential for scientifically relevant fossils

1518 West Taft Avenue
Orange, CA 92865
Office (714) 974-8300

Field Offices
San Diego • Riverside • Morro Bay • Sacramento • Arizona

cogstone.com
Toll free 888-333-3212

Federal Certifications WOSB, EDWOSB, SDB
State Certifications DBE, WBE, SBE, UDBE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY OF FINDINGS

The purpose of this study was to assess potential impacts to cultural and paleontological resources resulting from the Well 28 Project located at 225 West Maple Avenue in the City of Orange, Orange County, California. The proposed Project consists of constructing a new well (Well 28) and pumping station that is expected to produce approximately 3,000 gallons of water per minute. The construction would involve the removal of existing surface asphalt, building construction, and drilling the well to a depth of 1,200 feet. A small park is planned for the western and southeastern portions of the parcel.

Paleontological Resources

The Project is mapped entirely as middle to late Pleistocene older alluvial fan which was deposited between 500,000 and 11,700 years ago. The paleontological record search revealed no fossil localities from within the project or within a 2.5 mile radius. Fossil localities are known from terrestrial deposits near to the Project. Extinct late Pleistocene animal fossils of ground sloth, sabre-toothed cat, mammoth, horse, tapir, camel, and bison have been recovered from within ten miles of the study area.

A records search revealed that all of the fossils previously recovered within a ten mile radius were mostly more than five feet deep in deposits mapped as Pleistocene at the surface. Sediments with a Holocene component such as those of the study area produced fossils starting at eight feet deep. As such, the project sediments less than eight feet below the modern surface are assigned a low potential for fossils (PFYC 2) due to the lack of fossils in these deposits. Sediments more than eight feet below the modern surface are assigned a moderate potential for fossils (PFYC 3) due to similar deposits producing fossils at that depth near to the study area.

Drilling is planned to extend to depths of 1,200 feet. While Pleistocene and older potentially fossil bearing deposits will be encountered during these excavations, borings, drilling, pot-holing, pile driving and similar activities have only a low potential to produce fossils meeting scientific relevance criteria (see above). This is because any fossils that are encountered during these activities will not provide information on formation, depth, or context. The only instance in which such fossils will meet the criteria is if the recovered material represents a new species for the region.

If unanticipated fossil discoveries are made, all work must halt within 25 feet until a qualified paleontologist can evaluate the find. Work may resume immediately outside of the 25 foot radius.

Cultural Resources

Cogstone requested a search of the California Historic Resources Information System (CHRIS) from the South Central Coastal Information Center (SCCIC) on July 24, 2020 that included the entire proposed Project Area as well as a one-half mile radius. The SCCIC completed the request on August 22, 2020. Results of the record search indicate that 12 previous studies have been completed within one-half mile of the proposed Project Area. The records search also determined no previously recorded resources are located within the Project boundaries.

However, the Project Area is located within the boundaries of the Old Towne Orange Historic District. In addition, 15 historic architectural resources are located within one-half mile of the Project Area. No prehistoric or historic archaeological sites have been recorded within the Project Area or the one-half mile buffer.

On September 3, 2020, Cogstone architectural historian Shannon Lopez photo documented buildings adjacent to the Project Area. This includes both historic resources and modern buildings within approximately one assessor's parcel of the Project Area. No archaeological or paleontological survey was conducted as the area was entirely hardscaped.

The scale of the Project and its building components are comparable to nearby historic industrial, commercial, and institutional buildings/building components in the historic district Old Towne Orange Historic District and surrounding area. Also, the scale, massing, and setback of the well house building and park will not adversely impact the significance of the historic residential structures located adjacent to the Project Area. Materials for this facility are intended to reflect the use of brick and pre-cast concrete in nearby historic industrial/commercial buildings. In keeping with the well enclosure's industrial use, building will have minimal ornamentation. As specific material choices are developed, the design will avoid recreating specific historic features, but will emphasis elements that are compatible historic buildings.

Conceptual materials of park reflect historic materials of industrial sites in area, like standard concrete paving, metal planters, and wood and concrete benches. The park design is intended to use compatible materials in contemporary design elements. The integration of the park into the street grid reflects the character of existing historic parks within Old Towne, like Veterans Park or Plaza Park. It improves the streetscape by eliminating fenced vacant property from context of historic district and repurposing it with a compatible park use. The well enclosure is an accessory building within the context of the park. Industrial use is concentrated and screened at interior corner of site to avoid visual impacts to historic streetscape. Enclosure setback from north property line will reduce impacts to historic industrial building to the north during construction and operation. As the context immediately surrounding the Project area is of mixed-used with a variety of architectural styles, building types, and setbacks, Well 28 and its associated park is consistent with the historic pattern of the surrounding area.

Not all buildings within this area will have a clear line of view of the Project Area, also the proposed Project will include tall trees and various landscape features which will obscure visual impacts. This Project is found to be in conformance with the Historic Preservation Design Standards for Old Towne which are considered to be in conformance with the Secretary of the Interior Standards (SOI) Standards.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this study was to assess potential impacts to cultural and paleontological resources resulting from the Well 28 Project (Project) located at 225 West Maple Avenue in the City of Orange, Orange County, California (Figure 1). The City of Orange (City) is the lead agency under the California Environmental Quality Act (CEQA).

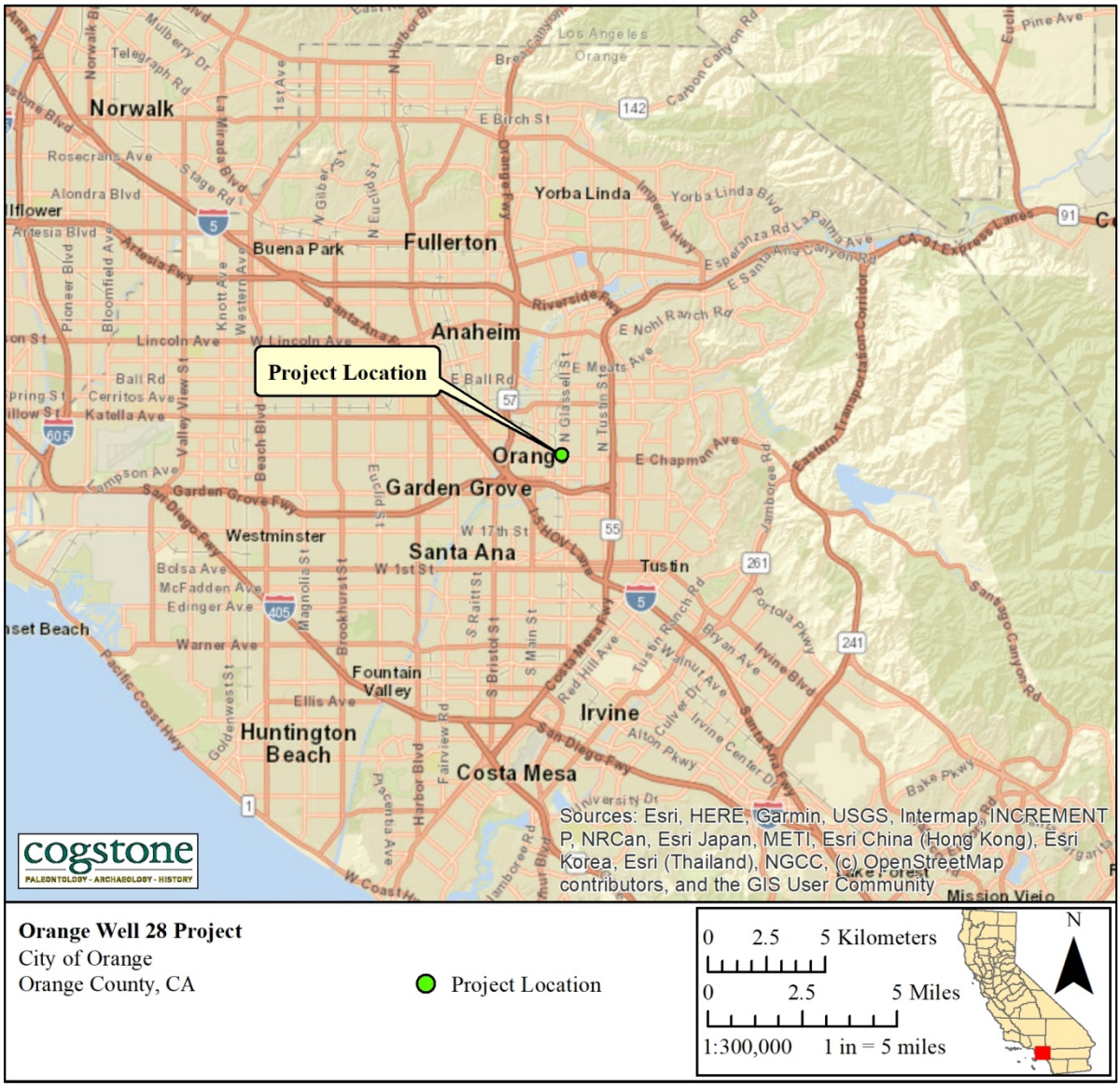


Figure 1. Project vicinity map

PROJECT LOCATION

The Project Area is 0.36 acres located at 225 West Maple Avenue in the City of Orange. Specifically, the Project is located within Township 4 South, Range 9 West, Section 30, San Bernardino Baseline and Meridian, and on the United States Geological Survey (USGS) 7.5 minute Orange topographic quadrangle map (Figure 2).

PROJECT DESCRIPTION

The City's Public Works, Water Division is seeking to construct a new well (Well 28) and pumping station. The well is expected to produce approximately 3,000 gallons of water per minute. The construction would involve the removal of existing surface asphalt and drilling to a depth of 1,200 feet (Figures 2 and 3). Following drilling will be the installation of well infrastructure such as the pumping station, piping, a system flushing spill catch basin, a 400 square-foot (20' X 20') 14-foot high sound enclosure (with removable panels) around the well head, a transformer, and a 40-foot by 13-foot-4-inch wide by 14 -foot high building containing a motor control room, chlorine storage, and electrical meters. The well and associated infrastructures (including the electrical, chemical, and control room) will be enclosed within a16-foot high , 3,900 square foot, brick screen wall, organized with a square footprint; a 3-inch high parapet will be located at all elevations. Access to the interior of the enclosure will be provided by a 18-foot wide by 14-foot high rolling steel gate and a single-paneled pedestrian door, both located at the south façade. No additional fenestration openings will be present. The enclosure will be located at the northeast corner of the property (setback of 66 feet east of Lemon Street from its west elevation and approximately 50 feet north of Maple Avenue from its south façade). A small park with shaded seating arranged in a circular pattern at the south and open linearly arranged seating at the north is planned for the western as well as the southeastern portions of the parcel where the drive way will also be located.

Also included is resurfacing of the site, perimeter landscaping, street-facing walls and/or fences behind an adequate setback (consistent with the character of the neighborhood), new driveways, curb replacement, new curbs and gutters, and piping connection into an existing water line in Lemon Street.

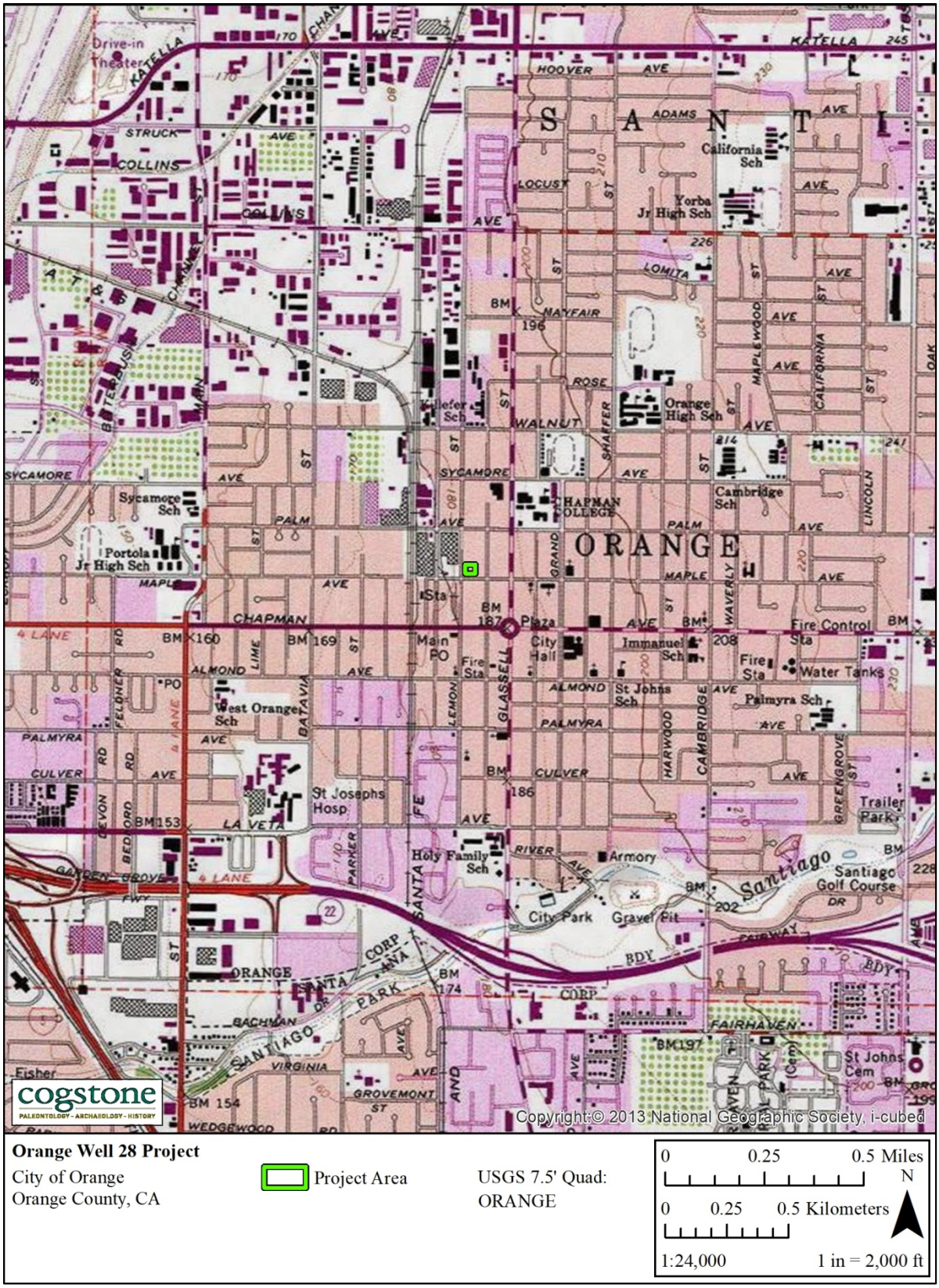


Figure 2. Project location

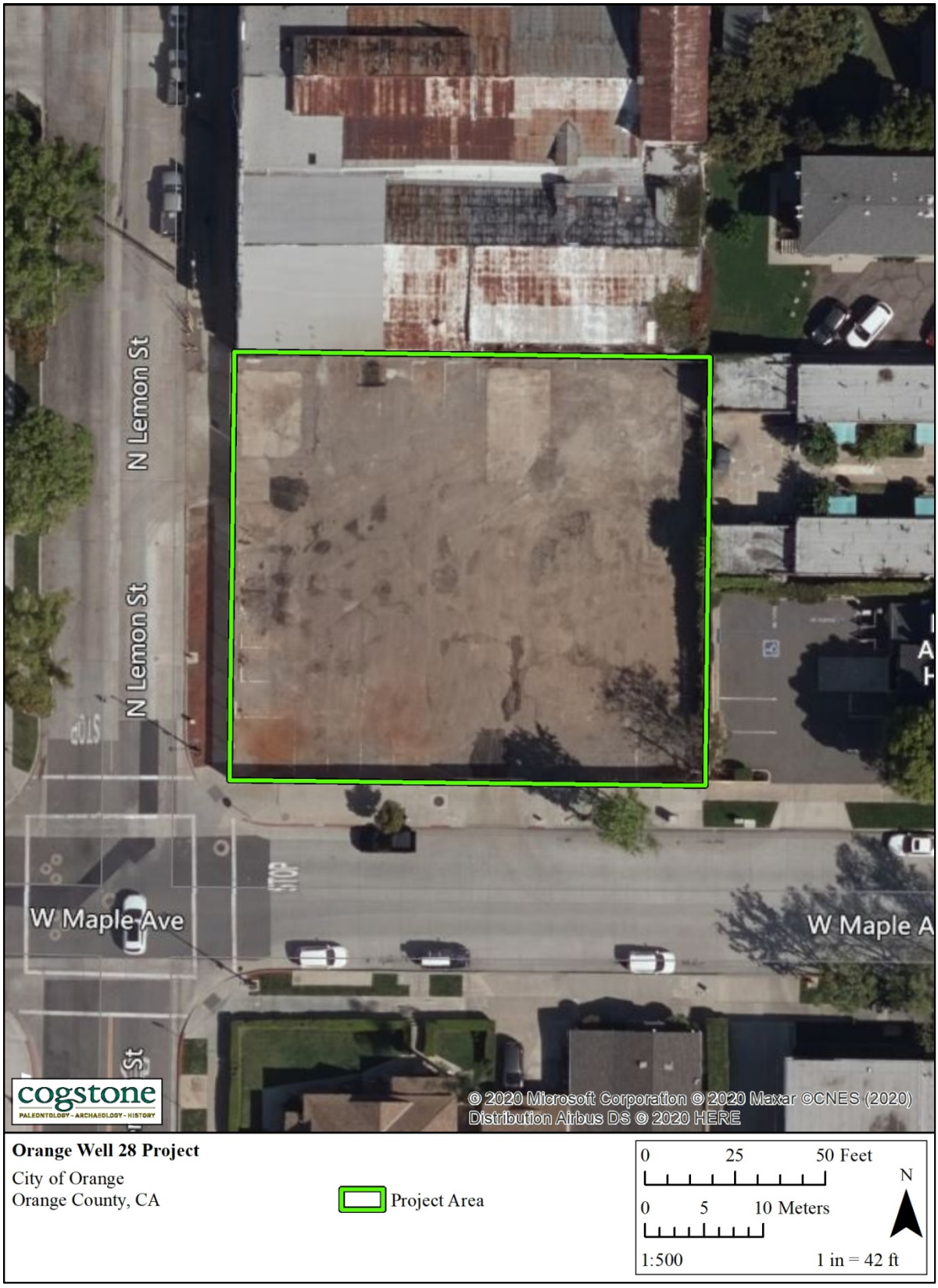


Figure 3. Project Area map

PROJECT PERSONNEL

Cogstone Resource Management, Inc. (Cogstone) conducted the cultural and paleontological resources study. Resumes of key personnel are provided in Appendix A.

- John Gust, Registered Professional Archaeologist, served as the Task Manager for the Project and reviewed this report. Dr. Gust has a PhD in Anthropology from the University of California (UC), Riverside and an MA in Geography from the University of Colorado, Colorado Springs. He has over eight years of experience in archaeology.

