McCarty Estates

Archaeological Database Information

Author(s): Brian F. Smith

14010 Poway Road, Suite A
Poway, California 92064
(858) 484-0915

Report Date: April 3, 2017; Revised May 25, 2017

Report Title: Phase I Archaeological Survey for the McCarty Estates Project

Prepared for: McCarty Family Trust
c/o Kent McCarty
3929 Arroyo Sorrento Road
San Diego, California 92130

Submitted to: City of San Diego
Development Services Department
1222 First Avenue, MS 501
San Diego, California 92101

Submitted by: Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064
(858) 484-0915

Lead Agency Identifier: APN 307-060-60

USGS Quadrangle: Del Mar, California (7.5 minute)

Study Area: 2.4 acres

Key Words: USGS Del Mar Quadrangle (7.5 minute); 2.4 acres; archaeological survey; no cultural resources; monitoring recommended.
I. PROJECT DESCRIPTION AND LOCATION

On behalf of the project applicant for the McCarty Estates Project, Brian F. Smith and Associates, Inc. (BFSA) conducted a cultural resources study of the 2.4-acre project located directly east of the intersection of Arroyo Sorrento Road and Tierra Del Sur in the Sorrento Estates area south of Carmel Valley in the northern area of the city of San Diego, California. The project is located in the northwest quarter of Section 30 in Township 14 South, Range 3 West of the Del Mar, California USGS Quadrangle (Figures 1 through 3 [Appendix C]). The property is characterized as the western edge of the Del Mar Mesa, overlooking the confluence of Carmel Valley and Los Peñasquitos Lagoon. This study was conducted in accordance with City of San Diego Historical Resources Guidelines (HRG) for discretionary land development projects. The project scope of work consisted of a records search conducted at the South Coastal Information Center (SCIC) at San Diego State University (SDSU) and an archaeological survey of the entire property.

II. SETTING

Natural Environment

The project area lies in the coastal mesa region located in the Peninsular Range Geomorphic Province of southern California. The project is situated on a relatively flat mesa (the western edge of the Del Mar Mesa) consisting of sediments derived from the Lindavista Formation. The project area primarily includes sage scrub habitat (Beauchamp 1986), and is bordered to the north by low-lying foothills. The central and northern San Diego County coastline is characterized by large bays and lagoons where the major rivers empty into the sea and mesas terminate at the ocean in the form of bluffs (Beauchamp 1986). Evidence from nearby Los Peñasquitos Lagoon indicates that beginning at approximately 7,500 years before the present (YBP), rapid sedimentation occurred within Los Peñasquitos Lagoon, which closed the lagoon off to the coast and significantly altered the lagoon environment (Smith and Moriarty 1985). As sea levels rose during the middle Holocene, the lagoon filled with sediment, creating a deep-channeled inlet by 6,000 YBP, which provided a thriving shellfish population, thus attracting La Jolla Complex groups to the lagoon. Radiocarbon dates from nearby sites, such as Site W-20, indicate increased cultural activity during the period from 7,000 to 4,000 YBP, which coincides with the rise of shellfish populations in the lagoon. By 3,000 YBP, the rising sea level and the continuing siltation of the lagoon created a sand bar across the lagoon’s mouth that restricted water flow and created a salinity imbalance, resulting in the rapid decline of shellfish habitat. This sedimentation process resulted in the decline of mollusk populations, which greatly reduced human activity in the area.

Native coastal sage scrub vegetation was likely common to the project area during prehistoric times (Beauchamp 1986; Randolph 1955). The coastal sage scrub and chamise chaparral plant communities comprised major food resources for prehistoric inhabitants (Bean and
Saibel 1972), as did the rocky foreshore and sand beach marine communities of the Cove region (Smith and Pierson 1996). Studies indicate that an estuarine/lagoonal habitat existed near today's La Jolla Beach and Tennis Club until the early 1900s (Moriarty 1981), and may have been a primary source of fresh water in prehistoric times.

The coastal habitats of the area did provide a rich environment capable of supporting a moderately dense prehistoric population of hunter/gatherers from the Early Archaic Period to more recent Kumeyaay populations (Smith and Moriarty 1983, 1985; Smith and Pierson 1996). Such population densities likely required considerable foraging along the shoreline and in the surrounding drainages and mesas to sustain seasonal occupations. This would have included the area currently under study as well as the adjacent seasonal mesas and shoreline.

Cultural Environment

The area of western San Diego County has a very rich and extensive record of both prehistoric and historic activity. The cultures that have been identified in the general vicinity of the project area include the Paleo Indian Period manifestation of the San Dieguito Complex, the Early Archaic Period represented by the La Jolla Complex, and the Late Prehistoric Period represented by the Kumeyaay Indians. Following the Hispanic intrusion into the region, the Presidio of San Diego, the Mission San Diego de Alcalá, and the Pueblo of San Diego were established, and the project area was possibly used in conjunction with the agricultural activities of the mission until the period of mission secularization. The pastoral activities of the Mexican Period (1822 to 1846) likely included use of the areas near the project for grazing purposes. Farming also blossomed and gradually replaced cattle ranching in many of the coastal areas. A brief discussion of the cultural elements present in the project area are provided in the following subsections.

Prehistory

In general, the prehistoric record of San Diego County has been documented in many reports and studies, several of which represent the earliest scientific works concerning the recognition and interpretation of the archaeological manifestations present in this region. Geographer Malcolm Rogers initiated the recordation of sites in the area during the 1920s and 1930s, using his field notes to construct the first cultural sequences based upon artifact assemblages and stratigraphy (Rogers 1966). Subsequent scholars expanded the information gathered by Rogers and offered more academic interpretations of the prehistoric record. Moriarty (1966, 1967, 1969), Warren (1964, 1966), and True (1958, 1966) all produced seminal works that critically defined the various prehistoric cultural phenomena present in this region (Moratto 1984). Additional studies have sought to further refine these earlier works (Cardenas 1986, 1987; Moratto 1984; Moriarty 1966, 1967; True 1970, 1980, 1986; True and Beemer 1982; True and Pankey 1985; Waugh 1986). In sharp contrast, the current trend in San Diego prehistory has also resulted in a revisionist group that rejects the established cultural historical sequence for San Diego. This
revisionist group (Warren et al. 1998) has replaced the concepts of La Jolla, San Dieguito, and all of their other manifestations with an extensive, all-encompassing, chronologically undifferentiated cultural unit that ranges from the initial occupation of southern California to around A.D. 1000 (Bull 1983, 1987; Ezell 1983, 1987; Gallegos 1987; Kyle et al. 1990; Stropes 2007). For the present study, the prehistory of the region is divided into four major Periods: Early Man, Paleo Indian, Early Archaic, and Late Prehistoric.

**Early Man Period (Prior to 8500 B.C.)**

At the present time, there has been no concrete archaeological evidence to support the occupation of San Diego County prior to 10,500 YBP. Some archaeologists, such as Carter (1957, 1980) and Minshall (1976), have been proponents of Native American occupation of the region as early 100,000 YBP. However, their evidence for such claims is sparse at best and has lost much support over the years as more precise dating techniques have become available for skeletal remains thought to represent early man in San Diego. In addition, many of the “artifacts” initially identified as products of early man in the region have since been rejected as natural products of geologic activity. Some of the local proposed Early Man Period sites include Texas Street, Buchanan Canyon, and Brown, as well as Mission Valley (San Diego River Valley), Del Mar, and La Jolla (Bada et al. 1974; Carter 1957, 1980; Minshall 1976, 1989; Moriarty and Minshall 1972; Reeves 1985; Reeves et al. 1986).

**Paleo Indian Period (8500 to 6000 B.C.)**

For the region, it is generally accepted that the earliest identifiable culture in the archaeological record is represented by the material remains of the Paleo Indian Period San Dieguito Complex. The San Dieguito Complex was thought to represent the remains of a group of people who occupied sites in this region between 10,500 and 8,000 YBP, and who were related to or contemporaneous with groups in the Great Basin. As of yet, no absolute dates have been forthcoming to support the great age attributed to this cultural phenomenon. The artifacts recovered from San Dieguito sites duplicate the typology attributed to the Western Pluvial Lakes Tradition (Moratto 1984; Davis et al. 1969). These artifacts generally include scrapers, choppers, large bifaces, and large projectile points, with few milling tools. Tools recovered from sites of the San Dieguito Complex, along with the general pattern of their site locations, led early researchers to believe that the San Dieguito was a wandering, hunting, and gathering society (Moriarty 1969; Rogers 1966).

The San Dieguito Complex is the least understood of the cultures that have inhabited the San Diego County region. This is due to an overall lack of stratigraphic information and/or datable materials recovered from sites identified as San Dieguito. Currently, controversy exists among researchers that centers upon the relationship of the San Dieguito and the subsequent cultural manifestation in the area, the La Jolla Complex. Firm evidence has not yet been discovered to indicate whether the San Dieguito “evolved” into the La Jolla Complex, the La Jolla Complex
moved into the area and assimilated the San Dieguito people, or the San Dieguito retreated from the area due to environmental or cultural pressures.

**Early Archaic Period (6000 B.C. to A.D. 0)**

Based upon evidence suggesting climatic shifts and archaeologically observable changes in subsistence strategies, a new cultural pattern is believed to have emerged in the San Diego region around 6000 B.C. This Archaic Period pattern is believed by archaeologists to have evolved from or replaced the San Dieguito culture, resulting in a pattern referred to as the Encinitas Tradition. In San Diego, the Encinitas Tradition is thought to be represented by the coastal La Jolla Complex and its inland manifestation, the Pauma Complex. The La Jolla Complex is best recognized for its pattern of shell middens and grinding tools closely associated with marine resources and flexed burials (Shumway et al. 1961; Smith and Moriarty 1985). Increasing numbers of inland sites have been identified as dating to the Archaic Period and have focused on terrestrial subsistence (Cardenas 1986; Smith 1996; Raven-Jennings and Smith 1999).

The tool typology of the La Jolla Complex displays a wide range of sophistication in the lithic manufacturing techniques used to create the tools found at their sites. Scrapers, the dominant flaked tool type, were created by either splitting cobbles or by finely flaking quarried material. Evidence suggests that after about 8,200 YBP, milling tools began to appear in La Jolla sites. Inland sites of the Encinitas Tradition (Pauma Complex) exhibit a reduced quantity of marine-related food refuse and contain large quantities of milling tools and food bone. The lithic tool assemblage shifts slightly to encompass the procurement and processing of terrestrial resources, suggesting seasonal migration from the coast to the inland valleys (Smith 1996). At the present time, the transition from the Archaic Period to the Late Prehistoric Period is not well understood. Many questions remain concerning cultural transformation between periods, possibilities of ethnic replacement, and/or a possible hiatus from the western portion of the county.

**Late Prehistoric Period (A.D. 0 to 1769)**

The transition into the Late Prehistoric Period in the project area is primarily represented by a marked change in archaeological patterning known as the Yuman Tradition. This tradition is primarily represented by the Cuyamaca Complex, which is believed to have derived from the mountains of southern San Diego County. The people of the Cuyamaca Complex are considered as ancestral to the ethnohistoric Kumeyaay (Diegueño). Although several archaeologists consider the local Native American tribes to be latecomers, the traditional stories and histories passed down through oral tradition by the local Native American groups speak both presently and ethnographically to tribal presence in the region as being since the time of creation.

The Kumeyaay Native Americans were a seasonal hunting and gathering people, with cultural elements that were very distinct from the La Jolla Complex. Noted variations in material culture included cremation, the use of bows and arrows, and adaptation to the use of the acorn as a main food staple (Moratto 1984). Along the coast, the Kumeyaay made use of marine resources
by fishing and collecting shellfish for food. Seasonally available plant food resources (including acorns) and game were sources of nourishment for the Kumeyaay. By far the most important food resource for these people was the acorn. The acorn represented a storable surplus, which in turn allowed for seasonal sedentism and its attendant expansion of social phenomena.

**History**

**Exploration Period (1530 to 1769)**

The Historic Period around San Diego Bay began with the landing of Juan Rodríguez Cabrillo and his men in 1542 (Chapman 1921). Sixty years after the Cabrillo expeditions (1602 to 1603), Sebastian Vizcaíno led an extensive and thorough expedition and exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Vizcaíno had the most lasting effect on the nomenclature of the coast. Many of the names Vizcaíno gave to various places throughout the region have survived to the present time, whereas nearly every one of Cabrillo's has faded from use. For example, Cabrillo gave the name “San Miguel” to the first port at which he stopped in what is now the United States; 60 years later, Vizcaíno changed the port name to “San Diego” (Rolle 1969).

**Spanish Colonial Period (1769 to 1821)**

The Spanish occupation of the claimed territory of Alta California took place during the reign of King Carlos III of Spain (Engelhardt 1920). Jose de Gálvez, a representative of the king in Mexico, conceived of the plan to colonize Alta California and thereby secure the area for the Spanish Crown (Rolle 1969). The effort involved both a military and religious contingent, where the overall intent of establishing forts and missions was to gain control of the land and the native inhabitants through conversion. Actual colonization of the San Diego area began on July 16, 1769 when the first Spanish exploring party, commanded by Gaspar de Portolá (with Father Junipero Serra in charge of religious conversion of the native populations), arrived by the overland route to San Diego to secure California for the Spanish Crown (Palau 1926). The natural attraction of the harbor at San Diego and the establishment of a military presence in the area solidified the importance of San Diego to the Spanish colonization of the region and the growth of the civilian population. Missions were constructed from San Diego to the area as far north as San Francisco. The mission locations were based upon a number of important territorial, military, and religious considerations. Grants of land were made to persons who applied, but many tracts reverted back to the government for lack of use. As an extension of territorial control by the Spanish Empire, each mission was placed so as to command as much territory and as large a population as possible. While primary access to California during the Spanish Period was by sea, the route of El Camino Real served as the land route for transportation, commercial, and military activities within the colony. This route was considered to be the most direct path between the missions (Rolle 1969; Caughey 1970). As increasing numbers of Spanish and Mexican peoples, as well as the later
Americans during the Gold Rush, settled in the area, the Indian populations diminished as they were displaced or decimated by disease (Carrico and Taylor 1983).