- Shannon Lopez served as Principal Architectural Historian. She conducted the survey and as well as prepared this report. Ms. Lopez has an MA in History from California State University, Fullerton and over two years of experience.

- Kim Scott served as the Principal Investigator for Paleontology for the Project and wrote the geological, paleontological, and environmental portions of this report. Ms. Scott has an MS in Biology with paleontology emphasis from California State University (CSU), San Bernardino and has over 25 years of experience in California paleontology and geology.

- Molly Valasik served as the Task Manager for the Project and provided QA/QC. Ms. Valasik has an MA in Anthropology from Kent State University in Ohio and over 10 years of experience in southern California archaeology.

- Logan Freeberg requested the paleontological and cultural record searches and prepared the maps for the report. Mr. Freeberg has a certificate in Geographic Information Systems (GIS) from CSU Fullerton and a BA in Anthropology from UC Santa Barbara. He has more than 15 years of experience in southern California archaeology.

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA states that: It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this state with...historic environmental qualities." It further states that public or private projects financed or approved by the state are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. In the event that a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

If paleontological resources are identified as being within the proposed project study area, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

Tribal Cultural Resources

As of 2015, CEQA established that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (Public Resources Code, § 21084.2). In order to be considered a "tribal cultural resource," a resource must be either:

(1) listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or
(2) a resource that the lead agency chooses, in its discretion, to treat as a tribal cultural resource.

To help determine whether a project may have such an effect, the lead agency must consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact. Public Resources Code §20184.3 (b)(2) provides

examples of mitigation measures that lead agencies may consider to avoid or minimize impacts to tribal cultural resources.

PUBLIC RESOURCES CODE

Section 5097.5: 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 (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The California Register of Historical Resources (CRHR) is a listing of all properties considered to be significant historical resources in the state. The California Register includes all properties listed or determined eligible for listing on the National Register, including properties evaluated under Section 106, and State Historical Landmarks number No. 770 and above. The California Register statute specifically provides that historical resources listed, determined eligible for listing on the California Register by the State Historical Resources Commission, or resources that meet the California Register criteria are resources which must be given consideration under CEQA (see above). Other resources, such as resources listed on local registers of historic resources or in local surveys, may be listed if they are determined by the State Historic Resources Commission to be significant in accordance with criteria and procedures to be adopted by the Commission and are nominated; their listing in the California Register is not automatic.

Resources eligible for listing include buildings, sites, structures, objects, or historic districts that retain historical integrity and are historically significant at the local, state or national level under one or more of the following four criteria:

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

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired,

or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance.

Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data.

NATIVE AMERICAN HUMAN REMAINS

Sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with state law (i.e., Health and Safety Code §7050.5 and Public Resources Code §5097.98), as reviewed below:

In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that "No person shall remove, injure, deface or destroy any object of paleontological, archeological or historical interest or value."

DEFINITION OF SIGNIFICANCE FOR PALEONTOLOGICAL RESOURCES

Only qualified, trained paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources. Fossils are considered to be significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;

2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life;
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

As so defined, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer 2003; Scott et al. 2004).

BACKGROUND

The geologic, paleontological, and environmental sections below provide information on the environmental factors that affect archaeological and paleontological resources, while the prehistoric and historical settings provide information on the history of land use in the general Project region.

GEOLOGIC SETTING

The Project lies in the broad coastal plain of Orange County, California named the Tustin Plain. The Tustin Plain is bounded by the Santa Ana Mountains to the east, the Puente and Coyote Hills to the north, the Pacific Ocean to the west, and the San Joaquin Hills to the south. Orange County is part of the coastal section of the Peninsular Range Geomorphic Province, which is characterized by elongated northwest-trending mountain ridges separated by sediment-floored valleys. Faults branching off from the San Andreas Fault to the east create the local mountains and hills. The Peninsular Ranges Geomorphic Province is located in the southwestern corner of California and is bounded by the Transverse Ranges Geomorphic Province to the north and the Colorado Desert Geomorphic Province to the east (Morton and Miller 2006).

The Project is mapped entirely as middle to late Pleistocene older alluvial fans which were deposited between 500,000 and 11,700 years ago by Santiago Creek coming from the Santa Ana Mountains to the east. Sediments consist of poorly sorted, moderately to well-consolidated, silts to gravels (Morton and Miller 2006).

PALEONTOLOGICAL SETTING

During the past 100,000 years or so, southern California's climate has shifted from the cooler and damper conditions of the last glacial period to the warmer and dryer conditions of the Holocene interglacial which began approximately 11,000 years ago. While continental ice sheets covered the interior of northern North America, southern California was ice free.

Fossils of Monterey cypress (*Hesperocyparis macrocarpa*), Monterey pine (*Pinus radiata*), and Torrey pine (*Pinus* sp. cf. *P. torreyana*) have been found in middle to late Pleistocene deposits in the Wilshire District of Los Angeles (Scott et al. 2014). Fossils of Monterey cypress are also known from middle to late Pleistocene deposits in Costa Mesa, California, as well as from the late Pleistocene Rancho La Brea asphalt seeps of the Wilshire District of Los Angeles (Axelrod and Govean 1996; Stock and Harris 1992). Today, the most restricted conifers (Monterey cypress and Torrey pine) only inhabit locations on the coasts with cool, moist summers

characterized by abundant sea fog. These locations experience a mean summer high temperature of 70ºF - 83ºF (21.1ºC - 28.3ºC). Winters are cool and damp with average precipitation of 10.59 - 32.41 inches (26.90 - 82.32 cm; Intellicast 2020; The Weather Channel 2020). Cold water upwellings due to submarine canyons adjacent to the shore near the relict populations create these conditions.

ENVIRONMENTAL SETTING

The City of Orange is situated approximately 30 miles southeast of Los Angeles and 14 miles east of the Pacific Ocean. The Santa Ana River flows south-southwest through the City. Santiago Creek borders the City on the southern end and merges into the Santa Ana River in Santa Ana, prior to it flowing into the Pacific Ocean. The Santa Ana Mountains, a north-south trending range, and the Cleveland National Forest lie to the east.

The current Mediterranean-like climate is characterized by warm, dry summers and cool, moist winters, with rainfall predominantly falling between November and May. Mild breezes reach the area from the Pacific Ocean, located west of the Project Area.

Prior to development, the native vegetation of the Project Area consisted of California coastal sage scrub. Typical species include California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis* var. *consanguinea*), California buckwheat (*Eriogonum fasciculatum*), lemonade berry (*Rhus integrifolia*), poison oak (*Toxicodendron diversiloba*), purple sage (*Salvia leucophylla*), and black sage (*Salvia mellifera*; Ornduff et al. 2003). Additional common species include brittlebush (*Encelia californica*), chamise (*Adenostoma fasciculatum*), white sage (*Salvia apiana*), Our Lord's candle (*Hesperoyucca whipplei*), and prickly pear cactus (*Opuntia*; Hall 2007).

Modern vegetation in this portion of Orange County includes grasslands and California coastal sage scrub with non-native species mixed in. Grasses such as slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and giant reed (*Arundo donax*); shrubs and trees including blackwood acacia (*Acacia melanoxylon*), saltcedar (*Tamarix ramosissima*), eucalyptus (*Eucalyptus* spp.), and Brazilian pepper (*Schinus terebinthifolius*) are common (Cal-IPC 2006). Large native land mammals of the region included mule deer (*Odocoileus hemionus*), bighorn sheep ([1]‡*Ovis canadensis*), tule elk (‡*Cervus canadensis nannodes*), pronghorn (‡*Antilocapra americana*), bison (‡*Bison bison*), bobcat (‡*Lynx rufus*), mountain lion (‡*Felis concolor*), jaguar (‡*Panthera onca*), coyote (*Canis latrans*), grey wolf (‡*Canis lupus*), black and grizzly bears (‡*Ursus americanus*, ‡*Ursus arctos*). Smaller native fauna included rabbits (‡*Lepus*

[1] ‡ - indicates that the species has been extirpated from Southern California.

californicus, Sylvilagus audubonii, ‡*Sylvilagus bachmani*), desert tortoise (‡*Gopherus agassizii*), and numerous other species (California Department of Fish and Game 2020). In recent history, urban development has driven most animals from the area, although mule deer, bobcat, and coyotes still occur in the surrounding hills.

PREHISTORIC SETTING

Approaches to prehistoric frameworks have changed over the years from being based on material attributes to radiocarbon chronologies to association with cultural traditions. Archaeologists defined a material complex consisting of an abundance of milling stones (for grinding food items) with few projectile points or vertebrate faunal remains dating from about 7,000 to 3,000 years before the present as the "Millingstone Horizon." Later, the "Millingstone Horizon" was redefined as a cultural tradition named the Encinitas Tradition with various regional expressions including Topanga and La Jolla. Use by archaeologists varied as some adopted a generalized Encinitas Tradition without regional variations, some continued to use "Millingstone Horizon" and some used Middle Holocene (the time period) to indicate this observed pattern (Sutton and Gardner 2010:1-2).

Recently, the fact that generalized terminology is suppressing the identification of cultural, spatial and temporal variation and the movement of peoples throughout space and time was noted. These factors are critical to understanding adaptation and change (Sutton and Gardner 2010:1-2).

The latest cultural revisions for the Project Area define traits for time phases of the Greven Knoll pattern of the Encinitas Tradition applicable to the Pasadena area (Sutton and Gardner 2010; Table 1). This pattern is replaced in the Project Area by the Angeles pattern of the Del Rey Tradition later in time (Sutton 2010; Table 1). Each pattern has subdivisions as identified by specific changes in cultural assemblages through time. Phases are identified by their archaeological signatures in components within sites.

Greven Knoll sites tend to be in valleys similar to areas like the Project Area. These inland peoples did not switch from manos/metates to pestles/mortars like coastal peoples (c. 5,000 years before present); this may reflect their closer relationship with desert groups who did not exploit acorns.

Table 1. Culture Chronology

PATTERN	PHASE	DATES (BP)	MATERIAL TRAITS	OTHER TRAITS
Encinitas	Greven Knoll I	8,500 to 4,000	Abundant manos and metates, Pinto dart points for atlatls or spears, charmstones, cogged stones and discoidals rare, no mortars or pestles, general absence of shell artifacts	No shellfish, hunting important, flexed inhumations, cremations rare
	Greven Knoll II	4,000 to 3,500	Abundant manos and metates, Elko dart points for atlatls or spears, core tools, late discoidals, few mortars and pestles, general absence of shell artifacts	No shellfish, hunting and gathering important, flexed inhumations, cremations rare
Angeles	Angeles I	3,500 to 2,600	Appearance of Elko dart points and an increase in the overall number of projectile points from Encinitas components; beginning of large-scale trade in small steatite artifacts (effigies, pipes, and beads) and *Olivella* shell beads from the southern Channel Islands; appearance of single-piece shell fishhooks and bone harpoon points; Coso obsidian becomes important; appearance of donut stones	appearance of a new biological population (Takic proto-Gab/Cupan language), apparent population increase; fewer and larger sites along the coast; collector strategy; less overall dependence on shellfish but fishing and terrestrial hunting more important; appearance of flexed and extended inhumations without cairns, cremations uncommon
	Angeles II	2,600 to 1,600	Continuation of basic Angeles I material culture with the addition of mortuary features containing broken tools and fragmented cremated human bone; fishhooks become more common	continuation of basic Angeles I settlement and subsistence systems; appearance of a new funerary complex
	Angeles III	1,600 to 1,250	Appearance of bow and arrow technology (e.g., Marymount or Rose Spring points); changes in *Olivella* beads; asphaltum becomes important; reduction in obsidian use; Obsidian Butte obsidian largely replaces Coso	larger seasonal villages; flexed primary inhumations but no extended inhumations and an increase in cremations; appearance of obsidian grave goods; possible expansion into eastern Santa Monica Mountains, replacing Topanga III groups
	Angeles IV	1,250 to 800	Cottonwood points appear; some imported pottery appears; birdstone effigies at the beginning of the phase and "spike" effigies dropped by the end of the phase; possible appearance of ceramic pipes	change in settlement pattern to fewer but larger permanent villages; flexed primary inhumations continue, cremations uncommon; expansion into the San Gabriel Mountains, displacing Greven Knoll III groups

PATTERN	PHASE	DATES (BP)	MATERIAL TRAITS	OTHER TRAITS
	Angeles V	800 to 450	Trade of steatite artifacts from the southern Channel Islands becomes more intensive and extensive, with the addition or increase in more and larger artifacts, such as vessels and comals; larger and more elaborate effigies	strengthening of ties, especially trade, with southern Channel Islands; expansion into the northern Santa Ana Mountains and San Joaquin Hills; development of mainland dialects of Gabrielino
	Angeles VI	450 to 150	Addition of Euroamerican material culture (e.g., glass beads and metal tools), locally made pottery, metal needle-drilled *Olivella* beads	change of settlement pattern, movement close to missions and ranches; use of domesticated species obtained from Euroamericans; flexed primary inhumations continue, cremations uncommon to the north (nearer the Chumash) but somewhat more common to the south (nearer the Luiseño); apparent adoption of Chingichngish religion

The Greven Knoll toolkit is dominated by manos and metates throughout its extent. In Phase I, other typical characteristics were pinto dart points for atlatls or spears, charmstones, cogged stones, absence of shell artifacts and flexed position burials (Table 1). In Phase II, Elko dart points for atlatls or spears and core tools are observed along with increased indications of gathering (Table 1). In addition, the Greven Knoll populations are biologically Yuman (based on skeletal remains) while the later Angeles populations are biologically Shoshonean (Sutton and Gardner 2010, Sutton 2010).

The Angeles pattern generally is restricted to the mainland and appears to have been less technologically conservative and more ecologically diverse, with a largely terrestrial focus and greater emphases on hunting and nearshore fishing. In Angeles Phase I, Elko points for atlatls or darts appear, small steatite objects such as pipes and effigies from Catalina are found, shell beads and ornaments increase, fishing technologies increase including bone harpoons/fishhooks and shell fishhooks, donut stones appear, and hafted micro blades for cutting/graving wood or stone appear. In addition, several Encinitas (Topanga) traits, such as discoidals, cogged stones, plummet-like charm stones and cairn burials (see Sutton and Gardner 2010: Table 1) virtually disappear from the record. Mortuary practices changed to consist of primarily flexed primary inhumations, with extended inhumations becoming less common. Settlement patterns made a shift from general use sites being common to habitation areas separate from functional work areas. Subsistence shifted from mostly collecting to increased hunting and fishing (Sutton 2010).

The Angeles Phase II is identified primarily by the appearance of a new funerary complex, with other characteristics similar to Angeles I. The complex features killed (broken) artifacts including manos, metates, bowls, mortars, pestles, points, and others plus highly fragmented cremated human bones and a variety of faunal remains. In addition to the cremains, the other material also often burned. None of the burning was performed in the burial feature (Sutton 2010).

The Angeles III Phase is the beginning of what has been known as the Late Period and is marked by several changes from Angeles I and II. These include the appearance of small projectile points, steatite shaft straighteners and increased use of asphaltum all reflecting adoption of bow and arrow technology, obsidian sources changed from mostly Coso to Obsidian Butte and shell beads from Gulf of California species began to appear. Subsistence practices continued as before and the geographic extent of the Angeles Pattern increased (Sutton 2010).

Angeles Phase IV is marked by new material items including Cottonwood points for arrows, *Olivella* cupped beads and *Mytilus* shell disks, birdstones (zoomorphic effigies with magicoreligious properties) and trade items from the Southwest including pottery. It appears that populations increased and that there was a change in the settlement pattern to fewer but larger permanent villages. Presence and utility of steatite vessels may have impeded the diffusion of pottery into the Los Angeles Basin. The settlement pattern altered to one of fewer and larger permanent villages. Smaller special-purpose sites continued to be used (Sutton 2010).

Angeles V components contain more and larger steatite artifacts, including larger vessels, more elaborate effigies and comals. Settlement locations shifted from woodland to open grasslands. The exploitation of marine resources seems to have declined and use of small seeds increased. Many Gabrielino inhumations contained grave goods while cremations did not (Sutton 2010).

The Angeles VI phase reflects the ethnographic mainland Gabrielino of the post-contact (i.e., post-A.D. 1542) period. One of the first changes in Gabrielino culture after contact was undoubtedly population loss due to disease, coupled with resulting social and political disruption. Angeles VI material culture is essentially Angeles V augmented by a number of Euroamerican tools and materials, including glass beads and metal tools such as knives and needles (used in bead manufacture). The frequency of Euroamerican material culture increased through time until it constituted the vast majority of materials used. Locally produced brownware pottery appears along with metal needle-drilled *Olivella* disk beads (Sutton 2010).

The ethnographic mainland Gabrielino subsistence system was based primarily on terrestrial hunting and gathering, although nearshore fish and shellfish played important roles. Sea mammals, especially whales (likely from beached carcasses), were prized. In addition, a number

of European plant and animal domesticates were obtained and exploited. Ethnographically, the mainland Gabrielino practiced interment and some cremation (Sutton 2010).

ETHNOGRAPHY

The Project Area is located within the traditional territory of the Gabrielino (Tongva) who were semi-sedentary hunters and gatherers (Figure 4). The Gabrielino speak a language that is part of the Takic language family. Their territory encompassed a vast area stretching from Topanga Canyon in the northwest, to the base of Mount Wilson in the north, to San Bernardino in the east, Aliso Creek in the southeast and the Southern Channel Islands, in all an area of more than 2,500 square miles (Bean and Smith 1978; McCawley 1996). At European contact, the tribe consisted of more than 5,000 people living in various settlements throughout the area. Some of the villages could be quite large, housing up to 150 people.

The Gabrielino are considered to have been one of the wealthiest tribes and to have greatly influenced tribes they traded with (Kroeber 1976:621). Houses were domed, circular structures thatched with tule or similar materials (Bean and Smith 1978:542). The best known artifacts were made of steatite and were highly prized. Many common everyday items were decorated with inlaid shell or carvings reflecting an elaborately developed artisanship (Bean and Smith 1978:542).

The main food zones utilized were marine, woodland and grassland (Bean and Smith 1978). Plant foods were, by far, the greatest part of the traditional diet at contact. Acorns were the most important single food source. Villages were located near water sources necessary for the leaching of acorns, which was a daily occurrence. Grass seeds were the next most abundant plant food used along with chia. Seeds were parched, ground, and cooked as mush in various combinations according to taste and availability. Greens and fruits were eaten raw or cooked or sometimes dried for storage. Bulbs, roots, and tubers were dug in the spring and summer and usually eaten fresh. Mushrooms and tree fungus were prized as delicacies. Various teas were made from flowers, fruits, stems, and roots for medicinal cures as well as beverages (Bean and Smith 1978:542).

The principal game animals were deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, quail, dove, ducks, and other birds. Most predators were avoided as food, as were tree squirrels and most reptiles. Trout and other fish were caught in the streams, while salmon were available when they ran in the larger creeks. Marine foods were extensively utilized. Sea mammals, fish, and crustaceans were hunted and gathered from both the shoreline and the open ocean, using reed and dugout canoes. Shellfish were the most common resource, including abalone, turbans, mussels, clams, scallops, bubble shells, and others (Bean and Smith 1978:542).