**Mexican Period (1821 to 1846)**

On September 16, 1810, the priest Father Miguel Hidalgo y Costilla started a revolt against Spanish rule. He and his untrained Native American followers fought against the Spanish, but his revolt was unsuccessful and Father Hidalgo was executed. After this setback, Father Jose Morales led the revolutionaries, but also failed and was executed. These two men are still symbols of Mexican liberty and patriotism today. After the Mexican-born Spanish and the Catholic Church joined the revolution, Spain was finally defeated in 1821. Mexican Independence Day is celebrated on September 16 of each year, signifying the anniversary of the start of Father Hidalgo’s revolt. The revolution had repercussions in the northern territories, and by 1834, all of the mission lands had been removed from the control of the Franciscan Order under the Acts of Secularization. Without proper maintenance, the missions quickly began to disintegrate, and after 1836, missionaries ceased to make regular visits inland to minister to the needs of the Native Americans (Engelhardt 1920). Large tracts of land continued to be granted to persons who applied for them or who had gained favor with the Mexican government. Grants of land were also made to settle government debts and the Mexican government was called upon to reaffirm some older Spanish land grants shortly before the Mexican-American War of 1846 (Moyer 1969).

**Anglo-American Period (1846 to Present)**

California was invaded by United States troops during the Mexican-American War of 1846 to 1848. The acquisition of strategic Pacific ports and California land was one of the principal objectives of the war (Price 1967). At the time, the inhabitants of California were practically defenseless, and they quickly surrendered to the United States Navy in July of 1847 (Bancroft 1885).

The cattle ranchers of the “counties” of southern California had prospered during the cattle boom of the early 1850s. They were able to “reap windfall profit... pay taxes and lawyer’s bills... and generally live according to custom” (Pitt 1966). However, cattle ranching soon declined, contributing to the expansion of agriculture. With the passage of the “No Fence Act,” San Diego’s economy shifted from raising cattle to farming (Robinson 1948). The act allowed for the expansion of unfenced farms, which was crucial in an area where fencing material was practically unavailable. Five years after its passage, most of the arable lands in San Diego County had been patented as either ranchos or homesteads, and growing grain crops replaced raising cattle in many of the county’s inland valleys (Blick 1976; Elliott 1965).

By 1870, farmers had learned to dry farm and were coping with some of the peculiarities of San Diego County’s climate (San Diego Union, February 6, 1868; Van Dyke 1886). Between 1869 and 1871, the amount of cultivated acreage in the county rose from less than 5,000 to more than 20,000 acres (San Diego Union, January 2, 1872). Of course, droughts continued to hinder
the development of agriculture (Crouch 1915; San Diego Union, November 10, 1870; Shipek 1977). Large-scale farming in San Diego County was limited by a lack of water and the small size of arable valleys. The small urban population and poor roads also restricted commercial crop growing. Meanwhile, cattle continued to be grazed in parts of inland San Diego County. In the Otay Mesa area, for example, the “No Fence Act” had little effect on cattle farmers because ranches were spaced far apart and natural ridges kept the cattle out of nearby growing crops (Gordinier 1966).

During the first two decades of the twentieth century, the population of San Diego County continued to grow. The population of the inland county declined during the 1890s, but between 1900 and 1910, it rose by about 70 percent. The pioneering efforts were over, the railroads had broken the relative isolation of southern California, and life in San Diego County became similar to other communities throughout the west. After World War I, the history of San Diego County was primarily determined by the growth of San Diego Bay. In 1919, the United States Navy decided to make the bay the home base for the Pacific Fleet (Pourade 1967), and during the 1920s, the aircraft industry followed suit (Heiges 1976). The establishment of these industries led to the growth of the county as a whole; however, most of the civilian population growth occurred in the north county coastal areas, where the population almost tripled between 1920 and 1930. During this time period, the history of inland San Diego County was subsidiary to that of the city of San Diego, which had become a Navy center and industrial city (Heiges 1976). In inland San Diego County, agriculture became specialized and recreational areas were established in the mountain and desert areas. Just before World War II, urbanization began to spread to the inland parts of the county.

III. AREA OF POTENTIAL EFFECT (APE)

The APE includes the entire 2.4-acre property (Figure 4 [Appendix C]). The property is generally developed by existing uses associated with a residence and several rural sheds, horse corrals, landscaping, and roads. The majority of the vegetation on the property is non-native, but some areas of consists of coastal sage scrub exist on steeper slopes that have not been disturbed.

IV. STUDY METHODS

An archaeological records search was conducted for the project at the SCIC at SDSU on February 14, 2017 (Appendix D). The results identified 162 previous cultural resource studies conducted within a one-mile radius of the project, seven of which (Bull 1976; Smith 1992; Gallegos 1992; Gallegos and Strudwick 1992; Hix 1995; City of San Diego 1997; Gilmer and Berryman 2000) included all or portions of the APE. However, none of these reports identified any cultural resources within the current project. The records search also indicates that no cultural
resources have been previously recorded within the current APE; however, 70 cultural resources and two historic addresses have been recorded within one mile of the project APE.

The cultural resources survey was completed in accordance with the guideline protocols listed in the City of San Diego HRG. The project was surveyed using transects spaced at five- to 10-meter intervals, although the density of vegetation did force the pattern of transects to vary as necessary to allow field archaeologists to negotiate around dense stands of vegetation. Principal Investigator Brian F. Smith directed the cultural resources survey for the project and conducted the pedestrian survey with assistance from Senior Field Archaeologist Clarence Hoff. The technical report was prepared by Brian F. Smith. Kris Reinicke created the report graphics and Courtney Accardy conducted technical editing and report production. Qualifications of key personnel are provided in Appendix B.

V. RESULTS OF THE STUDY

Background Research

The Los Peñasquitos and Torrey Pines areas surrounding the project have yielded substantial cultural remains that document prehistoric occupation. For example, less than a mile to the northwest, sites such as SDI-4629 (W-20) represent multi-component occupation (Early Archaic La Jolla Complex and Late Prehistoric Kumeyaay) beginning approximately 5,000 YBP. During the Historic Period, new Native American encampments developed as the native population was displaced by European settlements (Carrico 1986). Eventually, the area of Carmel Valley supported the development of small farms and residences in the early part of the twentieth century. Directly south of the project area, multiple lithic scatter and hearth features have been recorded across multiple sites throughout the Del Mar Mesa area.

Field Reconnaissance

BFSA archaeologists performed a pedestrian survey of the project on March 15, 2017 (Plate 1). As required by City of San Diego guidelines, Native American monitor Nick Ruiz of Red Tail Monitoring & Research, Inc. accompanied BFSA during the archaeological survey. The survey was limited by the constraints of existing structures, horse corrals, greenhouses, non-native vegetation, shacks and storage sheds, roads, trails, and landscaping. In general, most of the property has been disturbed and little or no native vegetation remains except on the steeper slopes north of the existing residence. Non-native vegetation that covers most of the property includes non-native grass and weeds, eucalyptus trees, and palms. Visibility of the ground surface varied from within the property depending on the amount of clearing and the density of vegetation. Various footpaths and roads provided periodic areas of clear soil throughout the property. BFSA staff carefully inspected any exposed ground surfaces (eroded slopes, disturbed ground, and rodent burrows) to search for evidence of cultural resources. The survey did not result in the discovery of any artifacts or prehistoric sites; however, a small area of graded and eroded surfaces at the
south side of the property did contain a scatter of marine shell that may have been associated with one of the many prehistoric sites surrounding the property. Because the shell was scattered on an erosional surface directly on top of geological formational soil and was associated with fill dirt that may have been relocated to this portion of the property, it was clear that the shell was not in situ and that it has been erosional or physically transported to this area with fill soil. This scatter of approximately 40 small fragments of shell was not identified as a prehistoric resource because the shell is not in situ and no other evidence of a prehistoric site was observed. No archaeological investigations are recommended as part of the environmental review of the development project.

Plate 1: Overview of the McCarty Estates project, facing north.

VI. RECOMMENDATIONS

No cultural resources were identified during the archaeological survey conducted for the McCarty Estates Project, nor did the records search indicate the existence of any recorded sites on the property. However, the dense and extensive ground cover, as well as the previous grading within the property, restricted ground visibility that affected the accuracy of the investigation. Given the density of the ground cover that may have masked evidence of cultural resources on the property, as well as the density of cultural resources recorded in the immediate area of this property, the
potential exists that cultural resources may exist on the property. A review of the proposed development suggests that grading will include a building pad on the north side of the property. Because of the pattern of prehistoric sites in the general vicinity of the project, and due to the possibility for buried or otherwise masked prehistoric deposits, an archaeological monitoring program is recommended. Archaeological and Native American monitoring of all grading and excavation activities attendant to the new building pad is recommended. The archaeological monitor should have the authority to halt or divert grading or excavation activity in the area of any discovery until such discovery can be characterized and its significance assessed.

VII. SOURCES CONSULTED

<table>
<thead>
<tr>
<th>Source</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Register of Historic Places</td>
<td>Month and Year: February 2017</td>
</tr>
<tr>
<td>California Register of Historical Resources</td>
<td>Month and Year: February 2017</td>
</tr>
<tr>
<td>City of San Diego Historical Resources Register</td>
<td>Month and Year: February 2017</td>
</tr>
<tr>
<td>Archaeological/Historical Site Records:</td>
<td>Month and Year: February 2017</td>
</tr>
<tr>
<td>South Coastal Information Center</td>
<td></td>
</tr>
<tr>
<td>Other Sources Consulted: NAHC Sacred Lands File Search (Appendix E)</td>
<td></td>
</tr>
<tr>
<td>Bibliography (Appendix A)</td>
<td></td>
</tr>
</tbody>
</table>

VIII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria as defined in Section 15064.5 and City of San Diego HRG.

Brian F. Smith, M.A.
Principal Investigator

May 25, 2017
IX. APPENDICES

Appendix A: Bibliography
Appendix B: Personnel Qualifications
Appendix C: Project Figures
Appendix D: Archaeological Records Search Results
Appendix E: NAHC Sacred Lands File Search Results
APPENDIX A

Bibliography
BIBLIOGRAPHY

Bada, Jeffrey L., Roy A. Schroeder, and George F. Carter

Bancroft, Hubert Howe
1885 *History of California* (Vol. II); 1801-1824. The History Company, San Francisco, California.

Bean, Lowell John and Katherine Siva Saubel

Beauchamp, R. Mitchel
1986 *A Flora of San Diego County, California*. Sweetwater River Press, National City, California.

Blick, James D.

Brian F. Smith and Associates
Various Dates Research Library Holdings including Sanborn Maps, City Directories, Published Regional Histories, and Geologic and Paleontological References.

Bull, Charles S.


Cardenas, D. Sean
Carrico, Richard L.

Carrico, Richard L. and Clifford V.F. Taylor

Carter, George F.
1957 *Pleistocene Man at San Diego*. The Johns Hopkins Press, Baltimore, Maryland.

1980 *Earlier Than You Think: A Personal View of Man in America*. Texas A&M University Press, College Station, Texas.

Caughey, John W.

Chapman, Charles E.

City of San Diego

Crouch, Herbert

Davis, Emma Lou, Clark W. Brott, and David L. Weide

Elliott, Wallace W.

Engelhardt, Zephyrin
Ezell, Paul H.


Gallegos, Dennis R.


Gallegos, Dennis R. and Ivan Strudwick

Gilmer, Jo Anne and Judy A. Berryman
2000 Cultural Resource Survey for the Bosque Del Mar Property, City of San Diego. RECON. Unpublished report on file at the South Coastal Information Center, San Diego State University, San Diego, California.

Gordinier, Jerry G.

Heiges, Harvey

Hix, Ann B.
Kyle, Carolyn E., Adella B. Schroth, and Dennis R. Gallegos
1990 Early Period Occupation at the Kuebler Ranch Site SDI-8,654 Otay Mesa, San Diego County, California. Prepared for County of San Diego Department of Public Works by ERCE Environmental and Energy Services Co., San Diego.

Minshall, Herbert L.


Moratto, Michael J.

Moriarty, James R., III


Moriarty, James R., III and Herbert L. Minshall

Moyer, Cecil C.

Palou, Fray Francisco

Pitt, Leonard
Pourade, Richard F.

Price, Glenn W.
1967 *Origins of the War with Mexico: The Polk-Stockton Intrigue.* University of Texas Press, Austin.

Randolph, Howard Stelle Fitz
1955 *La Jolla Year by Year.* Library Association of La Jolla, California.

Raven-Jennings, Shelly and Brian F. Smith
1999 Final Report for Site SDI-8330/W-240 ‘Scraper Hill,’ Escondido, California. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Reeves, Brian O.K.

Reeves, Brian O.K., John M.D. Pohl, and Jason W. Smith.

Robinson, William Wilcox

Rogers, Malcolm J.

Rolle, Andrew F.

Shipek, Florence

Shumway, George, Carl L. Hubbs, and James R. Moriarty III
Smith, Brian F.

1996 The Results of a Cultural Resource Study at the 4S Ranch. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Smith, Brian F. and James R. Moriarty, III

1985 The Archaeological Excavations at Site W-20, Sierra Del Mar. Unpublished report on file at the South Coastal Information Center at San Diego State University, San Diego, California.

Smith, Brian F. and Larry J. Pierson

Stropes, Tracy A.

True, Delbert L.


True, Delbert L. and Eleanor Beemer

True, Delbert L. and Rosemary Pankey
1985 Radiocarbon Dates for the Pauma Complex Component at the Pankey Site, Northern San Diego County, California. *Journal of California and Great Basin Anthropology* 7:240-244.

Van Dyke, Theodore S.

Warren, Claude N.


Warren, Claude N., Gretchen Siegler, and Frank Dittner

Waugh, Mary Georgie

**Newspapers:**
San Diego Union – February 6, 1868
San Diego Union – November 10, 1870
San Diego Union – January 2, 1872
APPENDIX B

Personnel Qualifications
Brian F. Smith, MA
Owner, Principal Investigator

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California 1982
Bachelor of Arts, History, and Anthropology, University of San Diego, California 1975

Professional Memberships

Society for California Archaeology

Experience

Principal Investigator
Brian F. Smith and Associates, Inc. 1977–Present
Poway, California

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. Over the past 32 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Mr. Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Corps of Engineers, the Bureau of Land Management, the Bureau of Reclamation, the Department of Defense, and the Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts that have added significantly to the body of knowledge concerning the prehistoric life ways of cultures once present in the Southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.


Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven-block area of the “East Village” area of San Diego, where occupation spanned a period from the 1870s to the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark Project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade (2000-2007).

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, containing primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the city of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the city of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs documenting this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the city and county of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the city. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the city showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City’s Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City’s historical and archaeological guidelines for use by the Planning Department of the City.

The Mid-Bayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the city. The study included the analysis of some potentially historic features and numerous prehistoric sites.
Cultural Resources Survey and Test of Sites Within the Proposed Development of the Audie Murphy Ranch, Riverside County, California: Project manager/director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic— included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural Resources Evaluation of Sites Within the Proposed Development of the Otay Ranch Village Project, San Diego County, California: Project manager/director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic— included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural Resources Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project manager/director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project— project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee West GPA, Riverside County, California: Project manager/director of the investigation of nine sites, both prehistoric and historic— included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of An Archaic Cultural Resource for the Eastcote III Woods Project for the City of Chula Vista, California: Project archaeologist/ director— included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural Resources Survey and Test of Sites Within the Proposed French Valley Specific Plan/EIR, Riverside County, California: Project manager/director of the investigation of two prehistoric and three historic sites— included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Lawson Valley Project, San Diego County, California: Project manager/director of the investigation of 28 prehistoric and two historic sites— included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.


Enhanced Cultural Resource Survey and Evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel— included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.
Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee Ranch, Riverside County, California: Project manager/director of the investigation of one prehistoric and five historic sites—including project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage Mitigation of a Portion of the San Diego Presidio Identified During Water Pipe Construction for the City of San Diego, California: Project archaeologist/director—including direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—including project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project, Pacific Beach, California: Project manager/director of the investigation of a single-dwelling parcel—including project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—including project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage Mitigation of a Portion of Site SDM-W-95 (CA-SD1-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project archaeologist/director—including direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and Testing of Two Prehistoric Cultural Resources for the Airway Truck Parking Project, Otay Mesa, California: Project archaeologist/director—including direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural Resources Phase I and II Investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Westview High School Project for the City of San Diego, California: Project archaeologist/director—including direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project archaeologist/director—including direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of
Monitoring of Grading for the Herschel Place Project, La Jolla, California: Project archaeologist/monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and Testing of a Historic Resource for the Osterkamp Development Project, Valley Center, California: Project archaeologist/director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Testing of a Prehistoric Cultural Resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project manager/director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project manager/director—included direction of field crews; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July 1999.

Cultural Resources Phase I, II, and III Investigations for the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II Investigations for the Scripps Poway Parkway East Project, Poway, California: Project archaeologist/project director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.


Reports/Papers

Author, coauthor, or contributor to over 2,500 cultural resources management publications, a selection of which are presented below.

2015  An Archaeological/Historical Study for the Safari Highlands Ranch Project, City of Escondido, County of San Diego.

2015  A Phase I and II Cultural Resources Assessment for the Decker Parcels II Project, Planning Case No. 36962, Riverside County, California.

2015  A Phase I and II Cultural Resources Assessment for the Decker Parcels I Project, Planning Case No. 36950, Riverside County, California.


2015  Phase I Cultural Resource Survey for the Woodward Street Senior Housing Project, City of San Marcos, California (APN 218-120-31).


2015  A Phase I and II Cultural Resource Report for the Lake Ranch Project, TR 36730, Riverside County, California.

2015  A Phase II Cultural Resource Assessment for the Munro Valley Solar Project, Inyo County, California.


2014  National Historic Preservation Act Section 106 Compliance for the Proposed Saddleback Estates Project, Riverside County, California.

2014  A Phase II Cultural Resource Evaluation Report for RIV-8137 at the Toscano Project, TR 36593, Riverside County, California.

2014  Cultural Resources Study for the Estates at Del Mar Project, City of Del Mar, San Diego, California (TTM 14-001).

2014  Cultural Resources Study for the Aliso Canyon Major Subdivision Project, Rancho Santa Fe, San Diego County, California.

2014  Cultural Resources Due Diligence Assessment of the Ocean Colony Project, City of Encinitas.

2014  A Phase I and Phase II Cultural Resource Assessment for the Citrus Heights II Project, TTM 36475, Riverside County, California.

2013  A Phase I Cultural Resource Assessment for the Modular Logistics Center, Moreno Valley, Riverside County, California.
2013 A Phase I Cultural Resources Survey of the Ivey Ranch Project, Thousand Palms, Riverside County, California.
2013 Cultural Resources Report for the Emerald Acres Project, Riverside County, California.
2013 A Cultural Resources Records Search and Review for the Pala Del Norte Conservation Bank Project, San Diego County, California.
2013 An Updated Phase I Cultural Resources Assessment for Tentative Tract Maps 36484 and 36485, Audie Murphy Ranch, City of Menifee, County of Riverside.
2013 El Centro Town Center Industrial Development Project (EDA Grant No. 07-01-06386); Result of Cultural Resource Monitoring.
2013 Cultural Resources Survey Report for the Renda Residence Project, 9521 La Jolla Farms Road, La Jolla, California.
2013 A Phase I Cultural Resource Study for the Ballpark Village Project, San Diego, California.
2013 Archaeological Monitoring and Mitigation Program, San Clemente Senior Housing Project, 2350 South El Camino Real, City of San Clemente, Orange County, California (CUP No. 06-065; APN-060-032-04).
2012 Mitigation Monitoring Report for the Los Peñasquitos Recycled Water Pipeline.
2012 Cultural Resources Report for Menifee Heights (Tract 32277).
2012 A Phase I Cultural Resource Study for the Altman Residence at 9696 La Jolla Farms Road, La Jolla, California 92037.
2012 A Phase I Cultural Resource Study for the Payan Property Project, San Diego, California.
2012 Phase I Archaeological Survey of the Rieger Residence, 13707 Durango Drive, Del Mar, California 92014, APN 300-369-49.
2011 Mitigation Monitoring Report for the 1887 Viking Way Project, La Jolla, California.
2011 Results of Archaeological Monitoring at the 10th Avenue Parking Lot Project, City of San Diego, California (APNs 534-194-02 and 03).
2011 Archaeological Survey of the Pelberg Residence for a Bulletin 560 Permit Application; 8335 Camino Del Oro; La Jolla, California 92037 APN 346-162-01-00.
2011 A Cultural Resources Survey Update and Evaluation for the Robertson Ranch West Project and an Evaluation of National Register Eligibility of Archaeological sites for Sites for Section 106 Review (NHPA).
2011 Mitigation Monitoring Report for the 43rd and Logan Project.
2011 Mitigation Monitoring Report for the Sewer Group 682 M Project, City of San Diego Project #174116.

2011 A Phase I Cultural Resource Study for the Nooren Residence Project, 8001 Calle de la Plata, La Jolla, California, Project No. 226965.

2011 A Phase I Cultural Resource Study for the Keating Residence Project, 9633 La Jolla Farms Road, La Jolla, California 92037.


2010 Pottery Canyon Site Archaeological Evaluation Project, City of San Diego, California, Contract No. H105126.

2010 Archaeological Resource Report Form: Mitigation Monitoring of the Racetrack View Drive Project, San Diego, California; Project No. 163216.

2010 A Historical Evaluation of Structures on the Butterfield Trails Property.

2010 Historic Archaeological Significance Evaluation of 1761 Haydn Drive, Encinitas, California (APN 260-276-07-00).

2010 Results of Archaeological Monitoring of the Heller/Nguyen Project, TPM 06-01, Poway, California.


2010 An Archaeological Study for the 1912 Spindrift Drive Project

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological Constraints Study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an Archaeological Review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.


2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3, 115-180-049-1, 115-180-042-4, 115-180-047-9) in the City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.
2005  Results of Archaeological Monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6).

2005  Results of Archaeological Monitoring at the Baltazar Draper Avenue Project (Project No. 15857; APN: 351-040-09).

2004  TM 5325 ER #03-14-043 Cultural Resources.


2003  Evaluation of Archaeological Resources Within the Spring Canyon Biological Mitigation Area, Otay Mesa, San Diego County, California. Brian F. Smith and Associates, San Diego, California.


2002  An Archaeological/Historical Study for the Audie Murphy Ranch Project (et al.). Brian F. Smith and Associates, San Diego, California.


2001  A Cultural Resources Survey and Site Evaluations at the Stewart Subdivision Project, Moreno Valley, County of San Diego. Brian F. Smith and Associates, San Diego, California.


1999 Results of an Archaeological Evaluation for the Anthony's Pizza Acquisition Project in Ocean Beach, City of San Diego (with L. Pierson and B. Smith). Brian F. Smith and Associates, San Diego, California.


1995 Results of a Cultural Resources Study for the 4S Ranch. Brian F. Smith and Associates, San Diego, California.


1994 Results of the Cultural Resources Mitigation Programs at Sites SDI-11,044/H and SDI-12,038 at the Salt Creek Ranch Project. Brian F. Smith and Associates, San Diego, California.


APPENDIX C

Project Figures
Figure 1
General Location Map
The McCarty Estates Project
DeLorme (1:250,000 series)
Figure 2
Project Location Map
The McCarty Estates Project
USGS Del Mar Quadrangle (7.5-minute series)
Figure 3

Project Location Map

The McCarty Estates Project

Shown on The City of San Diego 1" to 800' Scale Engineering Map
Figure 4
Project Development Map
The McCarty Estates Project
APPENDIX D

Archaeological Records Search Results
CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM
RECORDS SEARCH

Company: Brian F. Smith & Associates Inc
Company Representative: Kris Reinicke
Date Processed: 2/14/2017
Project Identification: The McCarty Estates Project

Search Radius: 1 mile

Historical Resources:
Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

Previous Survey Report Boundaries:
Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

Historic Addresses:
A map and database of historic properties (formerly Geofinder) has been included.

Historic Maps:
The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

Summary of SHRC Approved CHRIS IC Records Search Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSID</td>
<td>794</td>
</tr>
<tr>
<td>RUSH</td>
<td>no</td>
</tr>
<tr>
<td>Hours</td>
<td>1</td>
</tr>
<tr>
<td>Spatial Features</td>
<td>297</td>
</tr>
<tr>
<td>Address-Mapped Shapes</td>
<td>yes</td>
</tr>
<tr>
<td>Digital Database Records</td>
<td>2</td>
</tr>
<tr>
<td>Quads</td>
<td>1</td>
</tr>
<tr>
<td>Aerial Photos</td>
<td>0</td>
</tr>
<tr>
<td>PDFs</td>
<td>Yes</td>
</tr>
<tr>
<td>PDF Pages</td>
<td>709</td>
</tr>
</tbody>
</table>

This is not an invoice. Please pay from the monthly billing statement.
APPENDIX E

NAHC Sacred Lands File Search Results
February 14, 2017

For: Native American Heritage Commission
   915 Capitol Mall, Room 364
   Sacramento, California 95814

From: Kris Reinicke, M.S.
      Brian F. Smith and Associates Inc.
      14010 Poway Rd. Suite A
      Poway, CA 92064

Re: Request for Sacred Lands File and Native American Contact List for the McCarty Estates Project, San Diego, San Diego County, California.

I would like to request a record search of the Sacred Lands File and a list of appropriate Native American contacts for the following project: McCarty Estates (Project No. 17-026). This project is a Phase I archaeological assessment requested by the County of San Diego for the development of two single family residences on a 2.36 acre lot at 3929 Arroyo Sorrento Road, San Diego, CA 92130. The project is located in Township 14 south, Range 03 west, Section 30, in the USGS Del Mar Quadrangle. A copy of the project map showing the project area and a 1 mile search radius buffer have been included for the processing of this request.

Sincerely,

Kris Reinicke, M.S.
Archaeologist/GIS Specialist
Billing: 14678 Ibex Court, San Diego, CA 92129
Phone: 858-484-0915
Email: kris@bfsa-ca.com

Attachments:
USGS 7.5 Del Mar, California, topographic maps with project area delineated.
Sacred Lands File Request Form
Sacred Lands File & Native American Contacts List Request
NATIVE AMERICAN HERITAGE COMMISSION
*915 Capitol Mall, RM 364* *Sacramento, CA 95814* * (916) 653-4082 * *(916) 657-5390 – Fax* *nahc@pacbell.net*

*Information Below is Required for a Sacred Lands File Search*

Project: The McCarty Estates Project

County: San Diego

USGS Quadrangle Name: *Del Mar*

Township: 14S   Range: 03W   Section: 30

Company/Firm/Agency: Brian F. Smith & Associates Inc.