HISTORIC SETTING

Spanish Period (1769-1822)

The earliest explorations of California began in the San Diego area in 1542, when Juan Rodríguez Cabrillo and his party landed near Point Loma. Cabrillo had been tasked by the Spanish monarch with exploration of the western United States interior. Interaction with the Kumeyaay was initiated, but intensive exploration and colonization of California by Spain did not happen until the 1700s.

In 1769, the Spanish developed plans to build four presidios (forts), and three towns along the California coastline stretching from San Diego northward to Monterey. The town sites, established between 1777 and 1797, included present-day Los Angeles, San Jose and a small town near Santa Cruz, named Branciforte; while the presidios were established at San Diego, Santa Barbara, Monterey and San Francisco. Under Spain, the borderlands were colonized as defenses against the intrusion of the English, French, Dutch, and Russians, with the Manila trade an important item for protection in California. They were held by two typical institutions: the mission and the presidio (Bolton 1913, 1921, 1930 as cited in Aviña 1976).

Mission San Diego Alcalá was founded in 1769, the first of twenty-one Franciscan missions built along the coast on the El Camino Real between San Diego and Sonoma. The goals of the missions were tri-fold: they established a Spanish presence on the west coast, provided a way to Christianize native peoples, and served to exploit native population as laborers. The mission system severely disrupted Kumeyaay socio-political structure, especially those living in close proximity (Loumala 1978:595).

Arrival of the Franciscan missionaries during the Spanish period resulted in far-reaching alterations in Native American lifeways. These shifts included high mortality rates and social changes due to the introduction of European diseases and customs (e.g., European farming methods) (Dobyns 1983; Walker and Hudson 1989). Due to the high mortality rates, many Native American villages were abandoned, with inhabitants fleeing to the missions:

> "As the Native Americans watched the Europeans remain healthy during the epidemics, they began to view disease as a form of divine punishment for human transgressions (Dobyns 1983). Believing that the Christian God held a power greater than their own, the Natives willingly joined the Spanish missions." (Rushing 1995:15)

The Kumeyaay population decreased as a consequence of a series of epidemics, and as neophytes were converted to Christianity and forced to work for the mission, their traditional lifestyle was severely altered.

Mexican Period (1822-1847)

After Mexico gained independence from Spain in 1822, the Mission lands were secularized under the Secularization Act of 1833, but much of the land was transferred to political appointees. A series of large land grants that transferred Mission properties to private ownership were awarded by the Governors of California—Juan B. Alvarado, Manuel Micheltorena and Pío Pico—between 1840 and 1846 (Ohles 1997; Cowan 1977). Ranches and farms were established throughout the San Diego region during this period.

American Period (1848-present)

The Mexican-American war followed on the heels of the Bear Flag Revolt of June 1846 (Ohles 1997). General Andrés Pico and John C. Frémont signed the Articles of Capitulation in December 1847, and with the signing of the Treaty of Guadalupe Hidalgo in February 1848, hostilities ended and Mexico relinquished California to the United States. Under the treaty, Mexico ceded the lands of present-day California, New Mexico and Texas to the U.S. for $15 million (Fogelson 1993:10). Within two years following the treaty, California applied for admission as a state.

City of Orange

The City of Orange was initially founded in 1871 after attorneys Alfred Chapman and Andrew Glassell acquired 1,385 acres of land from Rancho Santiago de Santa as payment for accrued legal fees in 1869. Chapman and Glassell designed the town with a 40-acre central town site surrounded by 10 acre farm lots (Taylor 2018). The town was initially founded as "Richland," but in 1873 was changed to Orange following the rejection of an application for a post office as Washington D.C. notified the community that there was already a Richland, California near Sacramento (Brigandi 2011).

From its establishing years up until the 1950s, Orange prospered as an agricultural community with grapes and grain as the biggest cash crops during the 1870s. After much experimentation, oranges, apricots, and walnuts emerged as the most successful tree crops. In the late 1880s, a mysterious blight ravaged the region's vineyards (now commonly known as the Anaheim Vine Disease). The damage was so severe that the grape industry never recovered and by 1910, grapes were no longer grown in the Orange area as a commercial crop (Brigandi 2011).

In 1880, the Southern Pacific Railroad built a depot (now demolished) at what is now "West Orange." In 1887, the Santa Fe Railroad also extended its line into Orange. Until the stations' closure in 1918, the railroad allowed for long distance shipment of fresh fruit and provided new markets for Orange's local growers. The subsequent increase in visitors as the result of the railroad also led to the "boom of the '80s" in Southern California, including Orange which experienced an increase in its residential population (City of Orange Public Library n.d.).

On April 6, 1888, the City of Orange was incorporated with William Blansdale serving at its first mayor; the population at the time was 600 residents. In 1889, the southern half of Los Angeles County broke away to form Orange County, with the county seat falling to Santa Ana. By the end of the 1880's local farmers were planting orange trees and by 1920 oranges had become the predominant crop (City of Orange Public Library n.d.).

The City, like the rest of the United States, suffered an economic decline as a result of the Great Depression which lasted until the outbreak of the Second World War. During the war, the 30th Field Artillery Battalion was stationed in Orange while the battalions troops trained in the Borrego Desert. Following the end of World War II, many service men returned to Orange with their families, which launched the second and largest population boom in the county's history. Between 1950 and 1960, the city's population increased from 10,000 to over 26,000, then to over 77,000 by 1970. As of 2020, the population of Orange is 139,484 (City of Orange Public Library n.d.).

Plaza Historic District (P-30-158679)

Listed on the National Register of Historic Places (NRHP; P-30-158679) in 1982, the Plaza Historic District (Figure 4) consists of 35 contributing commercial buildings and a park situated at the location of the original 1886 plaza in downtown Orange. The years of construction for the contributing buildings occurred during the early settlement of Orange, ranging from 1871 to 1931. The boundaries of the district include Maple Avenue to the north, Almond Avenue to the south, Orange Street to the west, and Olive Street to the east. The Plaza district is listed on the NRHP under Criterion A and C. Listing under Criterion A is due to the district's association with Community Planning and significant contributions to Orange's Agricultural and Commercial history. Listing under Criterion C is due the district's unique Landscape Architectural style, whereby the district's particular plaza style is more commonly found in the Midwest United States but uncommon in Southern California; in addition, the early commercial buildings located within the district retain their architectural integrity associated with the early 1900s–1930s commercial architecture (ASM Affiliates, Inc. 2015).

Old Towne Orange Historic District (P-30-159932)

The Project Area is located within the boundaries of the Old Town Orange Historic District (NRHP; P-30-159932) (Figure 4). The Old Towne Orange Historic District is the largest Nationally Registered Historic District in the state of California and is listed on the National Register of Historic Places (NRHP). The Old Towne Orange Historic District was also chosen by the American Planning Association as a "Great Place in America" (Taylor 2018). This historic district is roughly bounded by Walnut Avenue, Waverly Street, W.O. Hark Park, La Veta Avenue, Clark Street, and the Atchison Topeka Railroad track. Originally an agrarian community surrounded by citrus groves and farmland, the City of Orange underwent rapid development in the 1960s and 70s, however, its historic downtown business district and

surrounding residential community (now known at Old Towne Orange) experienced minimal redevelopment or modernization.

Listed on the NRHP in 1997, the Old Towne Orange Historic District (P-30-159932) consists of a total of 1,237 contributing buildings, sites, and objects located near the original plaza in downtown Orange. The majority of construction ranges from 1874 to 1940 and consists of over 50 architectural styles such as Victorian, Craftsman, American Bungalow, Classical Revival, Spanish Classical Revival, Mediterranean, and Prairie style. After 140 years, this area remains an epicenter for residents and maintains a thriving restaurant, business, and retail community. The district is listed on the NRHP under Criterion A for its association with Exploration/Settlement, Industry and Agriculture, and Transportation and Commerce. The district is also listed under Criterion C for architecture as it represents a large collection of residential, commercial, educational, civil, religious, government, and civic buildings which span from 1880 to 1940 and retain their integrity (ASM Affiliates, Inc. 2015).

Old Towne Orange Local Historic District

This historic district was designated locally by the City of Orange's City Council in c. 1983. The local Old Towne Orange Historic District encompasses nearly a one square mile area which includes 1,279 contributing historic residential, institutional, commercial, and industrial buildings which are centered around the downtown area's historic core (ASM Affiliates, Inc. 2015) (Figure 4). In 1982, the City began its first historic resources survey in order to evaluate all pre-1940 homes and buildings within the City of Orange. With a specific focus on Old Towne, the results of the survey provided guidance for the establishment of the City's first Historic Preservation Element of the City's General Plan which was adopted in 1983. (City of Orange 2015)

The boundaries of the Old Towne Orange Local Historic District expanded the boundaries of the National Register listed Old Towne Orange Historic District (Figure 4). While the buildings therein did not meet the National Park Service's criteria for NRHP designation, they were recognized by the City as historically important and warrant preservation and conservation (ASM Affiliates, Inc. 2015).

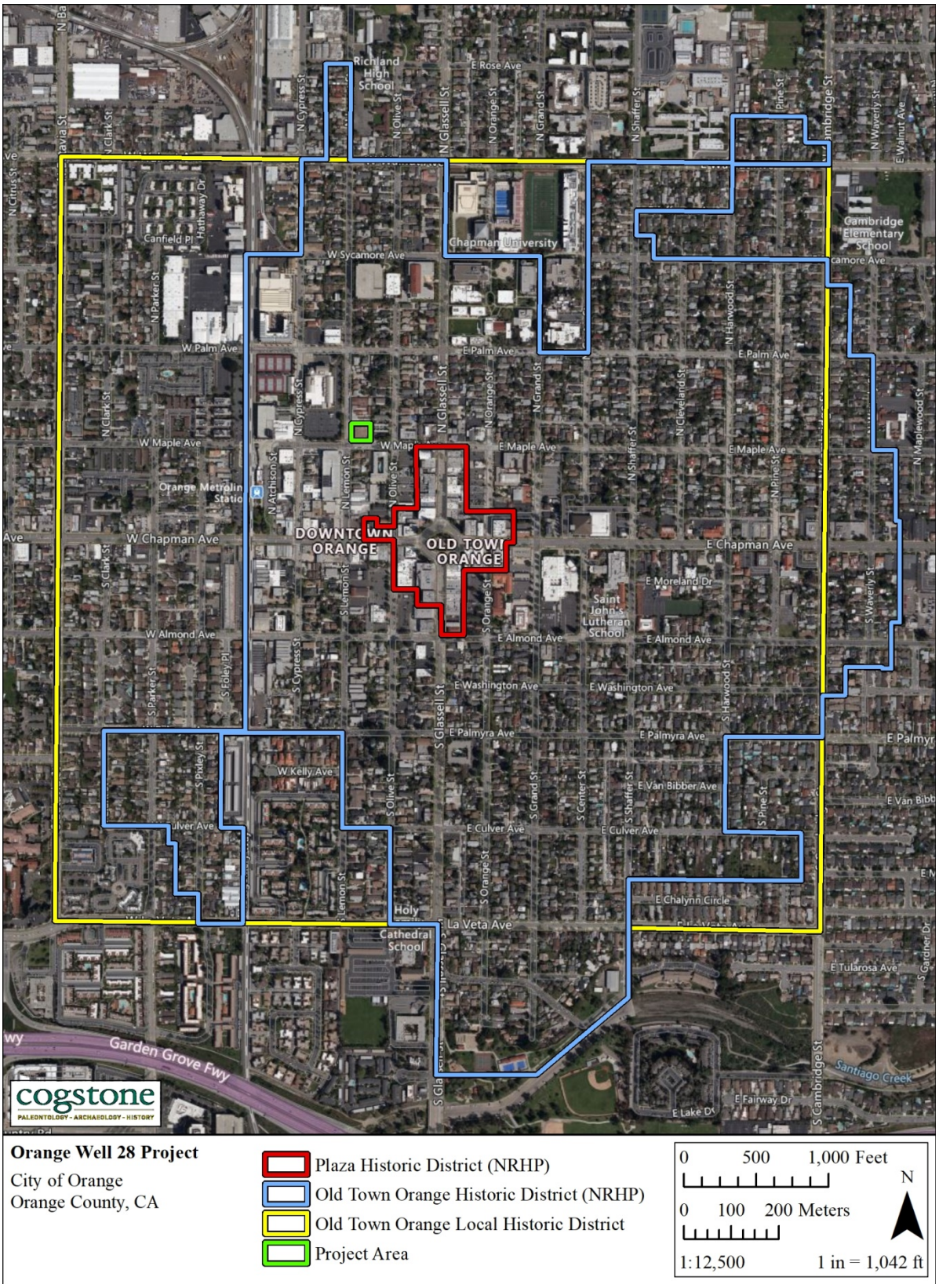


Figure 4. City of Orange's Historic District boundaries

PROJECT AREA HISTORY

Per the 1909 Sanborn map for the City, the earliest known structure within the Project Area was a single-story, wood frame dwelling located at the southwest corner of the parcel (Figure 5). By 1922, an additional single-story brick and wood frame dwelling is built at the northwest corner of the Project Area and a single-story brick dwelling is constructed at the northwest corner of the Project Area (this residence is labeled as having no chimney; Figure 6). By 1950, an automotive shed or private garage is built near the northwestern section of the Project Area (Figure 7). An additional single-story brick dwelling (this residence is labeled as having no chimney) is located west of the garage (Sanborn Map Company 1909, 1922, 1922-1950).

Sometime between 1950 and 1953, a building (likely a dwelling) was constructed in the northeastern section of the Project Area (Frame Finder 1953). By 1965 it appears that all but one of the dwellings has been demolished. The one remaining dwelling is on the west side of the Project Area, and a single-story structure is located in the northwestern portion of the Project Area. The majority of the Project Area also appears to be hardscaped (Frame Finder 1965). By 1980, all building have been removed (NETROnline 1980). According to modern aerial photographs, this area has been used from ca. 1980s to ca. 2017 as a parking area for utility vehicles and to store construction equipment. Currently, the Project Area is vacant.