Contact Person: Kris Reinicke

Street Address: 14010 Poway Road, Suite A

City: Poway           Zip: 92064

Phone: 858-484-0915

Fax: 858-679-9896

Email: kris@bfsa-ca.com

Project Description:

This records search is for my company's project: *McCarty Estates* (Project No. 17-026). This project is a Phase I archaeological assessment requested by the County of San Diego for the development of two single family residences on a 2.36 acre lot at 3929 Arroyo Sorrento Road, San Diego, CA 92130. The project is located in Township 14 south, Range 03 west, Section 30, in the USGS *Del Mar* Quadrangle. A copy of the project map showing the project area and a 1 mile search radius buffer have been included for the processing of this request.
February 17, 2017

Kris Reinicke
Brian F. Smith and Associates

Sent by Email: kris@bfsa-ca.com

RE: Proposed McCarty Estates Project, City of San Diego; San Diego County, California

Dear Ms. Reinicke:

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

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

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

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
<table>
<thead>
<tr>
<th>Tribal Contact List</th>
<th>Native American Heritage Commission</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego County</td>
<td>2/17/2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tribal Contact</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barona Group of the Cupan</strong></td>
<td>1095 Barona Road, Lakeside, CA, 92040</td>
<td>(619) 443-6612</td>
<td>(619) 443-0681</td>
<td><a href="mailto:cloyd@barona-nsn.gov">cloyd@barona-nsn.gov</a></td>
</tr>
<tr>
<td><strong>Campo Band of Mission Indians</strong></td>
<td>3619 Church Road, Suite 1, Campo, CA, 91906</td>
<td>(619) 478-9046</td>
<td>(619) 478-5818</td>
<td><a href="mailto:rgoff@campo-nsn.gov">rgoff@campo-nsn.gov</a></td>
</tr>
<tr>
<td><strong>Ewilaapaayp Tribal Office</strong></td>
<td>4054 Willows Road, Alpine, CA, 91901</td>
<td>(619) 445-6315</td>
<td>(619) 445-9126</td>
<td><a href="mailto:michaelg@leaningrock.net">michaelg@leaningrock.net</a></td>
</tr>
<tr>
<td><strong>Inaja Band of Mission Indians</strong></td>
<td>2005 S. Escondido Blvd., Escondido, CA, 92025</td>
<td>(760) 737-7628</td>
<td>(760) 747-8568</td>
<td></td>
</tr>
<tr>
<td><strong>Jamul Indian Village</strong></td>
<td>3619 Church Road, Suite 1, Campo, CA, 91906</td>
<td>(619) 478-9046</td>
<td>(619) 478-5818</td>
<td><a href="mailto:rgoff@campo-nsn.gov">rgoff@campo-nsn.gov</a></td>
</tr>
<tr>
<td><strong>Kwaaymii Laguna Band of Mission Indians</strong></td>
<td>P.O. Box 775, Pine Valley, CA, 91962</td>
<td>(619) 709-4207</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>La Posta Band of Mission Indians</strong></td>
<td>8 Crestwood Road, Boulevard, CA, 91905</td>
<td>(619) 478-2125</td>
<td><a href="mailto:LP13@lpostband.com">LP13@lpostband.com</a></td>
<td></td>
</tr>
<tr>
<td><strong>Manzanita Band of Kumeyaay Nation</strong></td>
<td>8 Crestwood Road, Boulevard, CA, 91905</td>
<td>(619) 478-2125</td>
<td><a href="mailto:jmillar@LPtribe.net">jmillar@LPtribe.net</a></td>
<td></td>
</tr>
</tbody>
</table>

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 6097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed McCarty Estates Project, San Diego County.

PROJ-2017-000847 02/17/2017 01:33 PM 1 of 2
<table>
<thead>
<tr>
<th>Band of Mission Indians</th>
<th>Band of the Kumeyaay Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manzanita Band of Kumeyaay</td>
<td>Sycuan Band of the Kumeyaay</td>
</tr>
<tr>
<td>Nick Elliott, Cultural Resources Coordinator</td>
<td>Lisa Haws, Cultural Resources Manager</td>
</tr>
<tr>
<td>P. O. Box 1302 Boulevard, CA, 91905</td>
<td>1 Kwaaypaay Court Kumeyaay El Cajon, CA, 92019</td>
</tr>
<tr>
<td>Phone: (619) 766-4930</td>
<td>Phone: (619) 312-1935</td>
</tr>
<tr>
<td>Fax: (619) 766-4957 <a href="mailto:nickmepa@yahoo.com">nickmepa@yahoo.com</a></td>
<td></td>
</tr>
<tr>
<td>Mesa Grande Band of Mission Indians</td>
<td>Viejas Band of Kumeyaay Indians</td>
</tr>
<tr>
<td>Virgil Oyos, Chairperson</td>
<td>Robert J. Welch, Chairperson</td>
</tr>
<tr>
<td>P.O Box 270</td>
<td>1 Viejas Grade Road Alpine, CA, 91901</td>
</tr>
<tr>
<td>Santa Ysabel, CA, 92070</td>
<td>Phone: (619)445-9810</td>
</tr>
<tr>
<td>Phone: (760)782-3818</td>
<td>Fax: (619)445-5337</td>
</tr>
<tr>
<td>Fax: (760)782-9092 <a href="mailto:mesagrandeband@msn.com">mesagrandeband@msn.com</a></td>
<td><a href="mailto:jhagen@viejas-nsn.gov">jhagen@viejas-nsn.gov</a></td>
</tr>
<tr>
<td>San Pasqual Band of Mission Indians</td>
<td>Viejas Band of Kumeyaay Indians</td>
</tr>
<tr>
<td>John Flores, Environmental Coordinator</td>
<td>Julie Hagen,</td>
</tr>
<tr>
<td>P. O. Box 365</td>
<td>1 Viejas Grade Road Alpine, CA, 91901</td>
</tr>
<tr>
<td>Valley Center, CA, 92082</td>
<td>Phone: (619) 445-3810</td>
</tr>
<tr>
<td>Phone: (760) 749-3200</td>
<td>Fax: (619) 445-5337</td>
</tr>
<tr>
<td>Fax: (760) 749-3876 <a href="mailto:johnf@sanpasqualtribe.org">johnf@sanpasqualtribe.org</a></td>
<td><a href="mailto:jhagen@viejas-nsn.gov">jhagen@viejas-nsn.gov</a></td>
</tr>
<tr>
<td>San Pasqual Band of Mission Indians</td>
<td></td>
</tr>
<tr>
<td>Allen E. Lawson, Chairperson</td>
<td></td>
</tr>
<tr>
<td>P. O. Box 365</td>
<td></td>
</tr>
<tr>
<td>Valley Center, CA, 92082</td>
<td></td>
</tr>
<tr>
<td>Phone: (760)749-3200</td>
<td></td>
</tr>
<tr>
<td>Fax: (760)749-3876</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:allenl@sanpasqualtribe.org">allenl@sanpasqualtribe.org</a></td>
<td></td>
</tr>
<tr>
<td>Sycuan Band of the Kumeyaay Nation</td>
<td></td>
</tr>
<tr>
<td>Cody J. Martinez, Chairperson</td>
<td></td>
</tr>
<tr>
<td>1 Kwaaypaay Court</td>
<td></td>
</tr>
<tr>
<td>El Cajon, CA, 92019</td>
<td></td>
</tr>
<tr>
<td>Phone: (619)445-2613</td>
<td></td>
</tr>
<tr>
<td>Fax: (619)445-1927 <a href="mailto:ssilva@sycuan-nsn.gov">ssilva@sycuan-nsn.gov</a></td>
<td></td>
</tr>
</tbody>
</table>

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 2007.99 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed McCarly Estates Project, San Diego County.
Biological Resources Report
McCarty Estates - Arroyo Sorrento
APN 307-060-60-00
Tentative Parcel Map, Site Development Permit, and Planned Development Permit
Carmel Valley Community Plan Area (Neighborhood 8b)
Arroyo Sorrento, San Diego, California

Prepared for City of San Diego
PTS No. 515157

Project Proponent:
Kent & Jill McCarty
McCarty Family Trust
3929 Arroyo Sorrento Road, San Diego CA 92130

Project Engineer:
Jorge H. Palacios P.E., JP Engineering, Inc.
4849 Ronson Court, Suite 105, San Diego CA 92111
858 569 7377 voice; 858 569 0830 facsimile

PSBS # W435

Project Biological Consultant:
Pacific Southwest Biological Services, Inc.
Post Office Box 985, National City CA 91951

R. Mitchel Beauchamp, M. Sc., President
24 February 2017
Table of Contents

Management Summary / Abstract 4
Introduction 4
Project Description 4
Methods and Survey Limitations 4
SURVEY RESULTS 4
Location and Physical Characteristics 4
Setting 5
BOTANICAL RESOURCES 5
Flora 5
Habitats -Vegetation Communities 5
Southern Maritime Chaparral 5
Disturbed Habitat 5
Urban / Developed 6
Table 1. Land Cover Types 6
Zoological Resources – Fauna 6
RARE, THREATENED, ENDANGERED, ENDEMIC and / or SENSITIVE SPECIES or MSCP-COVERED SPECIES 6
Special Status Species-Plants Associated with the Site or Nearby Area 6
Torrey Pine (Pinus torreyana ssp. torreyana) 6
Coast White-Lilac (Ceanothus verrucosus) 6
Nuttall’s Scrub Oak (Quercus dumosa) 7
Narrow Endemics 7
Special Status Species-Animals Associated with the Site or Nearby Area 7
Jurisdictional Wetlands and Waterways 7
Multiple Habitat Planning Area (MHPA) 8
Discussion of Site Photographs 8
PROJECT IMPACT ANALYSIS 8
Significance of Project Impacts and Proposed Mitigation 8
Environmentally Sensitive Land Regulations 8
Wildlife Movement Corridors 8
Project Impacts 8
Table 2. Development Sites and Brush Management Zone Impacts 9
Vegetation Community Impacts 9
Wildlife Impacts 9
Sensitive Biological Resources Impacts 9
Sensitive Vegetation Community Impacts 9
Sensitive Plant Impacts 9
Sensitive Wildlife Impacts 10
Multi-Habitat Planning Area Impacts 10
Cumulative Impacts 10
Mitigation Measures 10
Sensitive Wildlife Avoidance 10
Multi-Habitat Planning Area and Environmentally Sensitive Lands Adjacency Issues 10
MITIGATION AND MONITORING REQUIREMENTS
CONCLUSIONS
CERTIFICATION
Bibliographic References
Preparer and Persons/Organization Contacted
Consultant’s Resume
Site Photographs
Appendix 1. Floral Checklist of Species Observed At Arroyo Sorrento
Appendix 2. Observed or detected Species List – Fauna
Appendix 3. Sensitive Plant Taxa
Appendix 4. Sensitive Animal Taxa
Figure 1 Regional Location
Figure 2 Vicinity Site Map
Figure 3 Vegetation Map
Biological Resources Report
McCarty Estates - Arroyo Sorrento
PTS No. 515157
Tentative Parcel Map Number 1815504, Site Development Permit, Planned
Development Permit and Preliminary Grading Plan
24 February 2017

Management Summary / Abstract
The McCarty Estates site project is a Tentative Parcel Map, Site Development Permit, Planned
Development Permit and Preliminary Grading Plan to allow for the future construction of a single-family residence on APN 307-060-60-00, located in the Torrey Hills segment of the Carmel Valley Community Plan Area (Neighborhood 8b) of the City of San Diego with a zoning designation of AR-1-2. Due to the City's overlays on the property for Sensitive Biological Resources, the City requested a Biological Report detailing the resources on the site. This report includes a resource map and an analysis of the potential impacts to sensitive biological resources. A Covenant of Easement is proposed for the Sensitive Biological Resources on the site in the form of two stands of sensitive Southern Maritime Chaparral vegetation.

Introduction
The City of San Diego planning staff has requested an environmental technical document and biological assessment of the proposed project and project site to examine the biological functions of the site and to determine compliance with Environmentally Sensitive Lands regulations. This report follows the City of San Diego format for biological reporting.

Project Description
The proposed project consists of the subdivision of a 2.36 acre site into two lots for the purpose of creation of an additional single-family lot on the subdivision of APN 307-060-60-00 (Figure 1). The site on the south side of the enclave of Arroyo Sorrento on north-facing slopes is largely developed and landscaped at the southeastern corner of the mouth of Carmel Valley, in an area known as Arroyo Sorrento of the Torrey Hills Neighborhood. The site lies among a cluster of private homes.

Methods and Survey Limitations
Pacific Southwest Biological Services Senior Biologist, R. Mitchel Beauchamp, conducted a general biological resources survey of the site. The survey area was covered on foot on 9 February 2017, from approximately 11:45 to 15:45 hours. Vegetation communities were mapped on topographic maps of the site. Wildlife observed directly (utilizing 8.5x42 binoculars) or detected from calls, tracks, scat, nests, or other signs were noted. Plant taxa observed on-site were noted and identified in the field. This later winter survey was inadequate to observe directly spring annuals. Other information sources were utilized to extrapolate their potential to be on-site, including the biologist's 45 years of experience in the field in the Torrey Pines and Del Mar areas.

SURVEY RESULTS
Location and Physical Characteristics
The site lies south along Arroyo Sorrento Road, a paved street east of El Camino Real within the
Torrey Hills neighborhood of the City of San Diego in the southeast quarter of the southwest quarter of Section 30 R3W, T 14S SBBM. Elevation of the development site ranges from 176 feet at the north western corner of the site to 230 feet at the center of the parcel. The UTM coordinates are 3,643,000mN; 478,200E, Zone 11. Latitude and longitude are: 32° 55'40" N; 117° 13' 50" W.

Setting
Geological substrate of the site is mapped as Quaternary Holocene Alluvium at the lower northern portion and middle Eocene Torrey Sandstone formation on the remainder (Kennedy and Peterson 1975). Soils mapped for the site are Loamy alluvial land-Huerhuero complex, 9-50 percent slopes, severely eroded (LvF3) on the central portion of the site and Corralitos loamy sand, 9 to 15 percent slopes (CsD) in the lower portions of the site (Bowman 1973). The site has been disturbed by prior occupancy, as well as agricultural activity.

BOTANICAL RESOURCES
Flora
Appendix 1 lists the flora species detected on the site. The flora is representative of central, coastal San Diego County. The prior, urban use on the site has substantially changed the original native chaparral vegetation and allowed inter-gradation of non-native plants into the otherwise naturally vegetated areas. A total of 70 plant taxa were identified within the project site and immediately adjacent areas. Of this total 25 (36%) are species native to coastal San Diego County and the remaining 45 species (64%) are non-native, many being escapes or persisting from cultivation on the site that was formerly used by the residence for small scale floriculture.

Habitats -Vegetation Communities
The site supports two native plant associations or communities, Southern Maritime Chaparral and Urban, Developed. Southern Maritime Chaparral vegetation is considered to be sensitive due to the limited regional extent (Figure 3).

Southern Maritime Chaparral (Holland Vegetation Classification #37910) (0.28 acre) (Tier I)
The principal, functional vegetation on the site is Southern Maritime Chaparral, indicated by Coast White Lilac (Ceanothus verrucosus) with Chamise (Adenostoma fasciculatum) and Mission Manzanita (Xylococcus bicolor). This Tier I habitat occurs at two sites on the parcel, one at the southeastern area of the parcel and the other on a north-facing slope north of the residential area of the site. The southern site is largely a monoculture of Coast White Lilac which continues to the east on the adjacent parcel, while the northern stand is more heterogeneous, and involves invasion by several cultivated plants. The adjacent, off-site slope to the east has been cleared and planted with succulent plants.

The site has Torrey Pines (Pinus torreyana ssp. torreyana) in two areas of the lot. These were planted and do not represent a native stand. Further, the trees are not within the coverage of the Torrey Pine Trees Protection Ordinance MC 63.07, in that they do not occur within the Torrey Pines Preserve, not in Pueblo lots 1332, 1337 nor 1338, are not on City lands and have not been designated as Heritage Trees.
Urban / Developed (#12000) (2.08 acres)
The single-family dwelling unit and appurtenant structures, horse care facility and landscaping on the site constitute this land cover type.

Table 1. Land Cover Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Tier</th>
<th>Total Vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Maritime</td>
<td>I</td>
<td>0.28 ac</td>
</tr>
<tr>
<td>Chaparral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban / Developed</td>
<td>IV</td>
<td>2.08 ac</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2.36 ac</strong></td>
</tr>
</tbody>
</table>

Zoological Resources - Fauna
Fauna observed during the field visit on 9 February 2017, from approximately 11:45 to 15:45 hours, included those species typical of a winter season, shrub/tree system in coastal central San Diego County (Unitt 2004). See Appendix 2 for a complete list of the faunal species detected.

Two reptiles were detected during the field survey, i.e., the Western Fence Lizard (Sceloporus occidentalis) and Side-blotched Lizard (Uta stansburiana). To be expected on site due to the available habitat is the Gopher Snake (Pituophis catenifer annectens).

Birds detected at or adjacent to the project site include the following: Mourning Dove (Zenaida macroura), Anna’s Hummingbird (Calypte anna), Black Phoebe (Sayornis nigricans), American Crow (Corvus brachyrhynchos), Bushtit (Psaltriparus minimus), Wrentit (Chamaea fasciata), Northern Mockingbird (Mimus polyglottos), California Thrasher (Toxostoma redivivum). White-crown Sparrow (Zonotrichia leucophrys) and House Finch (Haemorhous mexicanus). This list is typical of almost any other tree/chaparral, urban area in coastal San Diego during the late summer months. A search of the canopies of the many Eucalyptus trees on the site and nearby did not disclose any nesting of raptors.

The only native mammal detected during the field visit was burrow activity of Valley Pocket Gopher (Thomomys bottae). Other mammals most probably present in this semi-rural setting are Striped Skunk (Mephitis mephitis), Raccoon (Procyon lotor), Opossum (Didelphis virginiana), Coyotes (Canis latrans) and Bobcat (Lynx rufus).

RARE, THREATENED, ENDANGERED, ENDEMIC and / or SENSITIVE SPECIES or MSCP-COVERED SPECIES
Special Status Species-Plants Associated with the Site or Nearby Area

Torrey Pine (Pinus torreyana ssp. torreyana)
As noted previously, the Torrey Pines on the site have been planted and are, therefore not part of a natural population. The owner’s intent is that the trees be part of the on-site landscaping.

Coast White-Lilac (Ceanothus verrucosus)
This shrub is a conspicuous component of the chaparral vegetation. None of the shrubs occur in an area proposed for development of the additional residence or associated site improvements.
Nuttall’s Scrub Oak (*Quercus dumosa*)
This shrub is also a notable component of the chaparral vegetation on the site. The occurrence of the Scrub Oak is coincidental with the distribution of the on-site Chaparral and is not plotted individually, due to their abundance. The identification of these plants, on the site and elsewhere in western San Diego County and northwestern Baja California is problematic. A conversation with Fred M. Roberts, a local botanist knowledgeable in the scrub oaks in the region, at a recent California Native Plant Society event, indicated that the scrub oaks of western San Diego County are involved with hybridization and not readily definable to either the Nuttall’s Scrub Oak (*Quercus dumosa*) or California Scrub Oak (*Quercus berberidifolia*). The plants on the project site appear to be this hybrid swarm, and not “pure” representatives of the sensitive Nuttall’s Scrub Oak. Nonetheless, the Southern Maritime Chaparral is a sensitive vegetation type for other reasons.

None of the City’s listed Narrow Endemics*, including Shot-leaved Live-forever, occur on the site, i.e.:
- *Acanthomintha ilicifolia* San Diego Thornmint
- *Agave shawii* Shaw’s Agave
- *Ambrosia pumila* San Diego Ambrosia
- *Aphanisma blitoides* Aphanisma
- *Astragalus tener var. titi* Coastal Dunes Milk Vetch
- *Baccharis vanessae* Encinitas Baccharis
- *Dudleya blochmaniae ssp. brevifolia* Short-leaved Live-forever
- *Dudleya variegata* Variegated Dudleya
- *Eryngium aristulatum ssp parishii* San Diego Button Celery
- *Hemizonia (Deinandra) conjugens* Otay Tarplant
- *Navarretia fossalis* Prostrate Navarretia
- *Opuntia parryi (californica) var. serpentina* Snake Cholla
- *Orcuttia californica* Orcuttgrass
- *Pogogyne abramsii* San Diego Mesa Mint
- *Pogogyne nudiuscula* Otay Mesa Mint

*None of the above Narrow Endemic Plant Taxa were noted on the lot due to the lack of associated habitats. Appendix 3 further addresses the likelihood of presence / absence on the project site.

**Special Status Species-Animals Associated with the Site or Nearby Area**
The site and immediate vicinity are not expected to support any sensitive/special status species of wildlife because of the disturbed nature of the site vegetation and absence of habitat (particularly extensive stands of California Sagebrush and Buckwheat) to support species such as the Coastal California Gnatcatcher (*Polioptila californica californica*)

**Jurisdictional Wetlands and Waterways**
A routine delineation of jurisdictional waters of the U.S. including waters of the State of California and City of San Diego wetlands was conducted during the site survey. The project site has no bed and bank features, lacks any wetland vegetation and has no wetland-associated soils. The site has a subsurface drainage system that takes intercepted flows at the eastern boundary of the eastern, adjacent parcel to the west of the subject lot. There are no jurisdictional wetlands or water in the surveyed area.
Multiple Habitat Planning Area (MHPA)
The project lies outside any MHPA area. The location of the nearest MHPA is to the south of the project. The MHPA is in an area that now contains residential development and contains no features associated with biotic resources which an MHPA designation would involve. There are no issues of land adjacency due to the developed condition there.

Discussion of Site Photographs
Photograph A - B Coast White-Lilac stand at SE corner of Lot 2
Photograph C - H Panorama of S end of Lot 2, from E to W
Photograph I - J Access to lower S side of Lot 2
Photograph K View to W of lower area of Lot 1
Photograph L - O Panorama of S slope of Lot 1, E to W
Photograph P View to N of pad site of Lot 1
Photograph Q View to west boundary of Lot 1
Photograph R View of base of S slope of Lot 1
Photograph S - T Edge of slope on site and adjacent, off-site cleared slope
Photograph U Intercept of flows from E onto Lot 1
Photograph V - X View to N of top of slope of Lot 1, E to W

PROJECT IMPACT ANALYSIS
Significance of Project Impacts and Proposed Mitigation
Environmentally Sensitive Land Regulations
As defined in the City of San Diego’s municipal Code (Chapter 14, Division 1), ESLs include (1) sensitive biological resources; (2) steep hillsides; (3) coastal beaches; (4) sensitive coastal bluffs; and (5) 100-year floodplains. The project area qualifies as ESL due to the presence of Tier I Southern Maritime Chaparral.

Wildlife Movement Corridors
Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features, such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas and facilitate the exchange of genetic traits between populations.

The project area is not part of, nor does it function as part of, a major wildlife corridor. The site is isolated from significant connections to large blocks of habitat by housing on all sides. Wildlife is attracted to the site due to the presence of domestic poultry.

Project Impacts
The proposed TPM and ultimate construction of an additional single-family residence will involve removal of some of the site’s Urban / Developed vegetation as quantified in Table 2 and Figure 3. The biological impacts of the project were assessed according to the City of San Diego’s Significance Determination Guidelines under CEQA (2011), and the Land Development Code Biology Guidelines (2012). CEQA guidelines were used to assess impacts not covered by the MSCP. Table 2 presents
impacts at Lot 1 and Lot 2.

Table 2. Development Sites and Brush Management Zone Impacts (Biological Resources Map-Figure 2)

Table 2 below indicates the extent of impact from the proposed building pad and associated Brush Management Zone envelopes.

<table>
<thead>
<tr>
<th>Type</th>
<th>Tier</th>
<th>Total Acreage</th>
<th>Impacted by Project (ac)</th>
<th>BMZ 1 (ac) Lot 1 / Lot 2</th>
<th>BMZ 2 (ac) Lot 1 / Lot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Maritime Chaparral</td>
<td>I</td>
<td>0.28</td>
<td>0</td>
<td>0.0 / 0.0</td>
<td>0.07 / 0</td>
</tr>
<tr>
<td>Urban / Disturbed</td>
<td>IV</td>
<td>2.08 ✓</td>
<td>0.43</td>
<td>0.10 / 0.08</td>
<td>0.11 / 0.18</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2.36 ✓</td>
<td>0.43</td>
<td>0.10 / 0.14</td>
<td>0.18 / 0.18</td>
</tr>
</tbody>
</table>

Vegetation Community Impacts
The proposed project contains a north-facing slope south of the proposed building site. The slope is a rather gently slope and does not involve any sandstone bluff system found elsewhere in the area. The western portion of this slope supports Southern Maritime Chaparral. This north-facing slope is located outside the area proposed for grading and is not proposed for disturbance. Portions of Zone 2 Brush Management that fall within the Sensitive Biological Resources are the minimum required to comply with the City fire codes.

Table 2 above indicates the extent of impact from the proposed building pad and associated Brush Management Zones.

Wildlife Impacts
The proposed project will displace local wildlife by the future grading of the house pad by removal of equestrian and poultry husbandry on the site. This impact is considered as part of the vegetation, especially large tree removal and, therefore, is considered less that significant. Likewise, if the project brushing and grading takes place outside the typical nesting season, no nests of migratory birds protected by the Migratory Bird Treaty Act and associated California regulations would be adversely affected. The project would be in compliance with these state and federal statutes.

Sensitive Biological Resources Impacts
Sensitive Vegetation Community Impacts
Since the Southern Maritime Chaparral vegetation is largely outside the development area, a quantifiably minimal impact to sensitive vegetation will occur. Brush Management Zone 2 impacts total 0.07 acre to this chaparral community. City regulations rate this as an impact neutral effect from the project, not requiring mitigation.

Sensitive Plant Impacts
A local endemic, Coast White Lilac (*Ceanothus verrucosus*), is considered a sensitive plant on the project site. Utilization of a Covenant of Easement for the protection of small patches of the Southern Maritime Chaparral and this species is recommended due to the Sensitive Biological Resources.
**Sensitive Wildlife Impacts**
Since no sensitive animals were observed on the project site, impacts to these species are not likely to occur during grading. Retention of natural open space will allow the persistence of wildlife habitat.

**Multi-Habitat Planning Area Impacts**
Because the project area is outside any MHPA, no direct impacts to the resources of a MHPA would be impacted.

**Cumulative Impacts**
The major development in the region has largely abated and only infill projects, such as this, are occurring.

**Mitigation Measures**
Mitigation is required for impacts that are considered significant under the City’s Biological Review References and the City’s CEQA Significance Determination Thresholds. This includes impacts to listed species, sensitive vegetation communities and habitats, and wetlands. Mitigation is intended to reduce significant impacts to a level of less than significant. Mitigation measures typically employed include resource avoidance, on-site habitat replacement, or the off-site acquisition of habitat. The project impacts 0.07 acre of Southern Maritime Chaparral sensitive habitat by Brush Management Zone 2 action. This area of Southern Maritime Chaparral is proposed to be part of the Covenant of Easement for protection of the sensitive vegetation. The involvement of Southern Maritime Chaparral in the Brush Management Zone 2 is considered impact neutral. A second area of Southern Maritime Chaparral occurs at the southeastern area of Lot 2 and is also proposed for placement of a Covenant of Easement for protection of the sensitive vegetation.