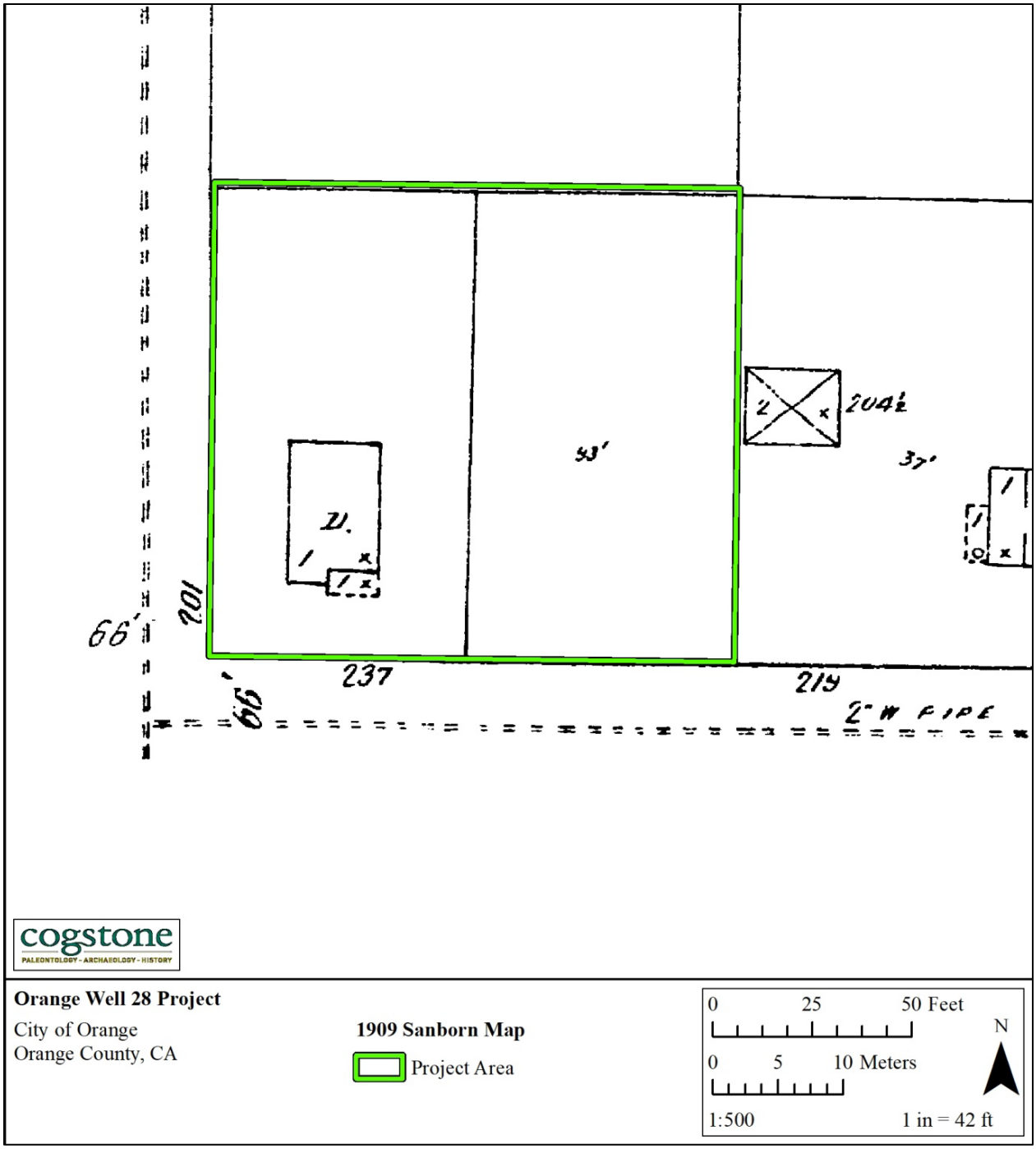


Figure 5. 1909 Sanborn map

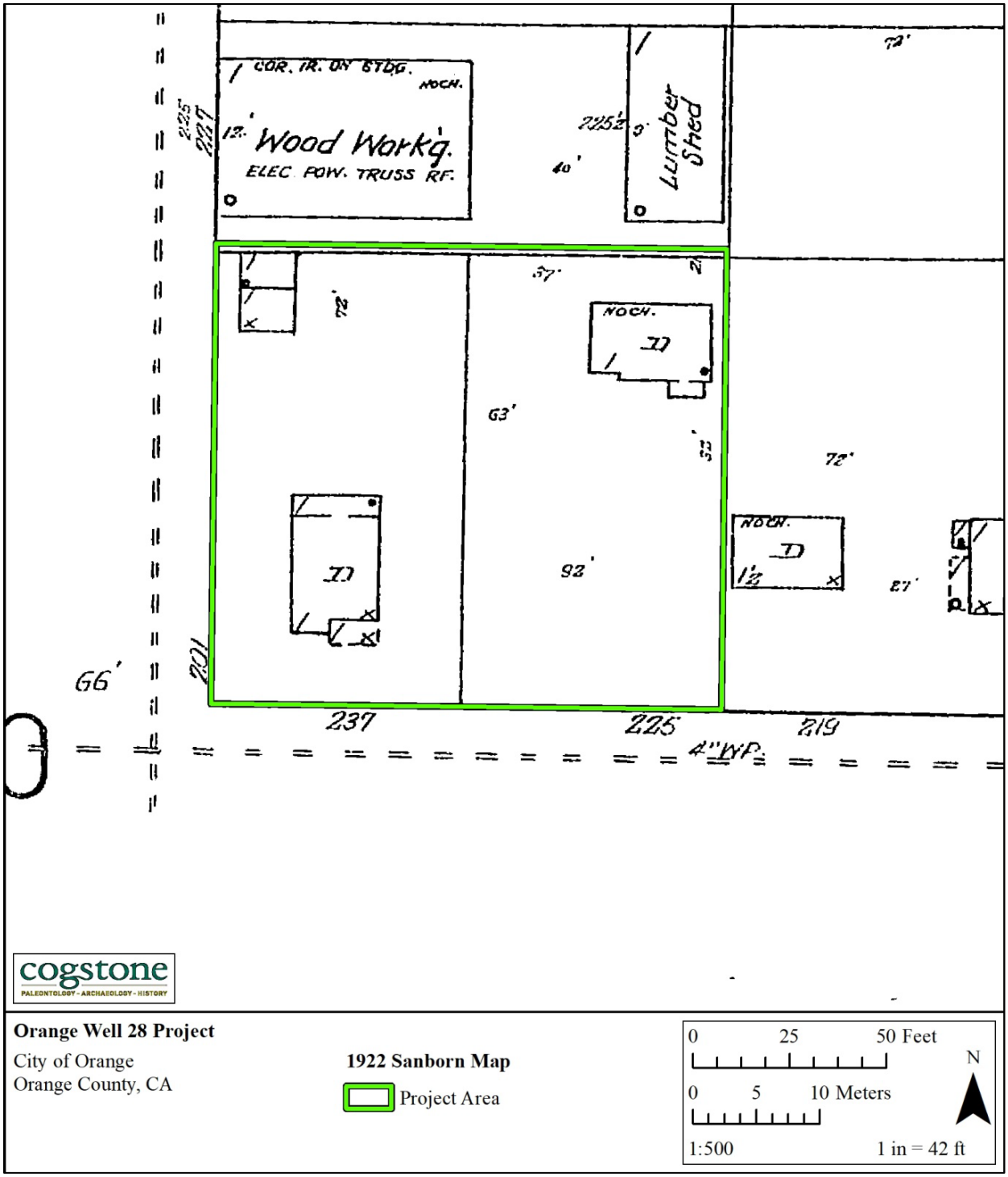


Figure 6. 1922 Sanborn map

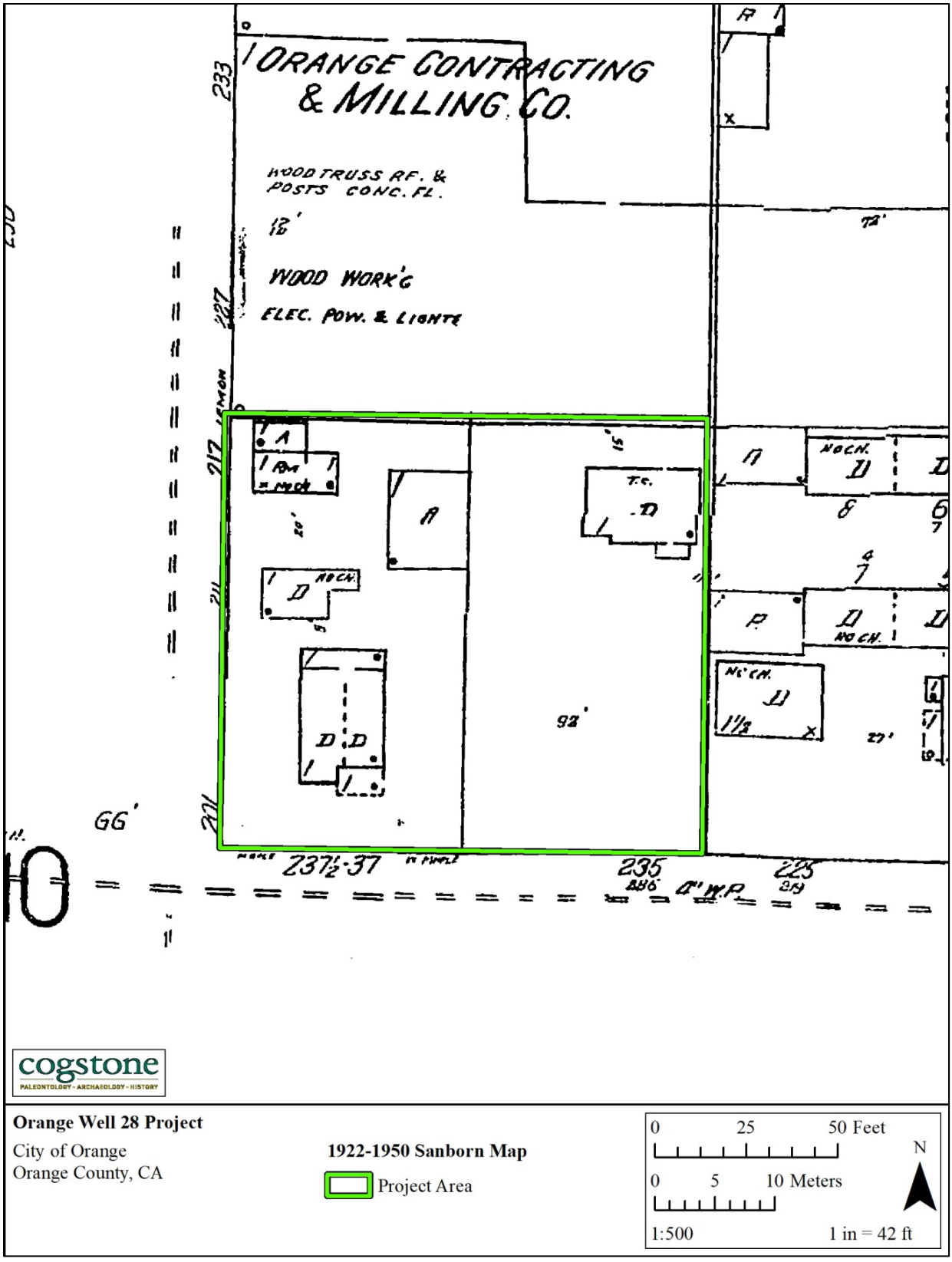


Figure 7. 1922-1950 Sanborn map

RECORDS SEARCHES

PALEONTOLOGICAL RECORD SEARCH

The following are confidential museum records. As such no maps of the localities are provided unless the locality may be impacted by the project. Cogstone requested a records search from the Natural History Museum of Los Angeles County, Department of Vertebrate Paleontology (LACM) that covered the Project Area as well as a one mile radius (Bell 2020; Appendix B). Additional records from the University of California Museum of Paleontology database (UCMP 2020) and the PaleoBiology Database (PBDB 2020), and print sources were searched for fossil records. Print resources including published material (Jefferson 1991a, 1991b) and previous nearby record searches were also checked for fossil localities.

Paleontological Records Search Results

No fossils are known from within sediments of similar age as those of the Project or within 1 mile of the Project Area. Two localities are known from Holocene deposits between 2.5 and 3.5 miles and another 13 localities were found between 3.5 and 10 miles from the Project. Extinct megafauna from these sites include Harlan's ground sloth (†[2]*Paramylodon harlani*), Columbian mammoth (†*Mammuthus columbi*), saber-toothed cat (†*Smilodon fatalis*), western horse (†*Equus occidentalis*), tapir (†*Tapirus californicus*), yesterday's camel (†*Camelops hesternus*), and bison (†*Bison antiquus*; Table 2). All of the fossils were a minimum of five feet deep in deposits mapped as late Pleistocene at the surface, while sediments with a Holocene component produced fossils starting at eight feet deep.

Although Bell (2020) reported a horse (*Equus* sp. LACM VP 4943) from Glassell Avenue and Fletcher Street in Orange, further examination indicates this is a modern animal. The depth of the find is probably due to the proximity to the Santa Ana River. Numerous large scale floods impacted the area and dumped tremendous amounts of sediments at the mouth of Santa Ana Canyon prior to the construction of the Prado Dam in 1941 (Masters 2012).

While the Fernando and Puente formations mentioned by Bell (2020) both occur east of State Route 55, any fossils recovered from deep drilling excavations will lack essential scientific context and have a low potential for significance.

[2]† = the taxon is extinct, although there may be living relatives in same genus or family

Table 2. Fossil localities from near to the Project Area

† = the taxon is extinct, although there may be living relatives in same genus or family

Common Name	Taxon	Depth below original surface	Formation mapped at surface	Age/ dates	Locality	Location	Reference
horse	*Equus* sp.	8-10 feet	Quaternary young alluvial fan	modern	LACM 4943	Fletcher Ave. east of Glassell St., Orange	Bell 2020
sheep	*Ovis* sp.	unknown	Quaternary young alluvial fan	Holocene	LACM 1652	Rio Vista Ave. south of Lincoln Ave., Anaheim	McLeod 2017
plant	Plantae	7'9"	Quaternary very old alluvial fan	Pleistocene	2011SRW0728.1	SR 57 NB between Imperial Highway or Greenbrier Lane, Brea	Gust and Richards 2012
bivalve	Pelecypoda						
bony fish	Teleostei						
snake	Ophidia						
cottontail rabbit	*Sylvilagus* sp.						
rodent	Cricetinae						
rodent	Rodentia						
vertebrate	Vertebrata						
rattlesnake	*Crotalus* sp.	21"-38"	Quaternary very old alluvial fan	Pleistocene	2011JLM0721.1	SR 57 NB between Imperial Highway or Greenbrier Lane, Brea	Gust and Richards 2012
bird	Passeriformes (sparrow-sized species)						
rodent	Rodentia						
vertebrate	Vertebrata						
cottontail rabbit	*Sylvilagus* sp. aff. *S. audubonii*	24 feet - 25.66 feet	Quaternary very old alluvial fan	Pleistocene	2011KMS0520.2	SR 57 NB west of Mystic Ave., Fullerton	Gust and Richards 2012
rodent	Rodentia						
herbivore (large)	herbivore						
vertebrate	vertebrata						
cottontail rabbit	*Sylvilagus* sp. aff. *S. audubonii*	10.32 feet - 8.5 feet	Quaternary very old alluvial fan	Pleistocene	2011KMS0520.1	SR 57 NB west of Deerpark Drive or Devonshire Ave., Fullerton	Gust and Richards 2012
rodent	Rodentia						
vertebrate	Vertebrata						
rodent	Rodentia	5 feet	Quaternary very old alluvial fan	Pleistocene	2011JLM1209.1	SR 57 NB west of Deerpark Drive, Fullerton	Gust and Richards 2012
vertebrate	Vertebrata						
plant	Plantae	4'2"-5'6"	Quaternary very old alluvial fan	Pleistocene	2011JLM1209.2	SR 57 NB west of Deerpark Drive or Devonshire Ave., Fullerton	Gust and Richards 2012
carnivore	Carnivora	4 feet	Quaternary very old alluvial fan	Pleistocene	2011JLM1209.3	SR 57 NB west of Deerpark Drive or between Bedford Drive or Braeburn Ave., Fullerton	Gust and Richards 2012
vertebrate	Vertebrata						

Common Name	Taxon	Depth below original surface	Formation mapped at surface	Age/ dates	Locality	Location	Reference
Harlan's ground sloth	†*Paramylodon harlani*	12-20 feet	Quaternary old alluvium	late Pleistocene	OCPC, no number as yet	North of Jamboree and Michelson, Irvine	Scott et al. 2007
ground sloth	†*Paramylodon sp.*						
sabre-toothed cat	†*Smilodon fatalis*						
carnivore?	Carnivora?						
western horse?	†*Equus occidentalis?*						
yesterday's camel	†*Camelops hesternus*						
ancient bison	†*Bison antiquus*						
bison	†*Bison sp.*						
Columbian mammoth	†*Mammuthus columbi*						
rabbit?	Leporidae?						
Botta's pocket gopher	*Thomomys bottae*						
gopher	Geomyidae						
squirrel	Sciuridae						
rodent	Rodentia						
mammal	Mammalia						
black vulture	†*Corygyps occidentalis*						
bird	Aves						
rattlesnake	*Crotalus* sp.						
pine snake	*Pituophis melanoleucus*						
snakes	Serpentes						
alligator lizard	*Elegaria* sp.						
oak	*Quercus* sp.						
ground sloth	†*Paramylodon sp.*	unknown	Quaternary old alluvium	late Pleistocene, Rancholabrean	LACM 1068	East of MacArthur Boulevard and north of what is now Bison Avenue, Irvine	McLeod 2018
tapir	†*Tapirus californicus*						
horse	†*Equus* sp.						
yesterday's camel	†*Camelops* sp.						
deer	*Odocoileus* sp.						
bison	†*Bison sp.*						
rabbit	*Sylvilagus* sp.						
mammal	Mammalia	unknown	Quaternary alluvium	Quaternary	LACM 1069	South side of University Drive east of MacArthur Boulevard	McLeod 2018

Common Name	Taxon	Depth below original surface	Formation mapped at surface	Age/ dates	Locality	Location	Reference
even-toed ungulate	Artiodactyla	unknown	Quaternary alluvium	Quaternary	LACM 3978	Adjacent to the southeastern side of the intersection of University Drive and MacArthur Boulevard	McLeod 2018
turkey	*Meleagris* sp.						
ground sloth	†Mylodontidae	shallow but unknown	Quaternary old alluvium	Pleistocene	LACM 7713	Southwest side Highway (Hwy) 133 or Hwy 405 interchange, Irvine	McLeod 2015
pocket gopher	*Thomomys* sp.	25 feet	Quaternary alluvium	Quaternary	LACM 7867	Southeast of Highway 133 or Interstate 5 interchange, C & 5th on El Toro base, Irvine	McLeod 2015

CALIFORNIA HISTORIC RESOURCES INFORMATION SYSTEM

Cogstone requested a search of the California Historic Resources Information System (CHRIS) from the South Central Coastal Information Center (SCCIC) on July 24, 2020 that included the entire proposed Project Area as well as a one-half mile radius. The SCCIC completed the request on August 22, 2020. Results of the record search indicate that 12 previous studies have been completed within one-half mile of the proposed Project Area (Table 3).

Table 3. Previous Cultural Resource Studies

Report No	Authors	Title	Year
OR-02560	Chakurian, Anthony	Request for SHPO Review of FCC Undertaking - 170 South Olive Street, Orange, California.	2002
OR-02618	Donovan, James	Planning Report, Re: Old Towne Brewing Co. (J.R. Guerin Brewing Co., LLC).	1997
OR-02719	Smith, Francesca	Section 106 Review Verizon Wireless Telecommunications Facility Site Elk's Building, 211 East Chapman Avenue, Orange, Orange County.	2000
OR-03095	Fulton, Terri	Cultural Resource Assessment AT&T Wireless Services Facility No. 13078b Orange County, California.	2005
OR-03102	Bonner, Wayne H., and Christeen Taniguchi	Records Search Results and Site Visit for Sprint Telecommunications Facility Candidate Og60xc658b (Elks Building) 211 East Chapman Avenue, Orange, Orange County, California.	2004
OR-03112	Bonner, Wayne H.	Cultural Resources Records Search Results and Site Visit for T-Mobile Candidate LA02886A (Sun Light Church) 172 North Glassell Street, Orange, Orange County, California.	2005
OR-03459	Bonner, Wayne H., and Kathleen A. Crawford	Cultural Resource Records Search Results and Site Visit for T-Mobile Candidate LA02886F (City of Orange Library), 101 North Center Avenue, Orange, Orange County, California.	2006
OR-03530	Bonner, Wayne H., and Kathleen Crawford	Cultural Resources Records Search and Site Visit Results for Sprint Nextel Candidate CA8219B (Sierra Peak), 211 East Chapman Ave., Orange, Orange County, California.	2008
OR-03669	Bonner, Wayne H.	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA02866G (City of Orange), 300 East Chapman Avenue, Orange, Orange County, California.	2007
OR-03814	Supernowicz, Dana	Cultural Resources Study of the Wimax Project (CA8219) Sprint Site No. CA-ORC5800A 211 E. Chapman Avenue, Orange, Orange County, California 92866.	2009
OR-03916	Tang, Bai "Tom"	Preliminary Historical/Archaeological Resources Study, Olive Subdivision Positive Train Control (PTC) Project, Southern California Regional Rail Authority (SCRRA) Cities of Anaheim, Orange, and Placentia, Orange County, California.	2010
OR-04058	Supernowicz, Dana	Cultural Resources Study of the Elks Lodge Project, AT&T Mobility Site No. LA3044F, 211 E. Chapman Avenue, Orange, Orange County, California 92866.	2009

The records search also determined no previously recorded resources are located within the Project boundaries (Table 4). However, the Project Area is located within the boundaries of the Old Towne Orange Historic District (NRHP) and the Old Towne Orange Historic District (locally designated). In addition, 15 historic architectural resources are located within one-half mile of the Project Area. No prehistoric or historic archaeological sites have been recorded within the Project Area or the one-half mile buffer (see Table 3).