**Sensitive Wildlife Avoidance**
The habitat assessment for Coastal California Gnatcatcher on the site indicated the lack of habitat for the presence of this sensitive bird. No mitigation measure for this animal is required.

**Multi-Habitat Planning Area and Environmentally Sensitive Lands Adjacency Issues**
The site is not adjacent to any MHPA, therefore no Land Use Adjacency Guidelines need be addressed.

**MITIGATION AND MONITORING REQUIREMENTS**
Mitigation measures are required to be imposed on the proposed project, in addition to those incorporated into the project design because the project, as designed would otherwise result in significant impacts to biological resources under CEQA.

The project proposes to impact 0.07 acre of Southern Maritime Chaparral in the BMZ 2 envelope on lot 1. The impact to 0.07 acre of Southern Maritime Chaparral in BMZ 2 is impact neutral.

The impact threshold under the City’s Biological Review references and the City’s CEQA Significance Determination Threshold is $> 0.1$ acre. This 0.07 acre does not exceed this threshold, therefore no mitigation is required.

Measures incorporated in the project design include the following:
A Covenant of Easement will be applied to the sensitive vegetation on lots 1 and 2 to protect the Southern Maritime Chaparral on the site.

CONCLUSIONS
The proposed project will have no significant, direct impacts to sensitive biological resources, including sensitive vegetation communities and sensitive plant species.

Implementation of the above mitigation measures will reduce the impacts of the project to biological resources to less than significant.

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

R. Mitchel Beauchamp
Report Author
24 February 2017

Bibliographic References


Preparer and Persons/Organization Contacted
R. Mitchel Beauchamp field biologist and report preparer
CONSULTANT'S RESUME

RUBLE MITCHEL BEAUCHAMP

Born July 15, 1946, National City, California.
Married 16 November 1968 to Martha M. Gorham, having two daughters; Vanessa Beth (1976), graduated June 1998, University of California, Irvine, Magna Cum Laude, Phi Beta Kappa; EPA - STAR Fellow, Arizona State University, Tempe, PhD, Plant Biology July 2004; Riparian Scientist, U S Geological Survey, Science Center, Fort Collins CO, August 2004, Professor of Biology, Towson University, 2008-present; and Nolina Lynn (1979), graduated June 2003, University of California, Irvine as a Regents' Scholar, BA, Criminology, BA, English, Phi Beta Kappa, English teacher, Buna Park High School, August 2004-present.
Naturalized Mexican citizen 2004 retaining United States of America Citizenship by birth

EDUCATION
1983  Teaching Credential, California Emergency Secondary Credential. 1983-1985
1972-1974  Post-graduate study at City University of New York and New York Botanical Garden, NY.
1972  Lifetime Teaching Credential, California Community Colleges
1972  M.Sc., Biology, California State University, San Diego. Master's Thesis: Floral Diversity of San Diego County, California.
1968  B.Sc., Botany, San Diego State College

MILITARY EXPERIENCE

EMPLOYMENT HISTORY
San Diego Evening Tribune Delivery Route Carrier, 1958-1963
Southern California Exposition, Del Mar, Flower Show Assistant 1964-67, 1971-3
Pomona Fair, Flower Show Assistant 1974-5
Agricultural Inspector, County of San Diego 1975-6
Pacific Southwest Biological Services, Inc., consultant biologist and owner, 1976-present
Tierra Madre Consultants, Inc., consultant biologist and owner. 1995-present
Sweetwater River Press, author and owner. 1986-present
General Manager, Ferrocarriles Peninsulares del Noroeste, Tijuana & Tecate, Baja California 2004-2007

PROFESSIONAL EXPERIENCE
Certifications
Responsible Corporate Officer – California Landscape Contractor, C-27 License #5431247
Certified Wetlands Delineator # 1697
Previously Certified Arborist
Notary Public 2006-present

Mr. Beauchamp is the senior botanist and senior restoration consultant, as well as owner of Pacific Southwest Biological Services, Inc., Gila Biological Services, Tierra Madre Consultants, Inc. and Sweetwater River Press. He has participated in, or directed, over 2,000 biological
studies for small, medium-sized and major private enterprises, as well as for local, state and federal agencies. Mr. Beauchamp is a recognized expert in the botanical resources of the southwestern United States, and in 1986 authored *A Flora of San Diego County, California*, the leading authoritative text used throughout that county.

He is the Principal of the revegetation and restoration branch of Pacific Southwest Biological Services, Inc., and is responsible for the design, planning and implementation of upland and wetland habitat restoration projects and rare plant transplantation in Southern California and Arizona. He has a long history of involvement with and is a life member of both the International Bulb Society, and the California Native Plant Society, and a regular member of other organizations involving botanical and environmental issues.

Mr. Beauchamp from 2003-2004, was general manger, Ferrocarriles Peninsulares del Noroeste. He is the principal owner of Tren Turistico del Noroeste, s. a de c.v., and Tierra Madre Railway. He is bilingual in Spanish and English, with some fluency in German and French.

**REPORTS AND PUBLICATIONS**

**Book**

**In-house Reports**
Pacific Southwest Biological Services in-house biological impact assessment reports. Prepared or supervised production of survey reports for over 2500 private and public development projects in Southern California.

**Periodical Articles**
*Espinas y Flores*, San Diego Cactus and Succulent Society - miscellaneous short articles. 1979

**COMMUNITY PARTICIPATION**
*Treasurer*, City of National City 2008-2012
*Director*, San Diego Electric Railway Association, National City CA 2006-present
*Member*, Technical Advisory Committee, Office of Spill Prevention and Response, Department
of Fish and Game, appointed by the Speaker of the Assembly. 2002-present

**Honorary Board Member**, Women’s Transportation Seminar, San Diego Chapter. 1998-present

**Director**, Sweetwater Authority, appointed representative of the City of National City. 2002-2009

**Councilman**, City of National City, California. 1994-2002

**Member**, Joint Committee on Regional Transit. 1998-2002

**Chairman, Member**, MTDB/S D Unified Port District Metropolitan Freight Rail Committee. 1998-2002

**Director**, Metropolitan Transit Development Board, San Diego, California. 1995-2002

**Member**, Finance Committee, San Diego Trolley. 1999-2001

**Sponsor**, National City Girl's Amateur Softball Association Team. 1998-2002

**Chairman**, San Diego and Arizona Eastern Railway-MTDB Ad Hoc Committee. 1998-2000


**Vice-Mayor**, City of National City, California. 1997, 2001

**Board Member**, National City Community Food Bank Board of Directors. 1996-2003

**Director**, Futures Foundation, appointed by Supervisor Cox. 2000-2003


**Chairman**, Board of Trustees, First Baptist Church of National City, California. 1995-1998, 2000

**Board Member**, National City Living History Preserve (Stein Farm) Board of Directors. 1993-present.

**Organist**, First Baptist Church of N C California 1989-present and First Congregational Church, National City, 1996-present

**Chairman**, Planning Commission, National City, California. 1985-1988

**Member**, California Native Plant Advisory Committee, Department of Fish and Game. 1977-1986.

**Member**, Local Board, Selective Service System, South Bay, San Diego. 1977-present

**RELATED ACTIVITIES**

**Consulting Arborist**, National Christmas Tree - Calculation of Weight of Engelmann Spruce for PCL for delivery to the White House, Christmas, 1996.


**Member**, San Diego County Off-Road Advisory Committee, 1975-1980.

**Co-founder**, San Diego Chapter of the California Native Plant Society, September 1970
Appendix 1. Floral Checklist of Species Observed At Arroyo Sorrento
Habitats: C-Chaparral, U-Urban/Developed

CRYPTOGAMS
Ferns
Polypodiaceae - Polypody Family
Dryopteris arguta (Kaulf.)Watt. Coastal Woodfern C

GYMNOSPERMS
Pinaceae - Pine Family
*Pinus torreyana Carr. ssp. torreyana Torrey Pine U

DICOTYLEDONS
Adoxaceae-Adoxus Family
Sambucus mexicana Presl ex DC. Elderberry C

Aizoaceae - Carpet-weed Family
*Aptenia cordifolia (L.f.) Schwant. Red Apple Ice Plant U
*Carpobrotus edulis (Molina) N.E. Brit. Hottentot-fig C,U

Anacardiaceae - Sumac Family
Malosma laurina (Torr. & Gray) Abrams Laurel-leaf Sumac C
Rhus integrifolia (Nutt.) Benth. & Hook. Lemonadeberry C

Asteraceae - Sunflower Family
Ambrosia psilostachya DC. Western Ragweed U
Artemisia californica Less. California Sagebrush C
Baccharis pilularis DC. Coyote Brush C
*Centaurea melitensis L. Tocalote U
*Conyza canadensis L. Fleabane U
*Cotula australis (Seiber ex Spreng.) Hook. U
Eriophyllum confertiflorum (DC.) Gray var. confertiflorum Golden-yarrow C
*Glebionis coronaria (L.) Cassini ex Spach Garland Chrysanthemum U
*Sonchus asper L. Sow-thistle U
Stephanomeria diegensis Gottlieb San Diego Wreath-plant C

Bignoniaceae - Bignonia Family
*Jacaranda acutifolia Humb. & Bonpland U
*Tecomaria capensis Thunb. Cape Honeysuckle U

Cactaceae-Cactus Family
*Opuntia ficus-indica L. Indian Fig U
*Trichocereus pachanoi Britt & Rose San Pedro Cactus U
Appendix 1.  Floral Checklist of Species Observed At Arroyo Sorrento (continued)

**Caprifoliaceae** - Honeysuckle Family
*Lonicera subspicata* H. & A.  Honeysuckle  C

**Chenopodiaceae** - Goosefoot Family
*Atriplex semibaccata* R. Br.  Australian Saltbush U

**Crassulaceae** - Stonecrop Family
*Crassula argentea* Thunb.  Jade Plant  U

**Cucurbitaceae** - Gourd Family
*Marah macrocarpus* (Greene) Greene var. *macrocarpus*  Cucamonga Man-root, Wild-cucumber  C, U

**Ericaceae** - Heath Family
*Xylococcus bicolor* Nutt.  Mission Manzanita  C

**Euphorbiaceae** - Spurge Family
*Euphorbia pepulus* L.  U

**Fabaceae** - Legume Family
*Acacia latifolia* Benth.  Golden Wattle  U
*Acisposon glabra* (Vogel) Broulette  Coastal Deerweed  C
*Albezia lebbeck* (L.) Benth.  Lekkeck Tree  U
*Cassia bicapsularis* L.  U

**Fagaceae** - Oak Family
*Quercus berberidifolia* Liebm.  California Scrub Oak  C

**Lamiaceae** - Mint Family
*Leonotis leonurus* (L.) R. Br.  Lion’s-ear  U
*Salvia mellifera* Greene  Black Sage  C

**Malvaceae** - Mallow Family
*Malva parviflora* L.  Cheeseweed, Little Mallow  U

**Moraceae** - Fig Family
*Ficus benjamina* L.  U

**Myoporaceae** - Myoporum Family
*Myoporum laetum* G. Forst.  U

**Myrtaceae** - Myrtle Family
*Eucalyptus canaliculensis* Dehnhardt  Murray Red Gum  U
*Psidium guajava* L.  Common Guava  U
*Psidium littorale* L.  Strawberry Guava  U
Appendix 1. Floral Checklist of Species Observed At Arroyo Sorrento (continued)

**Oxalidaceae** - Oxalis Family

*Oxalis pes-caprae* L. Bermuda Butter-cup C

**Phyrmaceae**

*Mimulus aurantiacus* Curtis forma "puniceus" San Diego Red Monkeyflower C

**Polygonaceae** - Buckwheat Family

*Rumex crispus* L. Lax C

**Rhamnaceae** - Buckthorn Family

*Ceanothus verrucosus* Torr. & Gray Wart-stemmed Ceanothus, Coast White Lilac C

**Rosaceae** - Rose Family

*Adenostoma fasciculatum* Hook & Arn. Chamise C

*Eriobotrya japonica* Thunb. Loquat U

*Heteromeles arbutifolia* (Ait.) M. Roem. Toyon C

**Rubiaceae** - Madder Family

*Galium angustifolium* Nutt. ex Torr. & Gray ssp. angustifolium Narrow-leaf Bedstraw C

**Rutaceae** - Rue Family

*Citrus sinensis* L. Blood Orange U

*Cneoridium dumosum* (Nutt.) Hook. F. Bushrue C

**Sapindaceae** - Sapindus Family

*Cupaniopsis anacardioides* (A. Rich.) Radlk Carrotwood Tree C

*Koelruteria paniculata* Laxm. Golden Rain Tree U

**Scrophulariaceae** - Figwort Family

*Scrophularia californica* Cham. & Schldl. ssp. floribunda(Greene)Shaw. California Figwort, Bee Plant C

**Solanaceae** - Nightshade Family

*Nicotiana glauca* Grah. Tree Tobacco U

*Solanum parishii* Heller Parish's Nightshade C

**Urticaceae** - Nettle Family

*Urtica urens* L. Stinging Nettle U

**Verbenaceae** - Verbena Family

*Duranta repens* L. Skyflower U

*Lantana camara* L. Lantana U
Appendix 1.  Floral Checklist of Species Observed At Arroyo Sorrento (continued)

**MONOCOTYLEDONS**

**Agavaceae- Agave Family**
*Agave attenuata* Salm-Dyck  U

**Amaryllidaceae- Amaryllis Family**
*Amaryllis belladonna* L. Naked Lady  U

**Aracaceae-Palm Family**
*Arecastrum romanzoffianum* (Cham.) Becc.  U
*Phoenix canariensis* Chaub. Canary Island Date Palm  U
*Washingtonia robusta* H. Wendel. Mexican Fan Palm  U

**Liliaceae - Lily Family**
*Yucca schidigera* Ortgies Mojave Yucca  C

**Musaceae**
*Strelitzia nicolai* Regel & Körn. Giant Bird of Paradise  U

**Poaceae - Grass Family**
*Agrostis capilaris* L. Colonial Bent
*Avena barbata* Link Slender Wild Oat  U
*Bromus diandrus* Roth  Ripgut Grass  U
*Bromus madritensis* L. ssp. *rubens* (L.) Husnot Red Brome  U
*Lymus condensatus* (C. Presl) A. Löve Giant Rye  C
*Vulpia myuros* (L.) Gmelin var. *hirsuta* (Hacketl) Asch & Graetoner Foxtail Fescue  U

* - Denotes non-native plant taxa
Appendix 2. Observed or detected Species List – Fauna

REPTILES
- Western Fence Lizard
- Gopher Snake

BIRDS
- Mourning Dove
- Anna's Hummingbird
- Black Phoebe
- Western Scrub-Jay
- American Crow
- Bewick's Wren
- Northern Mockingbird
- California Thrasher
- Wrentit
- California Towhee
- House Finch

MAMMALS
- California Mouse
- House Mouse
- Valley Pocket Gopher
- Opossum
- Striped Skunk
- Raccoon
- Bobcat
- Coyote

Scoleoperous occidentalis
Pituophis catenifer annectens
Zenaida macroura
Calypte anna
Sayornis nigricans
Aphelocoma californica
Corvus brachyrhynchos
Thryomanes bewickii
Mimus polyglottos
Toxostoma redivivum
Chamaea fasciata
Pipilo crissalis
Haemorhous mexicanus
Peromyscus californicus
Mus musculus
Thomomys bottae
Didelphis virginiana
Mephitis mephitis
Procyon lotor
Lynx rufus
Canis latrans
Appendix 3. Sensitive Flora and Fauna - as Separate Excel files
Figure 1. Regional Location
Figure 2. Vicinity Site Map
FIGURE 3
PROJECT EXISTING BIOLOGICAL RESOURCES
AND LIMITS OF DEVELOPMENT

Mapping prepared by Pacific Southwest Biological Services, Inc. & Exhibit by JP Engineering, Inc., FEBRUARY 24, 2017
### Appendix 3. Potential Sensitive Species Table—Flora

<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthomintha ilicifolia San Diego Thorn-mint</td>
<td>FT/SE/1B (2-3-2)</td>
<td>Chaparral, coastal scrub, valley &amp; foothill grassland, vernal pools, endemic to active vertisol clay soils of mesas &amp; valleys, usu on clay lenses within grassland or chaparral communities, 10-935 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soil that this species requires.</td>
</tr>
<tr>
<td>Adolphia californica California Adolphia</td>
<td>None/None/2 (1-3-1)</td>
<td>Chaparral, coastal sage scrub, valley &amp; foothill grassland, from sandy/gravelly to clay soils within grassland, coastal sage scrub, or chaparral; various exposures, 15-300 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clay soils</td>
</tr>
<tr>
<td>Agave shawii Shaw's Agave</td>
<td>None/None/2 (3-3-1)</td>
<td>Coastal bluff scrub, coastal scrub; elevation 10-75 m.</td>
<td>No</td>
<td>No</td>
<td>Site too far from north of known range.</td>
</tr>
<tr>
<td>Ambrosia chenopodifolia San Diego Bur-sage</td>
<td>None/None/2 (3-3-1)</td>
<td>Coastal scrub; elevation 55-155 m.</td>
<td>No</td>
<td>No</td>
<td>Site too far from north of known range.</td>
</tr>
<tr>
<td>Ambrosia (Hymenoclea) monogyna Singlewhorl Burrobush</td>
<td>None/None/2.2</td>
<td>Coastal ephemeral drainages to 400m</td>
<td>No</td>
<td>No</td>
<td>Site lacks drainages that would support this shrub.</td>
</tr>
<tr>
<td>Ambrosia pumila San Diego Ambrosia</td>
<td>FENone/1B (3-3-2)</td>
<td>Coastal sage scrub &amp; upper riverine benches of grassland, near the immediate coast, SD and Riverside Cos.</td>
<td>No</td>
<td>No</td>
<td>Site lacks detailed habitat requirements this species depends upon.</td>
</tr>
<tr>
<td>Aphanisma blitoides Aphanisma</td>
<td>None/None/1B (2-2-2)</td>
<td>Coastal bluff scrub, coastal dunes, coastal shrub/ sandy, 1-305m</td>
<td>No</td>
<td>No</td>
<td>Site lacks detailed habitat requirements this species depends upon.</td>
</tr>
<tr>
<td>Arctostaphylos glandulosa ssp. crassifolia Del Mar Manzanita</td>
<td>FE/ (3-3-2)</td>
<td>Sandy coastal bluffs</td>
<td>No</td>
<td>High</td>
<td>Site lacks on sandstone bluff formation</td>
</tr>
<tr>
<td>Artemisia palmeri San Diego Sagewort</td>
<td>None/None/2 (2-2-1)</td>
<td>Chaparral, coastal sage scrub, riparian scrub &amp; woodland/sandy, mesic, 15-915 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks drainages that would support this shrub.</td>
</tr>
<tr>
<td>Astragalus tener var. titi Titus Locoweed</td>
<td>None/None/1B(3-3-3)</td>
<td>Coastal sand dunes</td>
<td>No</td>
<td>No</td>
<td>Site lacks dune habitat.</td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/ Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Atriplex coulteri</em></td>
<td>None/None/1B(2-2-2)</td>
<td>Coastal bluff scrub, coastal dunes, coastal scrub, valley &amp; foothill grassland, esp. on ocean bluffs, ridge tops, alkaline low places, 10-440 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks alkaline soils that supports this species.</td>
</tr>
<tr>
<td><em>Atriplex pacifica</em></td>
<td>FSC/None/1B (3-2-2)</td>
<td>Coastal scrub, coastal bluff scrub, playas, chenopod scrub, esp. in alkali soils, 1-500 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks alkaline soils that supports this species.</td>
</tr>
<tr>
<td><em>Baccharis vanessae</em></td>
<td>FE/SE/1B(2-3-3)</td>
<td>Chaparral on sandstone and steep, open rocky areas 60-720 m.</td>
<td>No</td>
<td>Low</td>
<td>Searched for but not found in site chaparral habitat where this species is typically found.</td>
</tr>
<tr>
<td><em>Bergerocactus emoryi</em></td>
<td>None/None/2 (2-2-1)</td>
<td>Coastal sage scrub &amp; grassland, near the immediate coast, s SD Co.</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found. Planted at Torrey Pines State Reserve.</td>
</tr>
<tr>
<td><em>Brodiaea orcuttii</em></td>
<td>FSC/None/1B (1-3-2)</td>
<td>Vernal pools, valley &amp; foothill grassland, closed-cone conif forest, cismontane woodland, chaparral, meadows, esp mesic, clay habitats, occ serpentine, in vernal pools &amp; small drainages, 30-1615 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soil that this species requires.</td>
</tr>
<tr>
<td><em>California macrophylla</em></td>
<td>None/None/1B.1</td>
<td>Open bare soil</td>
<td>No</td>
<td>No</td>
<td>Site lacks calcareous soils that would support this annual.</td>
</tr>
<tr>
<td><em>Calochortus dunnii</em></td>
<td>None/Rare/1B (2-2-2)</td>
<td>Closed-cone conif forest, chaparral, esp. on gabbro or metavolcanic soils; also known from sandstone, oft assoc w/chaparral, 375-1830 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks gabbro or metavolcanic soils that typically supports this species.</td>
</tr>
<tr>
<td><em>Ceanothus cyaneus</em></td>
<td>FSC/None/1B (3-2-2)</td>
<td>Closed-cone conif forest, chaparral. In CA, known only fr RIV &amp; SD Cos., 100-1515 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks specific acid-igneous soils that typically supports this species.</td>
</tr>
<tr>
<td><em>Ceanothus verrucosus</em></td>
<td>FSC/None/2 (2-2-1)</td>
<td>Chaparral. In CA, known only fr SD Co., 1-380 m.</td>
<td>Present</td>
<td>High</td>
<td>Occurs as a major component of site chaparral.</td>
</tr>
<tr>
<td><em>Chaenactis glabriuscula</em></td>
<td>None/None/1B (2-3-2)</td>
<td>Coastal bluff scrub, coastal dunes, sandy sites, 3-100 m.</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found in sandy soils on site that typically support this species.</td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, Other)</th>
<th>Habitat Preferences/Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comarostaphylos diversifolia ssp. diversifolia Summer-Holly</td>
<td>FSC/None/1B (2-2-2)</td>
<td>Chaparral, oft in mixed chaparral in CA, sometimes post-burn, 30-550 m.</td>
<td>No</td>
<td>Low</td>
<td>Searched for but not found in chaparral.</td>
</tr>
<tr>
<td>Cordylanthus orcuttianus Orcutt's Bird's-beak</td>
<td>None/None/2 (3-3-1)</td>
<td>Coastal scrub. In CA, known only fr SD Co.; also in Baja. Found in coastal scrub assoc on slopes, also reported fr intermittent moist swales, &amp; in washes, 100-200 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks calcareous soils that would support this annual.</td>
</tr>
<tr>
<td>Coreopsis maritima Sea Dahlia</td>
<td>None/None/2 (2-2-1)</td>
<td>Coastal scrub, coastal bluff scrub, occurs on variety of soil types, incl sandstone, 5-150 m.</td>
<td>No</td>
<td>Low</td>
<td>Searched for but not found. Occurs at base of sandstone buffs 1 mile northwest of site</td>
</tr>
<tr>
<td>Corethrogyne filaginifolia var. incana San Diego Sand Aster</td>
<td>None/None/1B (3-3-2)</td>
<td>Coastal scrub, coastal bluff scrub, chaparral. In CA, known only fr/SD Co.; also in Baja. Most sites dist.; poss. in dist. sites &amp; ecotones, 3-115 m.</td>
<td>No</td>
<td>No</td>
<td>Site is north of known range.</td>
</tr>
<tr>
<td>Corethrogyne filaginifolia var. linifolia Del Mar Mesa Sand Aster</td>
<td>None/None/1B (3-3-3)</td>
<td>Coastal scrub, coastal bluff scrub, chaparral. Endemic to Del Mar-Carmel Mountain region, 3-115 m.</td>
<td>No</td>
<td>High</td>
<td>Site distrubance to extensive in sandy areas</td>
</tr>
<tr>
<td>Cupressus (Hesperocyparis) forbesii Tecate Cypress</td>
<td>FSC/None/1B (3-3-2)</td>
<td>Closed-cone conif forest, chaparral, esp. on north-facing slopes, groves oft assoc w/chaparral, 250-1500 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks coniferous forest habitats and chaparral community that typically supports this species.</td>
</tr>
<tr>
<td>Deinandra [Hemizonia] conjugens Otay Tarplant</td>
<td>FT/SE/1B (3-3-2)</td>
<td>Coastal scrub, valley &amp; foothill grassland. In CA, known only fr SD Co. Coastal plains, mesas, river bottoms, oft in open dist</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soil that this species requires.</td>
</tr>
<tr>
<td>Dudleya attenuata ssp. orcotti Orcutt's Dudleya</td>
<td>None/None/1B (3-3-1)</td>
<td>Coastal scrub, coastal bluff scrub, chaparral. Known only fr SD Co. &amp; adj Baja. Rocky mesas, cyns, &amp; ridges, 3-50 m.</td>
<td>No</td>
<td>No</td>
<td>North of known range of species. Not recognized by CNPS</td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
### Appendix 3. Potential Sensitive Species Table-Flora

<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, Other)</th>
<th>Habitat Preferences/Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dudleya blochmaniae</em> ssp. <em>blochmaniae</em> Blochman’s Dudleya</td>
<td>FSC?orNone/None/1B (2-3-2)</td>
<td>Coastal scrub, coastal bluff scrub, valley &amp; foothill grassland. Open, rocky slopes; often in shallow clays over serpentine or in rocky areas with little soil, 5-450 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey, serpentine or rocky soils that typically support this species.</td>
</tr>
<tr>
<td><em>Dudleya blochmaniae</em> ssp. <em>brevifolia</em> Short-leaf Hasseanthus</td>
<td>FSC/None/None/1B (2-3-2)</td>
<td>Coastal scrub, coastal bluff scrub, valley and foothill grassland.</td>
<td>No</td>
<td>Low</td>
<td>Searched for but not found on sandstone formation of site.</td>
</tr>
<tr>
<td><em>Dudleya variegata</em> Variegated Dudleya</td>
<td>FT/SE/1B (3-3-2)</td>
<td>Chaparral, coastal scrub, cismontane woodland, valley &amp; foothill grassland, vernal pools. In CA, known only fr SD Co. Rocky or clay soils, vernal pool margins, 3-550 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey or rocky soils that typically support this species.</td>
</tr>
<tr>
<td><em>Ericameria palmeri</em> ssp. <em>palmeri</em> Palmer’s Goldenbush</td>
<td>None/None/1B (3-2-1)</td>
<td>Coastal scrub, chaparral, granitic soils, steep hillsides, mesic areas; 100-600 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks granitic soils that typically supports this species.</td>
</tr>
<tr>
<td><em>Eryngium aristatum</em> var. <em>parishii</em> San Diego Button-celery</td>
<td>FE/SE/1B (2-3-2)</td>
<td>Vernal pools, coastal scrub, valley &amp; foothill grassland, esp in SD mesa hardpan &amp; claypan vernal pools &amp; southern interior basalt flow vernal pools; usu surr by scrub, 15-620 m</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soil that this species requires.</td>
</tr>
<tr>
<td><em>Euphorbia misera</em> Cliff Spurge</td>
<td>None/None/2 (2-2-1)</td>
<td>Coastal bluff scrub, coastal scrub. In so CA, Baja, Guadalupe l. Rocky sites, 10-500 m.</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found.</td>
</tr>
<tr>
<td><em>Ferocactus viridescens</em> San Diego Barrel Cactus</td>
<td>FSC/None/2 (1-3-1)</td>
<td>Chaparral, Diegan coastal scrub, valley &amp; foothill grassland, oft on exposed, level or s-facing sloping areas; oft in coastal scrub near crest of slopes, 3-485 m.</td>
<td>No</td>
<td>No</td>
<td>Searched for but not encountered.</td>
</tr>
<tr>
<td><em>Frankenia palmeri</em> Palmer’s Frankenia</td>
<td>None/None/2 (3-3-1)</td>
<td>Coastal dunes, marshes, swamps (coastal salt), playas, 0-10 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks saline habitats that typically support this species.</td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
### Appendix 3. Potential Sensitive Species Table-Flora