Table 4. Cultural Resource Sites

Primary No. (P-30-)	Trinomial/ HRI	Description	Year Recorded	Distance from Project Area	USGS 7.5' Quad
001774	-	Railroad, "LSA-HIL1701-S-1"; pre-1938.	2017	0-0.25	Orange
158653	-	Theatre, Classic Revival style, "Orange Theater" "Pantages Theatre"; 1925.	2005	0-0.25	Orange
158679	-	1-3 story commercial buildings, trees/vegetation, urban open space, "The Plaza Historic District"; 1887, 1889, 1900, 1901, 1905, 1907, 1909, 1910, 1911, 1912, 1914, ca. 1915, 1916, ca. 1920, 1922, 1924, 1925, 1926, 1928, 1931.	1982	0-0.25	Orange
158680	-	"The Plaza" "The Orange Plaza"; ca. 1886	1976	0-0.25	Orange
158686	-	Educational buildings, Neo-classical style, "Orange Union High School, Chapman College"; 1904, 1913, 1921, 1928.	1974	0-0.25	Orange
158710	-	Single family property, Spanish Colonial Revival style, "Porter-French House"; 1917.	1993	0.25-0.5	Orange
158759	-	Single family property, Italiante/Stick style, "Parker House"; 1887.	1988	0-0.25	Orange
158935	-	Church, Gothic Revival style, "St John's Lutheran Church"; 1914.	1990	0.25-0.5	Orange
159075	-	Church, Late Victorian: Gothic and Queen Anne style, "First Baptist Church of Orange"; 1893/1912	1995	0.25-0.5	Orange
159124	-	Single-family property, Queen Anne style, "C. Z. Culver"; 1887.	1984	0.25-0.5	Orange
159820	-	Single family property, Victorian and Bungalow style, "Lewis Ainsworth House"; 1910.	1980	0.25-0.5	Orange
159886	-	Educational building, Italian Renaissance "Orange Intermediate School"; 1914.	1992	0-0.25	Orange
159932	-	Single family properties, multiple family properties, 1-3 story commercial buildings, government buildings, religious buildings, Bungalow/Craftsman, Mission/Spanish Colonial Revival, Classical Revival, "Old Towne Orange Historic District"; 1888-1940.	1997	Within and 0-0.25	Orange

Primary No. (P-30-)	Trinomial/ HRI	Description	Year Recorded	Distance from Project Area	USGS 7.5' Quad
176663	-	Railroad, "Atchison, Topeka & Santa Fe RR, Burlington Northern Santa Fe RR"; 1885-1888.	2002, 2003, 2007, 2012, 2016, 2018	0-0.25	Anaheim /Orange
177662	-	Educational building, Contemporary style, "Orange High School"; 1952.	2018	0.25-0.5	Orange

OTHER SOURCES FOR CULTURAL RESOURCES

In addition to the SCCIC records search, a variety of sources were consulted in September 2020 to obtain information regarding the cultural context of the Project Area (Tables 5 and 6). Sources included the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), the California Historical Resources Inventory (CHRI), the California Historical Landmarks (CHL), the California Points of Historical Interest (CPHI) and the Bureau of Land Management (BLM). Specific information about the Project Area, obtained from historic-era maps and aerial photographs, is presented in the Project Area History section.

Table 5. Additional Sources Consulted for Cultural Resources

Source	Results
National Register of Historic Places (NRHP; 1979-2002 & supplements)	Positive: Project Area (PA) is within Old Town Orange National Register Historic District. Reference number 97000617
Historic United States Geological Survey Topographic Maps	Per the earliest topo map of the PA, by 1896 (Anaheim; 1:62,500) there appears to be one building/structure within the PA. By 1932 (Orange; 1:31,680), the street configuration adjacent to the PA is in its current alignment and only one structure is indicated to be within the PA. Topo maps following the 1932 Orange map until present show no built environment within the PA.
Historic US Department of Agriculture Aerial Photographs	Per the earliest known historic aerial of the PA, in 1931 there are multiple buildings and structures within the PA (approximately 7 to 8), at least two of which appear to be residences. By 1946, one additional building is present on the northern side of the PA. By 1963, two buildings on the northeast side of the PA have been demolished. By 1972, the majority of buildings appear to have been demolished with one or two smaller structures remaining at the northwest corner. All structures within the PA appear to have been demolished by 1980. From 2003 to ca. 2016, the PA is being used as a parking and storage area for utility vehicles, machinery, and equipment.
California Register of Historical Resources (CRHR; 1992-2014)	Negative

Source	Results	
Built Environment Resource Directory (BERD)	Negative	
California Historical Landmarks (CHL; 1995 & supplements to 2014)	Negative	
California Points of Historical Interest (CPHI; 1992 to 2014)	Negative	
Bureau of Land Management (BLM) General Land Office Records	Positive: see Table 6	
City of Orange Historic Preservation (ArcGIS)	On September 2, 2020, Cogstone was able to obtain various survey forms for buildings adjacent to the PA (Table 5 and Figure 8) from the City of Orange Historic Preservation online ArcGIS map of the city. Not all of these records have been issued a Primary number but they do provide helpful information regarding a building's architectural description, build date, historic name, period of significance, and status codes.	
Historic Societies (see Appendix D)	Name	Comments
	Orange County Archives	Attempts to contact the Orange County archives were made via email on August 8th and September 2nd, 2020. A response was received via email by Susan Beruman (county archivist) who said after a cursory search, no information regarding the PA could be found in their collection. On September 9th, 2020, Steve Oftelie (county archive specialist) contacted Cogstone via email and provided housing tract documentation which may provide information regarding previous ownership of the PA.
	Orange Community Historical Society	Attempts to contact the Orange Community Historical Society were made via USPS mail on September 2nd and September 8th, 2020. No response has been received at this time.
	Old Town Preservation Association	Attempts to contact the Old Town Preservation Association were made via email on September 2nd and September 8, 2020. On September 9th, Adam Feliz (new chairman of the association) contacted Cogstone via phone call, and provided links to online resources to assist in researching previous ownership of the PA.

Table 6. BLM Land Patents

Name	Year	Patent Area	Authority
Juan Pablo Peralta, Antonio Yorba, Bernardo Yorba, and Heirs of Bernardo Yorba	1883	Township 4 South, Range 9 West, Section 30 (all 640 acres)	Santiago De Santa Ana Land Grant: Grant-Spanish/Mexican

NATIVE AMERICAN SCOPING

A Sacred Lands File (SLF) search was requested from the Native American Heritage Commission (NAHC) on August 11, 2020. The NAHC responded later that day with a negative SLF search (Appendix E). The NAHC recommended that representatives from local Native American tribal organizations be contacted for further information regarding the Project vicinity. Cogstone sent Native American scoping letters to these representatives on behalf on the City in support of this cultural resources assessment.

SURVEY

The Project Area is entirely hardscaped and landscaped so no survey for cultural or paleontological resources was completed.

For historic built environment resources, the purpose was to identify and verify the location of all structures and buildings within the Project Area or adjacent parcels that are 45 years in age or older. Once identified, historic built environment resources are examined to ascertain if the original integrity of the resource remains intact and if it is considered eligible for listing as a historic resource at the local, state, or national level. These resources are documented with digital photography as part of this examination. The seven aspects of integrity which are considered as part of a determination of eligibility include: location, design, setting, materials, feeling, workmanship, and association.

SURVEY RESULTS

On September 3, 2020, Cogstone architectural historian Shannon Lopez photographically documented buildings adjacent to the Project Area. Access limitations restricted Ms. Lopez's pedestrian survey to what was visible from the adjacent streets. As the Project Area is completely landscaped or hardscaped, an intensive pedestrian survey for archaeological and paleontological resources was not conducted.

The following include both historic and non-historic resources within approximately one parcel of the Project Area (Table 7 and Figure 8). Context includes parcels to the west across Lemon, including Metrolink parking structure (Old Towne West Parking Structure) and Chapman film school.

Table 7. Properties adjacent to Project Area

Map Reference No.	APN	Build Year	Address	Status Code	Old Towne Local District
MR1	039-173-01	ca. 1905	193 N. Lemon St.	1D	Contributor
MR2	039-173-19	ca. 1920	224 W. Maple Ave.	6Z	-
MR3	039-173-22	1965	210 W. Maple Ave.	6Z	-
MR4	039-162-11	ca. 1905	204 N. Olive St.	1D	Contributor
MR5	039-162-12	1923	214-218 N. Olive St.	1D	Contributor
MR6	039-162-13	1958	224 N. Olive St.	6Z	-
MR7	039-162-21	ca. 1914/1938	233 N. Lemon St.	1D	Contributor
MR8	039-161-17	2005	283 N. Cypress St.	6Z	-
MR9	039-172-21	2018	130 N. Lemon St.	-	-

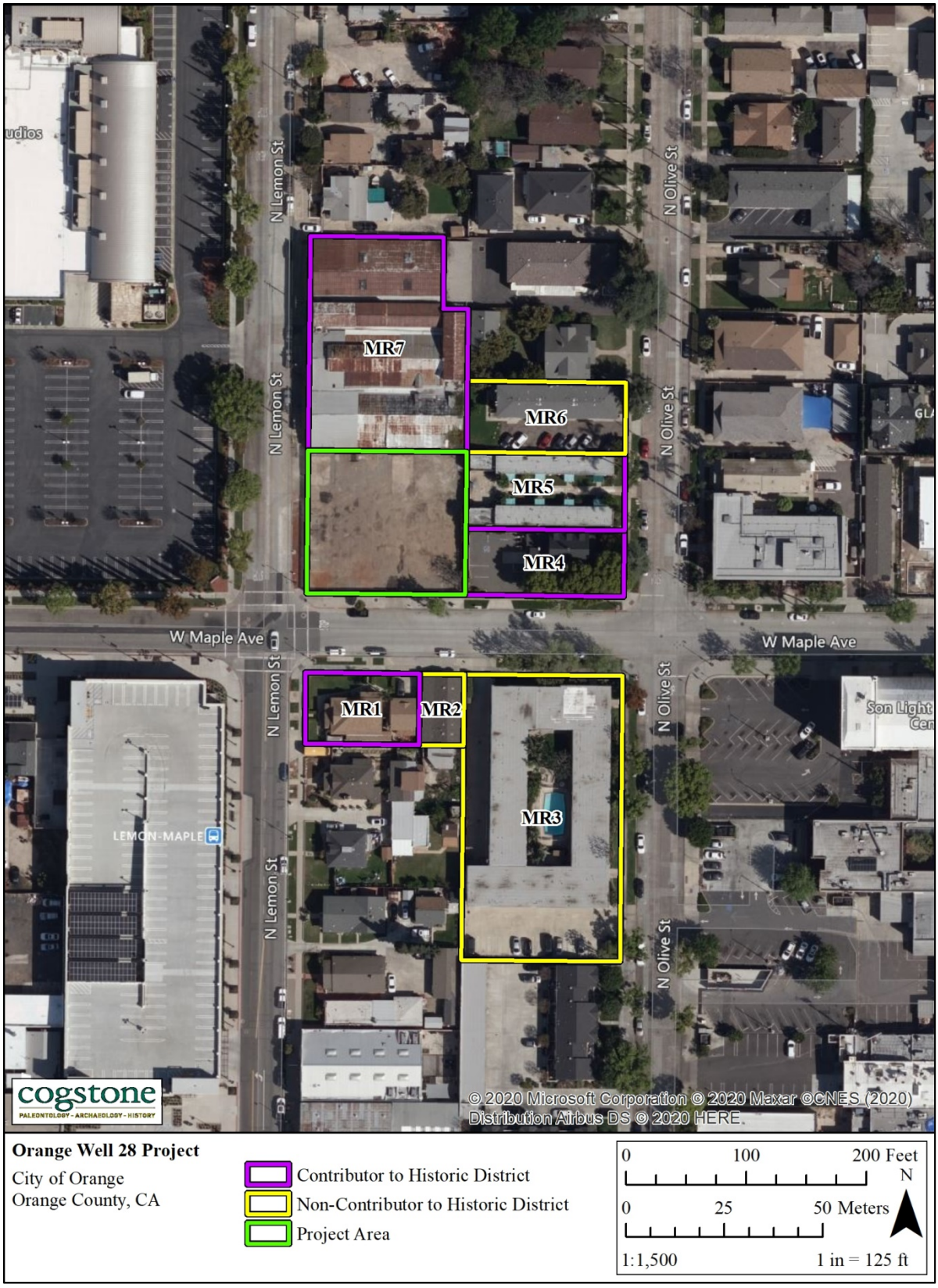


Figure 8. Resources adjacent to Project Area

The following buildings are located adjacent to the Project Area and are considered significant historic resources listed as contributors to the Old Towne Orange Historic District (1D).

MR1: (APN: 039-173-01) Built in ca. 1905, the "Sherburn and Mary Miner House" is an example of Hip Roof Cottage style. It is a single-story box plan house with combination hip and gable roof and an enclosed front porch. The house is built on a box plan with ornamental cornices emerging from the center of the roof and has clapboard siding. A detached garage is located to the east of the main residence. This residence is listed as a contributor to the Old Towne Orange Historic District (1D).

This residence is located south of the Project Area and would have a direct view of the proposed Well 28. The overall setting and view shed of this residence has been negatively impacted by past development such as the Chapman University Dodge College building and parking lot (283 N. Cypress St. ; built 2005) and the Old Towne West Parking Structure (130 N. Lemon St.; built 2018; Figures 9 and 10). The Old Towne West Parking Structure was found to be compatible with the historic district and in conformance with historic preservation standards. As such, it does not negatively impact the historic setting. However, it can be described as a change to original context of the neighborhood. The property on which the current parking structure resides originally contained the Pacific Electric Passenger and Freight Depot and after, a surface parking lot.

Figure 9. North elevation of 193 North Lemon Street; MR1

Figure 10. View of Project Area from 193 North Lemon Street; MR1

MR4: (APN: 039-162-11) Built in 1905, the "William D. and Ella Granger House" is an example of Victorian style. It is a two-story, single-family residence with a steep-pitched, multi-gable roof, and clapboard siding (siding has been recently replaced with like materials). At the front façade (east façade) is a full-width and partial wraparound porch covered by a separate roof extension which includes a pedimented gable with ornamental shingles. A large three-part window is also located at the east facade. This building is currently owned by Chapman University and referred to as the "Elliot Alumni House." It appears to be utilized as an office space.

This residence is listed as a contributor to the Old Towne Orange Historic District (1D) and is on the local Mills Act list as of 1999.

This residence is located east of the Project Area and would have a direct view of the proposed Well 28. The overall setting and view shed of this residence has been impacted by past development such as a large apartment complex (MR3; built 1965) and the demolition of the residential and ancillary buildings previously located within the current Project Area (ca. 1970s). View of the Project Area from this building is moderately obstructed by dense trees, foliage, and an approximately six foot tall privacy fence (Figures 11 and 12).

Figure 11. South (left) and east (right) elevation of 204 North Olive Street; MR4

Figure 12. Western view of Project Area from 204 North Olive Street; MR4

MR5: (APN: 039-162-12) Built in 1923, the "Marx Apartments" is an example of a simple Mediterranean Revival style multi-family property. The property consists of two identical one-story buildings with rectangular footprints, flat roofs, and stucco facades. This residence is listed as a contributor to Old Towne Orange Historic District (1D).

This residence is located northeast of the Project Area and would have a partial view of the proposed Well 28. The overall setting and view shed of this residence has been impacted by past development such as the demolition of the residential and ancillary buildings previously located within the current project area (ca. 1970s). View of the Project Area from the buildings is largely obstructed by dense trees, foliage, and an approximately seven- to eight-foot tall cinderblock wall (Figure 13).

Figure 13. View shed of Project Area from 214-218 North Olive Street; MR5

MR7: (APN: 039-162-21) This one-story industrial building was constructed in two phases, ca. 1914 and pre-1938. This Western Falsefront style building consists of two metal frame buildings joined as one (year not known) and clad in corrugated metal sheeting. This building is listed as a contributor to Old Towne Orange Historic District (1D).

This building is located north of the Project Area and would have a direct view of the proposed Well 28. The overall setting and view shed of this building has been negatively impacted by past development such as the Chapman University Dodge College building and parking lot (MR8; built 2005) and the Old Towne West Parking Structure (MR 9; built 2018; Figure 14).

Figure 14. South elevation of 233 North Lemon Street; MR7

IMPACT ANALYSIS

PALEONTOLOGICAL SENSITIVITY

A multilevel ranking system was developed by professional resource managers within the Bureau of Land Management (BLM) as a practical tool to assess the sensitivity of sediments for fossils. The Potential Fossil Yield Classification (PFYC) system (BLM 2016; Appendix C) has a multi-level scale based on demonstrated yield of fossils. The PFYC system provides additional guidance regarding assessment and management for different fossil yield rankings.

Fossil resources occur in geologic units (e.g., formations or members). The probability for finding significant fossils in a Project Area can be broadly predicted from previous records of fossils recovered from the geologic units present in and/or adjacent to the study area. The geological setting and the number of known fossil localities help determine the paleontological sensitivity according to PFYC criteria

All alluvial deposits may increase or decrease in fossiliferous potential depending on how coarse the sediments are. Sediments that are close to their basement rock source are typically coarse; those farther from the basement rock source are finer. The chance of fossils being preserved greatly increases once the average size of the sediment particles is reduced to 5 mm or less in diameter. Moreover, fossil preservation also greatly increases with rapid burial in flood-plains, rivers, lakes, oceans, etc. Remains left on the ground surface become weathered by the sun or consumed by scavengers and bacterial activity, usually within 20 years or less. So the sands, silts, and clays of flood-plains, rivers, lakes, and oceans are the most likely sediments to contain fossils.

Using the PFYC system, geologic units are classified according to the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts within the known extent of the geological unit. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC value; instead, the relative abundance of localities is intended to be the major determinant for the value assignment.

The Project is mapped entirely as middle to late Pleistocene older alluvial fans. A records search revealed that all of the fossils previously recovered within a ten mile radius were mostly more than five feet deep in deposits mapped as Pleistocene at the surface. Sediments with a Holocene component such as those of the study area produced fossils starting at eight feet deep. As such, the project sediments less than eight feet below the modern surface are assigned a low potential for fossils (PFYC 2) due to the lack of fossils in these deposits. Sediments more than eight feet

below the modern surface are assigned a moderate potential for fossils (PFYC 3) due to similar deposits producing fossils at that depth near to the study area.

ARCHAEOLOGICAL SENSITIVITY

Based on the results of the cultural records search, the Project Area has low sensitivity for prehistoric archaeological resources. A review of the City of Orange's General Plan Prehistory Archaeology Sensitivity Map shows that the Project Area is not mapped in a prehistoric sensitivity area (PAR Environmental Services, Inc. 2006). Analysis of these data sources and the construction history of the parcel using historical USDA aerial photographs and Sanborn Fire Insurance Company maps indicate that the most recent structures and buildings were demolished in modern times when regulations required removal of all debris. However, it is believed that these buildings may have existed prior to modern-day trash services and, therefore, there is a potential for subsurface trash deposits. A review of the City's General Plan Historical Archaeology Sensitivity Map shows that the Project Area is located within the the Early Town Development (1870s-1880s) and the Cypress Street Barrio (1893-1940s) historic archaeology sensitivity areas (PAR Environmental Services, Inc. 2006). No further work is recommended.

ANALYSIS OF DESIGN GUIDELINES

The Project is subject to comply with the local Historic Preservation Design Standards for Old Towne. Projects found to be in conformance with the Old Towne Design Standards are generally considered to be in conformance with the Secretary of the Interior Standards for Treatment of Historic Properties (SOI Standards). The Project Area is a paved lot and does not contain any structures, therefore, the proposed project does not directly impact contributing structures to the Old Towne Orange Historic District (NRHP or local) or Plaza Historic District (NRHP). However, because the project involves the construction of a new building within the boundaries of the Old Towne Orange Historic District, it constitutes a direct impact to the district. Per SOI Standard regarding Standard for Rehabilitation, "New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired" (U.S. Department of the Interior 2017). Therefore, Well 28 is designed in a way that is compatible with the historic district in terms of materials, features, size, scale and proportion, massing, and color while clearly differentiating itself from the historic buildings of the surrounding historic district.

The Historic Preservation Design Standards for Old Towne identified specific criteria for new construction that address compatibility with the historic district. As stated in the Historic Preservation Design Standard for Old Towne, guidelines for Infill Construction are as follows:

1. The location of new primary and secondary structures on a lot should be consistent with the historic pattern of front and side yard setbacks.

2. New buildings should be similar in mass and scale to surrounding buildings.

3. The height and roof form of a new building should be comparable to surrounding historic buildings.

4. A new primary building should have a main entrance and façade parallel to and facing the street.

5. The progression of public to private spaces from the street should be maintained.

6. New construction should have a similar pattern of windows and doors on elevations visible from the street to those found in surrounding historic buildings.

7. The use of traditional building materials found on historic buildings in the Historic District is encouraged for new construction.

8. The height, mass and scale of new secondary buildings should be minimized as much as possible.

9. Infill construction should adhere to the sections on Standards for Historic Residential Buildings – Setting or Standards for Historic Commercial Buildings – Setting.

The Project complies with the Historic Preservation Design Standards guidelines as outlined below:

1. The location of this building will be on the northeast corner of the Project area and will result in a substantial setback from North Lemon Street and West Maple Avenue. The setback of the Well 28 Building is similar to the adjacent historic Elliot Alumni House at 204 North Olive Street (MR4) in that the building is located near the northeast corner of the lot leaving the western half an open space (currently utilized as a parking lot). Multiple large trees are located in the otherwise unoccupied space at the south and eastern areas of 204 North Olive Street. The setback of the Well 28 Building will be infilled with trees, vegetation, and paved pathways that will form a small park (Figure 15). This small park will occupy approximately three-fourths of

the Project Area and will consist of decorative fencing, benches, decomposed granite paths, a, open turf area, multiple shade trees, planting areas, and the concrete paneled driveway to the building.

The primary public-facing use of the property is an open space/public park. A small park integrated into the street grid reflects the character of existing historic parks within Old Towne, like Veterans Park or Plaza Park. It improves the streetscape by eliminating fenced vacant property from context of historic district and repurposing it with a compatible park use. The well enclosure is an accessory building within the context of the park. Industrial use is concentrated and screened at interior corner of site to avoid visual impacts to historic streetscape. Enclosure setback from north property line will reduce impacts to historic industrial building to the north during construction and operation. As the context immediately surrounding the Project area is of mixed-used with a variety of architectural styles, building types, and setbacks, Well 28 and its associated park is consistent with the historic pattern of the surrounding area.

2. This building will be similar in mass and scale to surrounding buildings. The Well 28 Building will be one-story, with a square footprint and massing. The well enclosure has no roof, however, the enclosure wall (16’ high with parapet) is designed to give the building the appearance of a flat roof with parapet. This building’s massing balances well operations with a compatible building form derived from nearby historic brick buildings, including the Anaconda Wire Company (Chapman Digital Media Arts) located on Cypress Street.

The majority of historic buildings surrounding the Project Area are one story in height, two of which, 214-218 North Olive Street (MR5), have a flat root. The Well 28 Building’s square footprint is comparable to that of the large detached garage located opposite the Project area at 193 North Lemon Street (MR1). The building’s mass will be approximately a quarter of the size of the historic industrial building at 233 North Lemon Street (MR7) in terms of square footage, however, it will be larger than the residential buildings at 193 North Lemon Street and 204 North Olive Street (MR1 and MR4). The height of the well enclosure will be 16’ high, notably shorter than the gabled rooftops of buildings at 233 North Lemon Street (approximately 25-30 feet high) and 204 North Olive Street (approximately 25-30 feet high).

3. This building will have the appearance of flat roof , a style which is reflective of the two historic multi-family residences located at 214-218 North Olive Street (MR5). The enclosure wall’s lack of a sloped roof reduces overall height of the building to below that of adjacent historic buildings. This “flat roof appearance is also consistent with the roof form with other historic industrial/commercial buildings in area.

4. The main entrance and south façade of the proposed building will face Maple Avenue (Figures 15 and 16).

5. The setback of the Well 28 Building at the northeast corner of the lot and the addition of various trees and vegetation will screen the building's daily activities from pedestrian view (Figure 15).

6. According to current building plans, this building will have no windows or window openings. Metal doors on the south elevation (Maple Avenue) will be painted a terra-cotta color to match the brick and are intentionally non-descript. Trellises on west elevation and brick pilasters are intended to create a pattern similar to large ground floor industrial or commercial window openings. While they are not true openings, this balances the needs of well operations with rhythm of openings in historic commercial/industrial buildings in area.

7. The design of the building utilizes simple materials, found within the context of the Santa Fe Depot District in Old Town Orange. Clay brick, running bond application, is used for the veneer on all four elevations of the building. An evaluation of terra-cotta and buff color is in progress. A pre-cast concrete base will occur at the bulkhead. The cornice will be precast concrete to match the bulkhead, and a precast beam will be located above the large sectional door at the south facade. Materials also reflect materials used for the adjacent Old Towne West parking Structure (130 N. Lemon St.) to create an integrated design for City-owned facilities in this context. Materials for both facilities are intended to reflect the use of brick and pre-cast concrete in historic industrial/commercial buildings. In keeping with the well enclosure's industrial use, building will have minimal ornamentation. As specific material choices are developed, the design will avoid recreating specific historic features, but will emphasis elements that are compatible with nearby historic buildings.

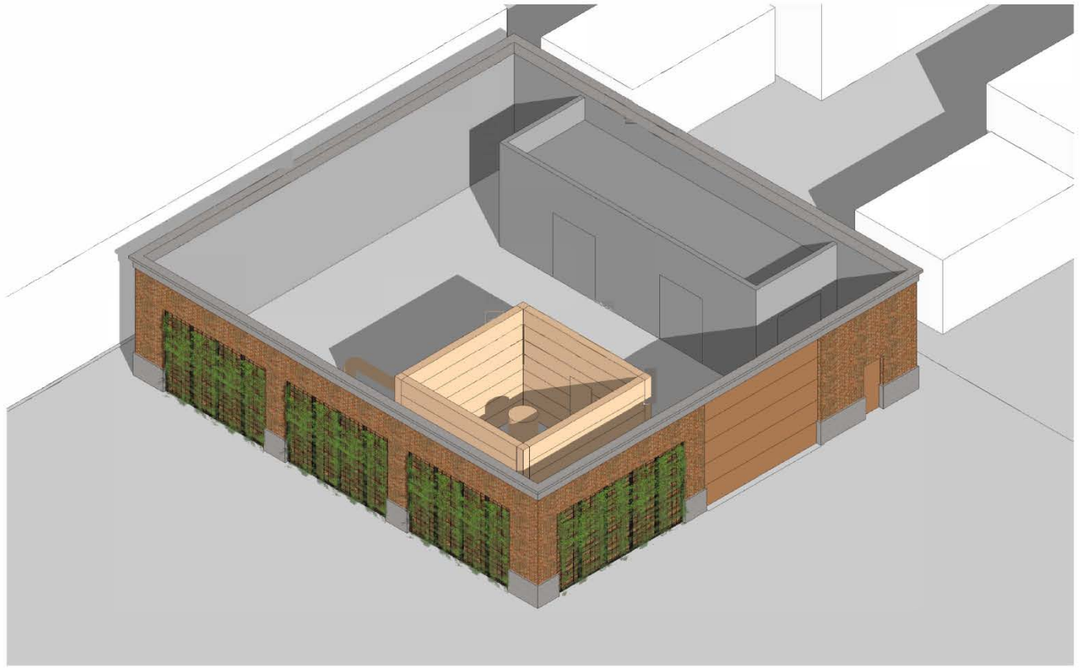
8. This building will be one story, with a square footprint and massing, and will have the appearance of a flat roof. The building is a simple design, with the intention of blending in with the landscape of the park.

9. This is a primarily industrial building and is not intended to be accessible by the public. It does not contain design elements of commercial buildings associated with Old Towne Historic District and is set back significantly from the street. Instead, the proposed park elements within the Project Area are intended to provide a substitute street front (Figure 15).

The Project does not erode or adversely affect an historic resource or district. The project has been designed to adhere to the SOI Standards and City design standards so as not to negatively impact adjacent historic resources and the larger Old Towne Orange Historic District. The scale, massing, and setback of this building will not adversely impact the significance of the historic residential structures located adjacent to the Project area. Conceptual materials of park reflect historic materials of industrial sites in area, including standard concrete paving, metal planters,

and wood and concrete benches. The park design is intended to use compatible materials in contemporary design elements. Fencing is setback from the sidewalk to allow landscaped border at the edge of the Project site, consistent with recommendations for fencing in Historic Preservation Design Standards.

Figure 15. Concept Plan for Well 28



isometric view

scale: nts

lemon st. - elevation

scale: 3/16"=1'-0"

maple ave. - elevation

scale: 3/16"=1'-0"

Figure 16. Well 28 Site Plan; west elevation and south façade

CONCLUSIONS AND RECOMMENDATIONS

PALEONTOLOGY RECOMMENDATIONS

The Project is mapped entirely as middle to late Pleistocene older alluvial fans. The record search revealed no fossil localities from within the Project or immediate vicinity, however localities are known from the same sediments as found within the study area near to the Project.

Middle to late Pleistocene older alluvial fan sediments less than eight feet below the modern surface are assigned a low potential for fossils (PFYC 2) due to the lack of fossils in these deposits. More than eight feet below the modern surface these sediments are assigned a moderate potential for fossils (PFYC 3) due to similar deposits producing fossils at that depth near to the study area.

Drilling is planned to extend to depths of 1,200 feet. While Pleistocene and older potentially fossil bearing deposits will be encountered during these excavations, borings, drilling, pot-holing, pile driving and similar activities have only a low potential to produce fossils meeting scientific relevance criteria (see above). This is because any fossils that are encountered during these activities will not provide information on formation, depth, or context. The only instance in which such fossils will meet the criteria is if the recovered material represents a new species for the region.

If unanticipated fossil discoveries are made, all work must halt within 25 feet until an Orange County certified paleontologist can evaluate the find. Work may resume immediately outside of the 25 foot radius.

ARCHAEOLOGICAL RESOURCES RECOMMENDATIONS

No pedestrian survey was completed as the Project Area is completely hardscaped or landscaped. The CHRIS and SLF searches conducted in support of the Project indicate that no cultural or tribal resources have been previously recorded within the Project Area. These negative findings, along with a review of historic USDA aerial photographs and Sanborn Fire Insurance Company maps, indicate that the potential for subsurface archaeological resource deposits is low. No further archaeological work is recommended for the Project.

In the event of an unanticipated discovery, all work must be suspended within 50 feet of the find until a qualified archaeologist evaluates it. In the unlikely event that human remains are encountered during project development, all work must cease near the find immediately.

In accordance with California Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods. Work may not resume in the vicinity of the find until all requirements of the health and safety code have been met.

HISTORIC BUILT ENVIRONMENT RECOMMENDATIONS

The scale of the Project and its building components are comparable to nearby historic industrial, commercial, and institutional buildings/building components in the Old Towne Orange Historic District and surrounding area. Also, the scale, massing, and setback of the well house building and park will not adversely impact the significance of the historic structures located adjacent to the Project Area. Materials for this facility are intended to reflect the use of brick and pre-cast concrete in nearby historic industrial/commercial buildings. In keeping with the well enclosure's industrial use, building will have minimal ornamentation. As specific material choices are developed, the design will avoid recreating specific historic features, but will emphasis elements that are compatible historic buildings.

Conceptual materials of park reflect historic materials of industrial sites in area, like standard concrete paving, metal planters, and wood and concrete benches. The park design is intended to use compatible materials in contemporary design elements. The integration of the park into the street grid reflects the character of existing historic parks within Old Towne, like Veterans Park or Plaza Park. It improves the streetscape by eliminating fenced vacant property from context of historic district and repurposing it with a compatible park use. The well enclosure is an accessory building within the context of the park. Industrial use is concentrated and screened at interior corner of site to avoid visual impacts to historic streetscape. Enclosure setback from north property line will reduce impacts to historic industrial building to the north during construction and operation. As the context immediately surrounding the Project area is of mixed-used with a variety of architectural styles, building types, and setbacks, Well 28 and its associated park is consistent with the historic pattern of the surrounding area.

Not all buildings within this area will have a clear line of view of the Project Area, also the proposed project will include tall trees and various landscape features which will obscure visual impacts. This Project is found to be in conformance with the Historic Preservation Design Standards for Old Towne which are considered to be in conformance with the SOI Standards.

REFERENCES CITED

ASM Affiliates, Inc.
2015 *Metrolink Parking Structure, Analysis of Potential Impacts on Historic Resources, Orange, Orange County, California*. Prepared for: Tim Gnibus of HDR Engineering, Inc.

Aviña, Rose Hollenbaugh
1976 *Spanish and Mexican Land Grants in California*. Arno Press, New York.

Axelrod, D. I., and F. Govean
1996 An Early Pleistocene Closed-Cone Pine Forest at Costa Mesa, Southern California. *International Journal of Plant Science* 157(3):323–329.

Bean, L. J., and C. R. Smith
1978 Gabrielino. In *Handbook of North American Indians*, Volume 8. *California*, volume edited by Robert F. Heizer, pp. 538-549 (W. T. Sturtevant, general editor). Smithsonian Institution, Washington, D.C.

Bell, Alyssa (Natural History Museum of Los Angeles County)
2020 Paleontological resources for the Well 28 project, City of Orange, Orange County, CA. See Appendix B.

BLM (Bureau of Land Management)
2016 *Potential Fossil Yield Classification* (*PFYC)* System. https://www.blm.gov/policy/im-2016-124, accessed June 2020.

Brigandi, Phil
2011 *A Brief History of Orange California: Plaza City*. Charleston: The History Press.

Cal-IPC
2006 California Invasive Plant Inventory, Cal-IPC Publication 2006-02. Berkeley, CA: The California Invasive Plant Council. https://www.cal-ipc.org/docs/ip/inventory/pdf/Inventory2006.pdf, accessed June 2020.

California Department of Fish and Game
2020 California Listing of Managed Species. https://wildlife.ca.gov/Conservation/Mammals, accessed June 2020.

City of Orange
2015 "Orange General Plan: Cultural Resources & Historic Preservation". Copy available at: https://www.cityoforange.org/DocumentCenter/View/564/General-Plan---Cultural-Resources-and-Historic-Preservation-PDF. Accessed: October 20, 2020.

City of Orange

n.d. "Historic Preservation Design Standards". Adopted by Orange City Council December 12, 2018. Copy available at: https://www.cityoforange.org/DocumentCenter/View/5928/Historic-Preservation-Design-Standards-for-Old-Towne?bidId=. Accessed September 29, 2020.

City of Orange Public Library
n.d. "History of Orange". https://www.cityoforange.org/411/History-of-Orange, accessed September 2, 2020.

Cowan, Robert G.
1977 Ranchos of California: A List of Spanish Concessions, 1775-1882 and Mexican Grants, 1822-1846. Historical Society of Southern California.

Dobyns, Henry F.
1983 *Their Number Become Thinned: Native American Population Dynamics in Eastern North America*. University of Tennessee, Knoxville.

Fogelson, Robert M.
1993 *The Fragmented Metropolis: Los Angeles, 1850-1930*. University of California Press, Berkeley, California.

FrameFinder
1931 "Flight C_1780, Frame C-1." https://mil.library.ucsb.edu/ap_indexes/FrameFinder/.
1953 "Flight C_18785, Frame 1-100." https://mil.library.ucsb.edu/ap_indexes/FrameFinder/.
1965 "Flight PAI_OC_65, Frame 250V-128." https://mil.library.ucsb.edu/ap_indexes/FrameFinder/.

Gust, S., and C. Richards
2012 Paleontological Monitoring Report for the SR-57 northbound widening project, cities of Fullerton or Brea, Orange County, California. 12ORA57 (PM 18.4/20.9), EA 12-0F0324; 29p. On file with Caltrans District 12 or Cogstone, Orange, CA.

Hall, C. A. Jr.
2007 Western Transverse Ranges. In *Introduction to the Geology of Southern California and Its Native Plants* (pp. 233-279). University of California Press, Berkeley.

Intellicast
2020 https://www.wunderground.com/intellicast, accessed June 2020.

Jefferson, G. T.
1991a A Catalogue of late Quaternary Vertebrates from California: Part one, nonmarine lower vertebrate and avian taxa. Natural History Museum of Los Angeles, Technical Report #5.
1991b A Catalogue of Late Quaternary Vertebrates from California-- Part Two, Mammals: Natural History Museum of Los Angeles County Technical Report No. 7.

Kroeber, A. L.
1976 *Handbook of Indians of California*. Reprint of 1925 original edition, Dover Publications, New York.

Luomala, Katherine
1978 Tipai and Ipai. In *California*, edited by Robert F. Heizer, pp. 592–609. Handbook of North American Indians, Vol. 8, William G. Sturtevant, general editor, Smithsonian Institution, Washington, D.C.

Masters, Nathan
2012 The Santa Ana River: How It Shaped Orange County. Published November 29, 2012. https://www.kcet.org/shows/lost-la/the-santa-ana-river-how-it-shaped-orange-county, accessed September 5, 2020.

McCawley, William
1996 *First Angelinos: the Gabrielino Indians of Los Angeles*. Malki Museum Press/Ballena Press, Banning, CA.

McLeod, S. A. (Natural History Museum of Los Angeles County Department of Vertebrate Paleontology)
2015 Vertebrate Paleontology Records Check for paleontological resources for the proposed Jeffery Open Space Trail Project, Cogstone Project # 3142, in the City of Irvine, Orange County, project area. On file at Cogstone, Orange, CA.
2017 Vertebrate Paleontology Records Check for paleontological resources for the proposed State Route 57 Improvement Project from Orangewood Ave to Katella Ave Project, Cogstone Project # 3292, in the Cities of Anaheim or Orange, Orange County, project area. On file at Cogstone, Orange, CA.
2018 Vertebrate Paleontology Records Check for paleontological resources for the proposed City of Irvine General Plan Update, Phase 2, Project, Cogstone Project # 4339, in the City of Irvine, Orange County, project area. On file at Cogstone, Orange, CA.

Morton, D. M., and F. K. Miller
2006 Geology map of the San Bernardino and Santa Ana 30’ x 60’ quadrangles, California; Geology and description of map units, version 1.0. Digital preparation by Cossette, P. M. and K. R. Bovard. USGS Open File Report 2006-1217, scale 1:100,000. https://ngmdb.usgs.gov/Prodesc/proddesc_78686.htm, accessed September 5, 2020.

NETROnline
1946 *Historic Aerials*. https://www.historicaerials.com/viewer#.
1963 *Historic Aerials*. https://www.historicaerials.com/viewer#.
1972 *Historic Aerials*. https://www.historicaerials.com/viewer#.
1980 *Historic Aerials*. https://www.historicaerials.com/viewer#.

Ohles, Wallace V.
1997 *Mission San Miguel Property and Padres*. The Friends of the Adobes, Inc.

Ornduff, R., P. M. Faber, and T. Keeler-Wolf
2003 *Introduction to California Plant Life, Revised Edition.* California Natural History Guides, Volume 69. University of California Press, Berkeley.

PAR Environmental Services, Inc.
2006 *Research Design and Sensitivity Assessment for the City of Orange, Orange County, California*. Prepared for: Chattel Architecture Planning and Preservation. Available at: https://www.cityoforange.org/DocumentCenter/View/588/Appendix-D---Cultural-Resources-PDF. Accessed October 15, 2020.

PBDB
2020 Records Search of the Paleobiology Database. Accessed September 5, 2020.

Rushing, Heather R.
1995 "In Sickness or In Health: European-Native American Contact and Disease." Unpublished manuscript, Directed Individual Study Seminar, Department of Anthropology, Summer II Term, Mississippi State University.

Sanborn Map Company
1909 "Sanborn map of Orange, Orange Co." Copy on File at Los Angeles Public Library. https://digitalsanbornmaps-proquest-com.ezproxy.lapl.org, accessed September 2, 2020.
1922 "Sanborn map of Orange, Orange Co." Copy on File at Los Angeles Public Library. https://digitalsanbornmaps-proquest-com.ezproxy.lapl.org, accessed September 2, 2020.
1922-1950 "Sanborn map of Orange, Orange Co." Copy on File at Los Angeles Public Library. https://digitalsanbornmaps-proquest-com.ezproxy.lapl.org, accessed September 2, 2020.

Scott, E., and K. Springer
2003 CEQA and Fossil Preservation in Southern California. *The Environmental Monitor,* Winter: 4-10, 17.

Scott, E., K. Springer, and J. C. Sagebiel
2004 Vertebrate Paleontology in the Mojave Desert: the Continuing Importance of 'Follow Through' in Preserving Paleontologic Resources. In *The Human Journey and Ancient Life in California's Deserts: Proceedings from the 2001 Millennium Conference*, edited by M. W. Allen and J. Reed, pp. 65-70. Maturango Museum Publication No. 15, Ridgecrest, California.

Scott, K., C. Richards, and S. Gust
2007 *Paleontological and Archaeological Assessment and Monitoring Report for Central Park West, Irvine, California*. On file with Cogstone, Orange, California.

Scott, K., C. Richards, and S. Gust
2014 *Paleontological Monitoring Compliance Report for the Metro Purple Line Extension Shaft Project Los Angeles, Los Angeles County, California*. On file with Cogstone, Orange, California.

Stock, C., and J. Harris, J.
1992 Rancho La Brea: a Record of Pleistocene Life in California. *Natural History Museum of Los Angeles County Science Series* 37.

Sutton, M.
2010 The Del Rey Tradition and its Place in the Prehistory of Southern California. *Pacific Coast Archaeological Society Quarterly* 44(2):1-54.

Sutton, M., and J. Gardner
2010 Reconceptualizing the Encinitas Tradition of Southern California. *Pacific Coast Archaeological Society Quarterly* 42(4):1-64.

Taylor, Lisa
2018 "Orange Old Towne Historic District and Plaza". https://www.preserveorangecounty.org/places/2018/10/4/orange-plaza-historic-district, accessed September 2, 2020.

UCMP
2020 Records search of the University of California, Berkeley paleontology database. Accessed online September 2020.

U.S. Department of the Interior
2017 *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Building*s. Revised by Anne E. Grimmer. Available online at: https://www.nps.gov/tps/standards/treatment-guidelines-2017.pdf. Accessed October 14, 2020.

USGS Historical Topographic Map Explorer
1896 *Anaheim*. U.S. Geological Survey [map], 1:62,500. Topographic Quadrangle Map, Reston, VA, 1896.
1932 *Orange*. U.S. Geological Survey, [map], 1:31,680. Topographic Quadrangle Map, Reston, VA, 1932.

Walker, Phillip L. and Travis Hudson
1989 *Chumash Healing: Changing Health and Medical Practices in an American Indian Society*. Malki Museum Press, California.

Weather Channel, The
2019 Santa Ana, CA. Available online at: https://weather.com/weather/monthly/l/3dd4b21351dd08c886e30957f79188f0a9bd2bdd90a551bc2ae97ca59da4e172/, accessed October 17, 2019.

Weather Underground
2019 John Wayne Airport Station. Available online at:

https://www.wunderground.com/weather/us/ca/santa-ana/92701, accessed October 17, 2019.

APPENDIX A. QUALIFICATIONS

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

JOHN GUST
Principal Investigator for Archaeology

EDUCATION

2016 Ph.D., Department of Anthropology, University of California, Riverside (UCR)
2011 M.A., Department of Anthropology, UCR
2007 M.A., Applied Geography, University of Colorado, Colorado Springs (UCCS)
2002 B.A., Department of Anthropology, minor in Geography/Environmental Studies, UCCS

SUMMARY QUALIFICATIONS

Dr. Gust is a Registered Professional Archaeologist (RPA) with over 8 years of experience in field archaeology. He meets the qualifications required by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and his field expertise includes pedestrian surveys, excavation monitoring, resource recording, and historic artifact analysis. Dr. Gust has managed cultural assessments for over 20 cellular tower projects and multiple assessments for construction of commercial and residential structures. He has also managed cultural resources monitoring projects for both public and private sector clients. Dr. Gust is a member of the Society for California Archaeology, Society for American Archaeology, and the American Anthropological Association.

SELECTED EXPERIENCE

Dogwood Road Project, City of El Centro, Imperial County, CA. Cogstone conducted a cultural resources assessment to determine the potential effects to cultural resources resulting from the construction of United States Department of Agriculture (USDA) Part 70-B RD Funding assisted housing on a 2.2-acre parcel. Cogstone conducted a record search, pedestrian survey, and determined that no further cultural resources work was necessary. The assessment provided environmental documentation as required by Section 106 of the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA). The City of El Centro acted as the lead agency. Sub to Partner Science & Engineering, Inc. Principal Investigator for Archaeology. 2019-2020

Euclid Fueling Station Project, City of Santa Ana, Orange County, CA. Cogstone conducted a cultural resources assessment to determine the potential impacts to cultural and paleontological resources during the construction of a convenience store, associated parking, gas station, and underground fuel storage tank. The assessment was conducted to meet the requirements of CEQA with the City of Santa Ana acting as lead agency. Cogstone conducted record searches, a Sacred Lands File Search, an intensive pedestrian survey, gave mitigation recommendations, and produced a report. Sub to Sagecrest Planning + Environmental. Principal Investigator for Archaeology. 2019

Jackson St HUD 58 EA Project, City of Riverside, Riverside County, CA. Cogstone conducted a cultural resources assessment to determine the potential effects to cultural resources resulting from the construction of United States Department of Housing and Urban Development (HUD) assisted housing on a 3.58-acre parcel. This assessment provided environmental documentation as required by Section 106 of the National Historic Preservation Act (NHPA). The City of Riverside was the lead agency. Cogstone conducted a records search, a Sacred Lands File Search, a pedestrian survey, and produced a report. Sub to Partner Science & Engineering. Principal Investigator for Archaeology and Report Author. 2019

Heathercliff Malibu Development Project, City of Malibu, Los Angeles County, CA. Cogstone conducted a study to determine the potential impacts to cultural resources resulting from the construction of a single residence bounded by Heathercliff Road to the southeast and the Pacific Coast Highway to the northwest. This study included all information required by the City of Malibu Archaeology Guidelines. Cogstone conducted a record search, Sacred Lands File Search, pedestrian survey, and produced an assessment. Sub to ACS Construction. Principal Investigator for Archaeology and Report Author. 2019

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

KIM SCOTT
Principal Investigator for Paleontology

EDUCATION

2013 M.S., Biology with a paleontology emphasis, California State University, San Bernardino
2000 B.S., Geology with paleontology emphasis, University of California, Los Angeles

SUMMARY QUALIFICATIONS

Ms. Scott has more than 20 years of experience in California paleontology. She is a sedimentary geologist and qualified paleontologist with extensive experience. She is a skilled professional who is well-versed in the compliance procedures of CEQA, NEPA, and the Paleontological Resources Preservation Act (PRPA). Ms. Scott regularly prepares reports for paleontological assessments, mitigation and monitoring plans and measures, and monitoring reports for a variety of federal, state, and local agencies throughout California. In addition, she has prepared paleontological resources reports for CEQA/ EIR compliance documents for Project-level and program-level Specific Plans, General Plans, Master Plans, and Zoning Amendments for mixed-use, residential, commercial and industrial developments. Ms. Scott serves as company safety officer.

SELECTED PROJECTS

Purple Line Extension (Westside Subway), Metro/FTA, Los Angeles, CA. Paleontological Field and Lab Director, Report Co-author. The Project involves extension of the subway from Wilshire/Western to the VA Facility in Westwood for 9 miles. Cogstone prepared the supplemental Archaeology and Architectural History Reports and the cultural and paleontological sections of the FEIS/FEIR. Cogstone subsequently prepared the cultural and paleontological mitigation and monitoring plans for the entire Project. Currently providing monitoring and all other cultural and paleontological services for Section One of the Project. 2011-present

Barren Ridge Transmission Line, Los Angeles Department of Water and Power (LADWP), Saugus to Mojave, Los Angeles and Kern Counties, CA. Principal Paleontologist. Over 75 miles of LADWP electrical lines were installed Angeles National Forest, BLM and private lands. Supervised paleontological monitoring and lab work and prepared a Paleontological Monitoring Report to CEQA, BLM, and PRPA standards. Sub to Aspen Environmental Group. 2015-present

City of La Verne General Plan, Los Angeles County, CA. Principal Paleontologist. The Project was for an update to the City's General Plan, a 5,446-acre area. Provided a Paleontological and Cultural Assessment Report for the City. Sub to De Novo Planning Group. 2018

Interstate 405 Paleontological Resources Mitigation Plan, Los Angeles and Orange Counties, CA. Principal Paleontologist. Improvements to a 6-miles of Interstate 405 (I-405) between State Route 73 and Interstate 605. Provided a Paleontological Mitigation and Monitoring Plan. Sub to OC 405 Partners. 2018

Little Tujunga Canyon Bridge, Angeles National Forest, Los Angeles County, CA. Principal Paleontologist. The Project was to replace the Little Tujunga Canyon Road Bridge along Little Tujunga Canyon Road. Provided a Paleontological Assessment Report. Sub to Michael Baker International. 2017

Park Place Extension Project, City of El Segundo, Los Angeles County, CA. Principal Paleontologist. The City proposes to extend Park Place from Allied Way to Nash Street with a railroad grade separation to implement a critical Project improving traffic and circulation in the Project Area. Provided a combined Paleontological Identification and Evaluation Report (PIR/PER). Sub to Michael Baker International. 2017

Coto de Caza EIR Subdivision, Coto de Caza, Orange County, CA. The project proposes the subdivision of an existing large estate for development of 28 new residential lots on approximately 50-57 acres of land. Proposed residential lots will be a minimum of one acre in size. Prepared a Paleontological Assessment Report. Contracted to Bill Lyon. Co-Principal Paleontologist/Report Co-author. 2015

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

SHANNON LOPEZ
Architectural Historian

EDUCATION

2018 M.A., History (with an emphasis in architecture), California State University, Fullerton
2012 B.A., History, Minor in Asian-Pacific Studies, California State University, Dominguez Hills

SUMMARY QUALIFICATIONS

Ms. Lopez is a qualified historian and she meets the *Secretary of the Interior's Standards and Guidelines for Architectural History.* Ms. Lopez is experienced in architectural history research and surveys along with photo documentation and recording of built environment resources for local and federal projects. She has extensive knowledge with Native American consultation, consultation with city and county historical societies, and analysis of primary and secondary sources. Additionally, she is an approved Reader at the Huntington Library by the Los Angeles Office of Historic Resources.

SELECTED EXPERIENCE

Irvine General Plan Update, Phase II, City of Irvine, Orange County, CA. Cogstone conducted a study to review and summarize available information regarding known paleontological, archaeological, and historical resources within the boundaries of the City of Irvine to support the Phase II update of the City's General Plan. A general analysis of impacts of future projects within the City of Irvine that may adversely affect paleontological, archaeological, or historic resources was provided along with mitigation recommendations. Sub to Placeworks. Architectural Historian. 2018-2019

2525 N. Main, City of Santa Ana, Orange County, CA. The project proposed demolition of existing building and the construction of a five-story multi-family residential apartment complex. Cogstone conducted a cultural and historic resources records search, a field visit to known historic homes and Santiago Park, evaluation of the historic resources, and produced a built environment report. Conducted research, evaluation and co-author. Architectural Historian. 2018

Purple Line Extension (Westside Subway) Crack Propagation Reassessment, City of Beverly Hills, Los Angeles County, CA. On behalf of METRO, Cogstone was approved to reassess the exterior façade of the old Porsche building located on Wilshire Boulevard. The purpose of this reassessment was to document and compare the cracks of the current building during construction of the underground subway with those recorded in a pre-construction survey. Architectural Monitor and Author. 2018

Desert Sage Wellness Center, City of Hemet, Riverside County, CA. Cogstone completed a National Register of Historic Places eligibility re-evaluation for a proposed historical ranching line camp on behalf of the California Area Office Indian Health Service. This study was performed pursuant to Section 110 of the National Historic Preservation Act. Services included an archaeological and architectural pedestrian survey, records search, update to DPR forms, public outreach, additional research, and reported updates to SHPO. Architectural Historian. 2018

3800 W. 6th Street Mixed-Used Development, Koreatown, Los Angeles County, CA. The project proposed to construct a 21-story mixed-use development with two levels of underground parking. Cogstone conducted a paleontological and cultural resources assessment. Tasks included records search, built environment survey, resource recording and technical report. Conducted built environment survey, recoded building, and conducted view shed impact analysis. Architectural Historian. 2018

Accelerated Charter Elementary School, Los Angeles Unified School District, City of Los Angeles, Los Angeles County, CA. The project involved the construction of a new facility on a 2.3-acre site in South Central Los Angeles. Cogstone conducted paleontological and cultural resources monitoring. Five new archaeological sites were defined and updated one building record. Updated building DPR. Sub to Gafon. Assistant Architectural Historian. 2017

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

LOGAN FREEBERG
GIS Supervisor

EDUCATION

2018 Geographic Information Systems (GIS) Certificate, California State University, Fullerton
2003 B.A., Anthropology, University of California, Santa Barbara

SUMMARY QUALIFICATIONS

Mr. Freeberg has over 15 years of professional experience in cultural resource management, and has extensive experience in field surveying, data recovery, monitoring, and excavation of archaeological and paleontological resources associated with land development projects in the private and public sectors. He has conducted all phases of archaeological work, including fieldwork, laboratory analysis, research, and reporting. Mr. Freeberg also has a strong grounding in conventional field and laboratory methods and is skilled in the use of ArcGIS.

SELECTED PROJECTS

Laguna Creek Trail and Bruceville Road Project, Caltrans District 3, City of Elk Grove, Sacramento County, CA. The City of Elk Grove, in cooperation with Caltrans, proposed multiple trail extensions and gap closures in effort to provide connecting links that would ultimately provide trail users with access to a vast system of trails, with connections to parks, schools, community centers, commercial retail and office areas, and transit facilities. Cogstone conducted pedestrian surveys, records search, and prepared an Archaeological Survey Report (ASR) and a Historic Property Survey Report (HPSR). Sub to Helix Environmental. GIS Technician. 2019

Roosevelt Park Regional Stormwater Capture Project, unincorporated area of Florence-Firestone, Los Angeles County, CA. Conducted cultural and paleontological monitoring during all ground disturbing activities in native sediments. This project includes the construction of three diversion structures and pipelines. Sub to Environmental Advisors. GIS Technician. 2019

Goddard School Project, City of Chino Hills, San Bernardino County, CA. Cogstone produced a paleontological resources mitigation and monitoring program for a proposed 59,129 square foot development would consist of a one-story, 10,587-square foot pre-school/daycare with nine classrooms, fenced play yards and play structures, and a parking lot with 40 stalls. Cogstone put forward mitigation measures that included monitoring for all ground-breaking activities, paleontological resource awareness training for construction personnel, and the completion of a final mitigation report. GIS Technician. 2019

Euclid Fueling Station Project, City of Santa Ana, Orange County, CA. This study was conducted to determine the potential impacts to archaeological and paleontological resources during construction activities for a proposed 7-eleven gas station and convenience store. The proposed project entailed the construction of the convenience store, associated parking, gas station, and underground fuel storage tank. Planned vertical impacts include approximately three to four feet of fill removal over at least some of the site, a trench approximately eight feet deep for utilities, and approximately 12 feet for the new fuel storage tanks. Sub to Sagecrest Environmental. GIS Technician. 2019

Fresno West Area Specific Plan, City of Fresno, Fresno County, CA. The objective of this study was to review and summarize available information regarding known paleontological, archaeological, and historical resources within the boundaries of the City of Fresno's West Area Specific Plan.. The purpose of the West Area Specific Plan is to implement and refine the City's vision for the West Area in order to guide future growth and development in the most northwest area of the City. Cogstone's services included record searches, mapping, and extensive background research. Sub to De Novo Planning. GIS Technician. 2019

Laguna Beach Fire Department Fire Breaks, City of Laguna Beach, Orange County, CA. This project included the areas adjacent to homes and businesses requiring vegetation removals to create new fire breaks. conducted a pedestrian survey of the natural landscape and slopes located along the eastern and western sides of the SR-133 highway, south of El Toro Road to Pacific Coast Highway. Archaeological Monitor. 2019

APPENDIX B. PALEONTOLOGICAL RECORD SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

August 4, 2020

Logan Freeberg
1518 W. Taft Ave.
Orange, CA 92865
(714) 974-8303 fax
lfreeberg@cogstone.com

re: Paleontological resources for the Well 28 project, City of Orange, Orange County, CA

Dear Logan:

I have conducted a thorough search of our paleontology collection records for the locality for proposed development at Well 28 project, City of Orange, Orange County, CA project area as outlined on the portion of the Orange USGS topographic quadrangle map that you sent to me via e-mail on 30 July 2020. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The entire proposed project area has surficial deposits consisting of older Quaternary fan deposits. Outcrops of the Puente and Fernando formations are present to the northeast of the site and may be encountered at depth in the project area. Each of these units may well contain significant fossil remains. The following table shows the closest known localities in the collections of the Natural History Museum of Los Angeles County to the project area.

Locality Number	Location	Formation	Taxa	Depth
LACM VP 1033	La Veta Ave & Esplanade St	Puente Formation	Fish (*Lutianus; Tunita; Eclipes; Syngnathus; Scomberesox)*	unknown
LACM VP 4943	Glassell Ave & Fletcher St	Older alluvium	Horse (*Equus*)	10 feet bgs
LACM IP 7692	Ridge 3/4-mile due south of Santiago-Aliso Road summit	Puente Formation	Invertebrates	surface
LACM IP 15677	0.3 miles NNE of Olive Hills Reservoir	Puente Formation	Invertebrates	surface

LACM VP 6287	Limestone Canyon, south of Black Star Canyon Road meets Santiago Canyon Road	Puente Formation	Fish (*Symphurus*)	top of cut in canyon
LACM IP 16158	1 1/2 miles west of Olive Post Office	Fernando Formation	Invertebrates	3198-3200 foot depth (Well #1)
LACM VP 3408	West of the intersection of Ford Road and Jamboree Road	Fernando Formation	Marine mammal	unknown
LACM VP 3980	east side of MacArthur Boulevard, south of Bonita Canyon Road	Fernando Formation	Baleen whale (*Mysticeti*)	surface

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

Excavations in the older Quaternary fan deposits and Puente and Fernando formations that potentially underlie the Quaternary deposits may well encounter significant fossils. Any substantial excavations into previously undisturbed sediments in the proposed project area, therefore, should be closely monitored to quickly and professionally collect any specimens without impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the records of the Natural History Museum of Los Angeles County. It is not intended to take the place of a thorough paleontological assessment of the proposed project area covering other institutional records, a literature review, or any potential on-site survey.

Sincerely,

Alyssa Bell

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

APPENDIX C. PALEONTOLOGICAL SENSITIVITY RANKING CRITERIA

PFYC Description Summary (BLM 2016)	PFYC Rank
Very Low. The occurrence of significant fossils is non-existent or extremely rare. Includes igneous (excluding air-fall and reworked volcanic ash units), metamorphic, or Precambrian rocks. Assessment or mitigation of paleontological resources is usually unnecessary except in very rare or isolated circumstances that result in the unanticipated presence of fossils.	1
Low. Sedimentary geologic units that are unlikely to contain vertebrate or scientifically significant nonvertebrate fossils. Includes rock units less than 10,000 years old and sediments with significant physical and chemical changes (e.g., diagenetic alteration) which decrease the potential for fossil preservation. Assessment or mitigation of paleontological resources is not likely to be necessary.	2
Moderate. Units are known to contain vertebrate or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered and/or of low abundance. Common invertebrate or plant fossils may be found and opportunities may exist for casual collecting. Paleontological mitigation strategies will be based on the nature of the proposed activity. Management considerations cover a broad range of options that may include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Surface-disturbing activities may require assessment by a qualified paleontologist to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources.	3
High. Geologic units containing a high occurrence of significant fossils. Fossils must be abundant per locality. Vertebrates or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Mitigation plans must consider the nature of the proposed disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access that could result in looting. Detailed field assessment is normally required and on-site monitoring or spot-checking may be necessary during land disturbing activities. In some cases avoidance of known paleontological resources may be necessary.	4
Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate or scientifically significant invertebrate or plant fossils. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities. Paleontological mitigation may be necessary before or during surface disturbing activities. The area should be assessed prior to land tenure adjustments. Pre-work surveys are usually needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.	5
Unknown. An assignment of "Unknown" may indicate the unit or area is poorly studied and field studies are needed to verify the presence or absence of paleontological resources. The unit may exhibit features or preservational conditions that suggest significant fossils could be present, but little information about the actual unit or area is known. Literature searches or consultation with professional colleagues may allow an unknown unit to be provisionally assigned to another Class, but the geological unit should be formally assigned to a Class after adequate survey and research is performed to make an informed determination.	U
Water or Ice. Typically used only for areas which have been covered thus preventing an examination of the underlying geology.	W, I

APPENDIX D. HISTORIC CONSULTATION

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

August 12, 2020

Orange County Archives
211 W. Santa Ana Blvd. Rm. 101
Santa Ana, CA 92701

RE: Information Request for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

To Whom It May Concern:

Cogstone Resource Management, Inc. (Cogstone) is conducting a Cultural Resources Assessment for the Well 28 Project (Project) located at 235 West Maple Avenue in the City of Orange, Orange County, California. The proposed Project consists of constructing a new well (Well 28) and pumping station that is expected to produce approximately 3,000 gallons of water per minute. The construction would involve the removal of existing surface asphalt and drilling the well to a depth of 1,200 feet.

The Project area is within the National Register of Historic Places (NRHP) listed Old Towne Historic District which has a period of significance of 1888-1940. The Project area is currently vacant with no structures and is completely paved with asphalt. Based on a review of historic aerial photographs and topographic maps, the Project area and vicinity was previously developed as early as 1896 (topographic map) with residences appearing by 1935 (topographic map). By 1995 the Project area was razed, and by 2003 the Project area appears to be paved with an industrial structure at the northern boundary.

We are contacting you because we would like to invite members of the Orange County Archives to provide input regarding the redevelopment of the Project area. We appreciate your providing any background information regarding previous property owners associated with the history of the Project area. Please contact me at slopez@cogstone.com or at (714) 974-8300. Thank you for your attention to this matter.

Sincerely,

Shannon Lopez

Shannon Lopez, M.A.
Architectural Historian
(714) 974-8300 x.108
slopez@cogstone.com

1518 West Taft Avenue
Orange, CA 92865
Office (714) 974-8300

Branch Offices
San Diego – Riverside – Morro Bay – Sacramento – Arizona

cogstone.com
Toll free (888) 333-3212

Federal Certifications EDWOSB , SDB
State Certifications DBE, WBE, SBE, UDBE

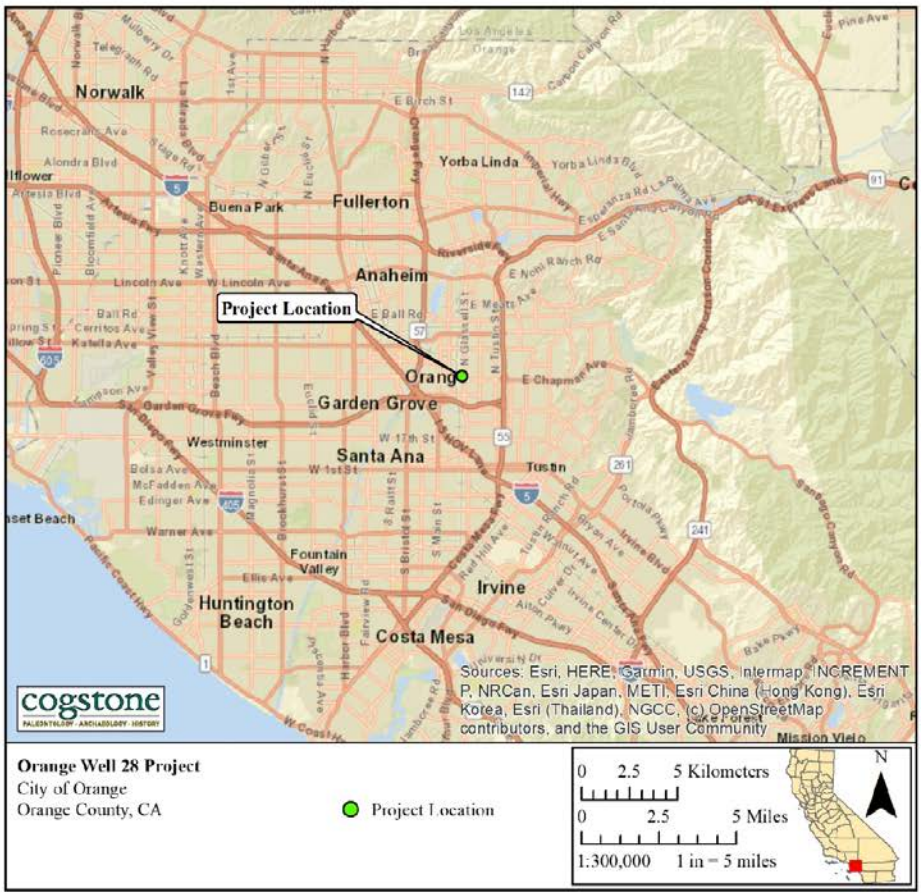


Figure 1. Project vicinity map

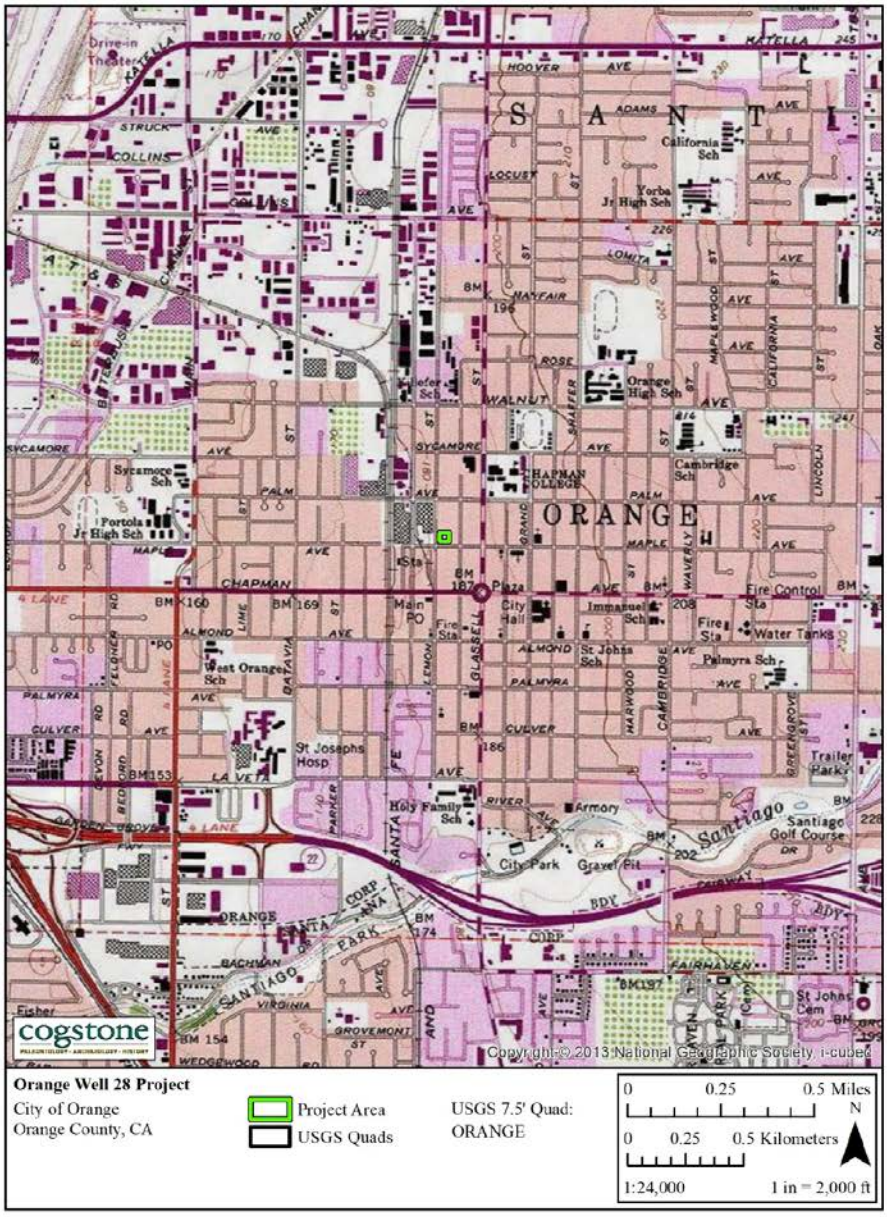


Figure 2. Project location map

cogstone.com

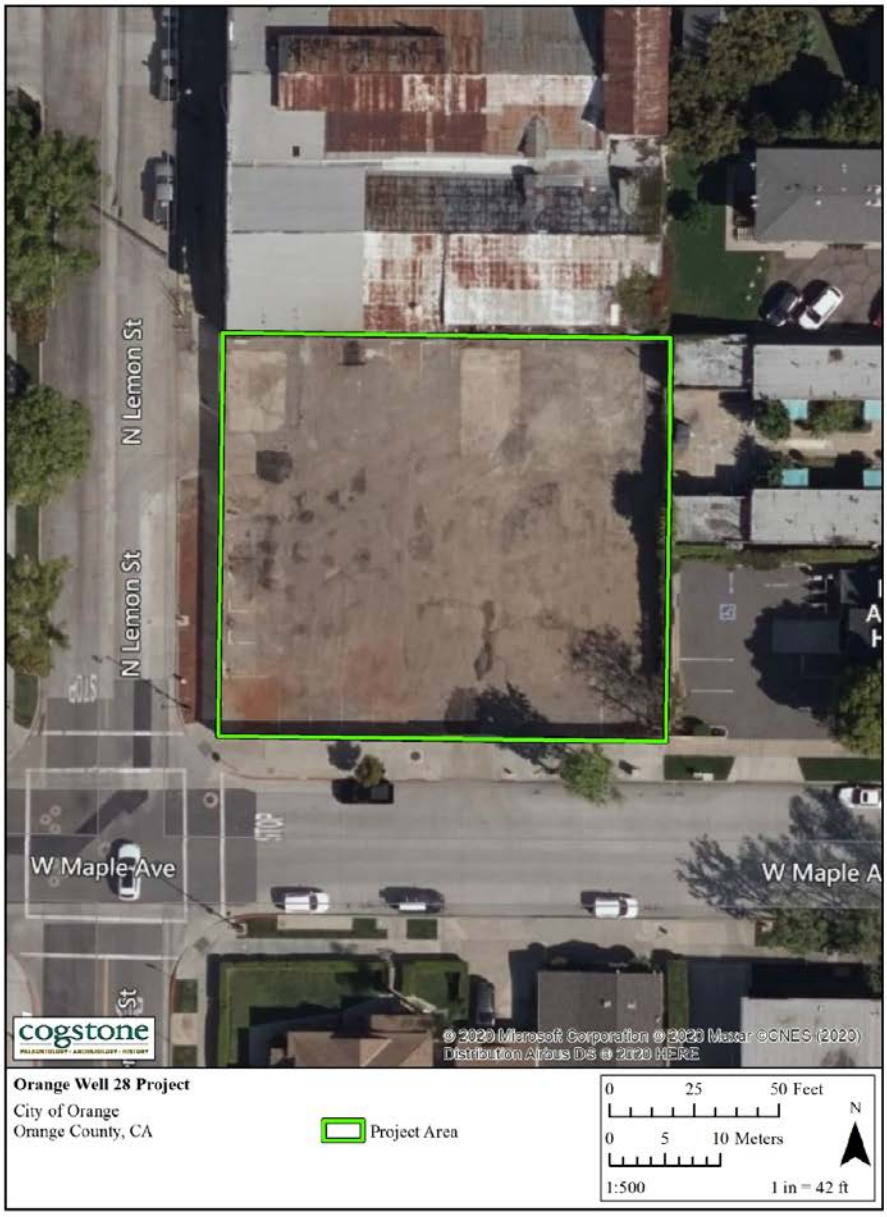


Figure 3. Project aerial map

RE: Request for Information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

From: Archives CR <archives@rec.ocgov.com>
To: Shannon Lopez <slopez@cogstone.com>
Date: 9/3/2020 11:20 AM

Do you have street names for the map?

From: Shannon Lopez <slopez@cogstone.com>
Sent: Thursday, September 03, 2020 11:17 AM
To: Archives CR <archives@rec.ocgov.com>
Subject: Re: Request for Information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

Good Morning Susan,

We are looking for any records regarding previous ownership. Based off of a 1950 Sanborn map I have (see attached) it looks like there were some homes on the property between 1909 and the 1960s/1970s. The homes have long since been demolished but I was hoping to find any names associated with these homes.

Thank you very much for your help and I look forward to hearing from you.

All the best,
Shannon

Shannon Lopez

Architectural Historian

Cogstone Resource Management

1518 W Taft Ave Orange, Ca 92865

714-974-8300 office |

slopez@cogstone.com www.cogstone.com

Field Offices in San Diego, Riverside, Morro Bay, Sacramento, Arizona

From: Archives CR <archives@rec.ocgov.com>
To: Shannon Lopez <slopez@cogstone.com>
Sent: 9/3/2020 10:43 AM
Subject: RE: Request for Information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

Hello Shannon,

The Orange County Archives has not received any requests for information on Well 28 in the City of Orange. I don't know what you're looking but after a cursory search, I couldn't find anything in our collection.

Have you contacted the City of Orange or the Orange County Flood Control Department?

Kind regards,

Susan Berumen
County Archivist
Orange County Archives
Old Orange County Courthouse
211 W. Santa Ana Blvd., Rm. 108
Santa Ana, CA 92701
Tel: 714-834-2536
Email: susan.berumen@rec.ocgov.com

From: Shannon Lopez <slopez@cogstone.com>
Sent: Wednesday, September 02, 2020 2:10 PM
To: Archives CR <archives@rec.ocgov.com>
Subject: Re: Request for Information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

Hello,

My name is Shannon Lopez and I wanted to reach out to see if you have received our request for information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California?

Thank you very much for your time and we look forward to hearing from you.

All the best,
Shannon

Shannon Lopez

Architectural Historian

Cogstone Resource Management

1518 W Taft Ave Orange, Ca 92865

714-974-8300 office |

slopez@cogstone.com www.cogstone.com

Field Offices in San Diego, Riverside, Morro Bay, Sacramento, Arizona

From: Shannon Lopez <slopez@cogstone.com>
To: <archives@rec.ocgov.com>
Sent: 8/12/2020 7:31 AM
Subject: Request for Information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

Hello,

My name is Shannon Lopez. Please see the attached for more information regarding our request for information for the Cultural Resources Assessment for the Well 28 Project, City of Orange, Orange County, California.

Thank you very much for your time and assistance.

We look forward to hearing from you.

All the best,
Shannon Lopez

Shannon Lopez

Architectural Historian

Cogstone Resource Management

1518 W Taft Ave Orange, Ca 92865

714-974-8300 office |

slopez@cogstone.com www.cogstone.com

Field Offices in San Diego, Riverside, Morro Bay, Sacramento, Arizona

Well 28 Project

From: Oftelie, Steve <steve.oftelie@rec.ocgov.com>
To: slopez@cogstone.com <slopez@cogstone.com>
Date: 9/9/2020 12:56 PM

Shannon,
I believe the property you asked about is lots 19 and 20 of the Davis Tract lot B. These show the ownership and transactions regarding the property the property.
If you need or want the actual deeds those would be one dollar per page. I can start pulling them if you want them.
If you have any other questions do not hesitate to ask.
Thank you,
Steve

Steve Oftelie
Office Specialist
Orange County Archives
(714) 834-5367

Hugh Nguyen
Orange County Clerk-Recorder

Attachments:

- davis tract 1.pdf
- davis tract 2.pdf
- davis tract 3.pdf
- davis tract 4.pdf
- davis tract 5.pdf
- davis tract 6.pdf
- davis tract 7.pdf

Orange Digital Library

From: Adam Feliz <feliz.adam@icloud.com>
To: slopez@cogstone.com
Date: 9/9/2020 10:07 AM

Here is the link to the digital collection: http://history.cityoforange.org/knowvation/app/consolidatedSearch/#search/v=list,c=1,q=queryType%3D%5B16%5D,sm=s,l=library4_lib%2Clibrary1_lib%2Clibrary3_lib%2Clibrary5_lib%2Clibrary2_lib

You might want to visit the library as well, they can sometimes look up more details.

Adam Feliz

APPENDIX E. NATIVE AMERICAN SCOPING