<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
</table>
| *Fremontodendron mexicanum*  
Mexican Flannelbush       | FE/Rare/1B (3-3-2)                                        | Closed-cone conifer forest, chaparral, cismontane woodland. Usu scattered along borders of creeks or in dry cyns; sometimes on gabbro soils, 10-490 m. | No                                | No                              | Site is north of known range.                          |
| *Harpagonella palmeri*  
Palmer’s Grapplinghook       | None/None/4 (1-2-1)                                       | Chaparral, coastal scrub, valley & foothill grassland, esp clay soils, open grassy areas, 15-830 m. | No                                | No                              | Site lacks clayey soil that this species requires.    |
| *Iva hayesiana*  
San Diego Marsh-elder       | FSC/None/2 (2-2-1)                                        | Marshes & swamps, playas, esp in river washes, 10-500 m. | No                                | No                              | Site lacks riverine soils that typically support this species. |
| *Lasthenia glabrata ssp. coulteri*  
Coulter’s Goldfields       | FSC/None/1B (2-3-2)                                       | Coastal salt marshes, playas, valley & foothill grassland, vernal pools, usu in alkaline soils in playas, sinks, grassland, 1-1400 m. | No                                | No                              | Site lacks alkaline soils that typically support this species. Occur in Peñasquitos Marsh to the west. |
| *Lepechinia ganderi*  
Gander’s Pitcher Sage       | None/None/1B (3-2-2)                                       | Closed-cone conifer forest, chaparral, coastal scrub, valley & foothill grassland/gabbroic or metavolcanic. SD Co., Baja. Known in CA fr fewer than 10 occurs, 305-1005 m. | No                                | No                              | Site lacks metavolcanic-derived soils that typically support this species. |
| *Lepidium virginicum var. robinsonii*  
Robinson’s Pepper-grass       | None/None/1B (3-2-2)                                       | Alkaline sites on the coastal sides of the main mountain ranges, below 800 m.. | No                                | No                              | Site lacks alkaline soils that typically support this species |
| *Lotus nuttallianus*  
Nuttall’s Lotus       | FSC/None/1B (3-3-2)                                       | Coastal dunes, coastal scrub, only from SD Co. & Baja; on sand dunes, 0-10 m. | No                                | No                              | Site lacks sandy soils that typically support this species. |
| *Monardella stoneana*  
Jennifer’s Monardella       | None/None/1B,2 (2-3-2)                                    | Coastal sage scrub and chaparral of rocky metavolcanic or volcanic soils | No                                | No                              | Site lacks metavolcanic-derived soils that typically support this species. |
| *Muilla clevelandii*  
San Diego Goldenstar       | FSC/None/1B (2-2-2)                                       | Chaparral, coastal scrub, valley & foothill grassland, vernal pools, esp. mesa grasslands, scrub edges; under 50 m. | No                                | No                              | Site lacks clayey soils that typically support this species. |

Note: Species limited to immediate coast excluded
## Appendix 3. Potential Sensitive Species Table-Flora

<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Myosurus minimus</em> ssp. <em>apus</em> Little Mousetail</td>
<td>FSC/None/3 (2-3-2)</td>
<td>Vernal pools. This ssp. has taxonomic probs. Distinguishing betw this and <em>M. sessilis</em> is difficult. Hybrid? Alkaline soils, 20-640 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soils that typically support this species.</td>
</tr>
<tr>
<td><em>Navarretia fossalis</em> Spreading Navarretia</td>
<td>FT/None/1B (2-3-2)</td>
<td>Vernal pools, chenopod scrub, marshes &amp; swamps, playas, esp in SD hardpan &amp; SD claypan vernal pools, in swales &amp; vernal pools, often surr., by other habitat types, 30-1300 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soils that typically support this species.</td>
</tr>
<tr>
<td><em>Nemacaulis denudata</em> var. <em>denudata</em> Coast Woolly-heads</td>
<td>None/None/1B (2-2-2)</td>
<td>Coastal dunes, 0-100 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks coastal dunes that typically support this species.</td>
</tr>
<tr>
<td><em>Nemacaulis denudata</em> var. <em>gracilis</em> Slender Woolly-heads</td>
<td>None/None/2 (2-2-1)</td>
<td>Coastal dunes, desert dunes, Sonoran desert scrub, 50-400 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks sandy soils that typically support this species.</td>
</tr>
<tr>
<td><em>Opuntia califomia</em> var <em>california</em> Snake Cholla</td>
<td>None/None/1B (3-3-2)</td>
<td>Chaparral, coastal scrub, 30-150 m.</td>
<td>No</td>
<td>No</td>
<td>Site is north of known range of this species.</td>
</tr>
<tr>
<td><em>Orcuttia californica</em> California Orcutt Grass</td>
<td>FE/SE/1B (3-3-2)</td>
<td>Vernal pools, 15-660 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks clayey soils that typically support this species.</td>
</tr>
<tr>
<td><em>Orobanche parishii</em> ssp. <em>brachylyoba</em> Short-lobed Broom-rape</td>
<td>FSC/None/1B (2-2-2)</td>
<td>Coastal bluff scrub, coastal dunes, coastal scrub/sandy, parasitic on shrubs such as <em>Isocoma</em></td>
<td>No</td>
<td>No</td>
<td>Site lacks sandy soils that typically support this species.</td>
</tr>
<tr>
<td><em>Phacelia stellaris</em> Brand's Phacelia</td>
<td>None/None/1B (3-3-2)</td>
<td>Coastal dunes, coastal scrub, 5-400 m. Known ifr fewer than 5 occurs.</td>
<td>No</td>
<td>No</td>
<td>Site lacks sandy soils that typically support this species.</td>
</tr>
<tr>
<td><em>Pogogyne abramsii</em> San Diego Mesa Mint</td>
<td>FE/SE/1B (2-3-3)</td>
<td>Vernal pools, 90-200 m, north of Otay Mesa</td>
<td>No</td>
<td>No</td>
<td>No vernal pools are found on the site that this species requires.</td>
</tr>
<tr>
<td><em>Quercus dumosa</em> Nuttall's Scrub Oak</td>
<td>FSC/None/1B (2-3-2)</td>
<td>Closed-cone conif. forest, chaparral, coastal scrub, gen. On sandy soils near coast, occ. on clay loam, 15-400 m.</td>
<td>No</td>
<td>No</td>
<td>Scrub oaks on site are hybrids, lacking diagnostic ventral leaf pubesence of typical species.</td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
### Appendix 3. Potential Sensitive Species Table-Flora

<table>
<thead>
<tr>
<th>Scientific and Common Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Probability of Occurrence (L-M-H)</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ribes viburnifolium</td>
<td>None/None/1B (0.2)</td>
<td>Coastal canyons</td>
<td>No</td>
<td>No</td>
<td>Site is north of known range. Planted in San Clemente Canyon to the south.</td>
</tr>
<tr>
<td>Santa Catalina Island Currant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senecio aphanactis</td>
<td>None/None/2 (3-2-1)</td>
<td>Chaparral, cismontane woodland, coastal scrub/alkaline, 15-800 m. Rare in LA, OR, &amp; RIV Cos.</td>
<td>No</td>
<td>No</td>
<td>Site lacks alkaline soils that typically support this species.</td>
</tr>
<tr>
<td>Rayless Ragwort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stemodia durantifolia</td>
<td>None/None/2 (3-3-1)</td>
<td>Sonoran desert scrub (often mesic, sandy), 180-300 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks riverine soils that typically support this species.</td>
</tr>
<tr>
<td>Purple Stemodia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetracoccus dioicus</td>
<td>FSC/None/1B (3-2-2)</td>
<td>Chaparral, coastal scrub, esp stony fine sandy decomposed gabbro soil, 165-1000 m.</td>
<td>No</td>
<td>No</td>
<td>Site lacks gabbro or metavolcanic soils that typically supports this species.</td>
</tr>
<tr>
<td>Parry’s Tetracoccus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
<table>
<thead>
<tr>
<th>Common and Scientific Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Year/No (Direct/Indirect Evidence)</th>
<th>Potential to Occur On Site</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverside Fairy Shrimp</td>
<td>FE/None/SSC</td>
<td>Endemic to western RIV and SD Cos, in area of tectonic swales, earth slump basins, in grassland &amp; coastal sage scrub; esp. in habitats seasonally astatic pools, filled by winter/spring rains; hatch in warm water later in the season.</td>
<td>No</td>
<td>No</td>
<td>Site lacks vernal pools that support this species</td>
</tr>
<tr>
<td><em>Streptocephalus woottoni</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Diego Fairy Shrimp</td>
<td>FE/None/None</td>
<td>Vernal pools</td>
<td>No</td>
<td>No</td>
<td>Site lacks vernal pools that support this species</td>
</tr>
<tr>
<td><em>Branchinecta sandiegonensis</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quino Checkerspot Butterfly</td>
<td>FE/None/None</td>
<td>Sunny openings in chaparral &amp; coastal sage shrublands in parts of RIV &amp; SD Cos; esp. on hills &amp; mesas near coast, with high densities of host plants <em>Plantago erecta, P. insulans, Orthocarpus purpureascens</em>.</td>
<td>No</td>
<td>No</td>
<td>Site lacks sufficient density of larval host plants this species requires</td>
</tr>
<tr>
<td><em>Euphydryas editha quino</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thorne's Hairstreak Butterfly</td>
<td>FSC/None/None</td>
<td>Endemic to San Diego County, where host plant, Tecate Cypress occurs, including Otay Mountain (Little Cedar Canyon)</td>
<td>No</td>
<td>No</td>
<td>Site lacks larval host plants this species requires</td>
</tr>
<tr>
<td><em>Mitoura thornei</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Spadefoot</td>
<td>FSC/None/SSC</td>
<td>Grassland habitats, valley &amp; foothill woodlands, requires vernal pools for breeding</td>
<td>No</td>
<td>No</td>
<td>Site lacks vernal pools that support this species</td>
</tr>
<tr>
<td><em>Spea hammondii</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Diego Horned Lizard</td>
<td>FSC/None/SSC</td>
<td>Coastal sage scrub, chaparral in arid and semi-arid climate, esp. friable, rocky, or shallow sandy soils</td>
<td>No</td>
<td>No</td>
<td>Site lacks adequate density of ant prey base that this species requires.</td>
</tr>
<tr>
<td><em>Phrynosoma coronatum blainvillii</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coronado Skink</td>
<td>FSC/None/SSC/None</td>
<td>Grassland, chaparral, piñon-juniper sage woodland, pine-oak &amp; pine forests in coastal ranges in so. CA, esp prefers early successional stages or open areas, found in rocky areas close to streams &amp; on dry hillsides</td>
<td>No</td>
<td>No</td>
<td>Site lacks good quality sage scrub or chaparral with sandy or rocky soils that this species requires</td>
</tr>
<tr>
<td><em>Eumeces skiltonianus interparietalis</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belding's Orange-throated Whiptail</td>
<td>FSC/None/SSC</td>
<td>Coastal scrub (low elev.), chaparral, valley &amp; foothill hardwood, esp washes &amp; sandy areas w/patches of brush &amp; rocks</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found.</td>
</tr>
<tr>
<td><em>Aspidoscelis [Cnemidophorus] hypertythus beldingi</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
<table>
<thead>
<tr>
<th>Common and Scientific Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/ Requirements</th>
<th>Verified On Site Yes/No (Direct/ Indirect Evidence)</th>
<th>Potential to Occur On Site</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Whiptail</td>
<td>FSC/None/None</td>
<td>Deserts &amp; semiarid areas w.</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found.</td>
</tr>
<tr>
<td>Aspidoscelis [Cnemidophorus] tigris stejnegeri</td>
<td>sparse vegetation &amp; open areas, also in woodland &amp; riparian areas, esp. where ground may be firm soil, sandy, or rocky</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silvery Legless Lizard</td>
<td>FSC/None/SSC</td>
<td>Sparse vegetation of chaparral</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found.</td>
</tr>
<tr>
<td>Anniella pulchra pulchra</td>
<td>riparian, loose soil for burrowing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Rosy Boa</td>
<td>FSC/None/Protected</td>
<td>Desert &amp; chaparral from coast to</td>
<td>No</td>
<td>No</td>
<td>Site lacks rocky outcrops and dense brush cover that supports this species</td>
</tr>
<tr>
<td>Charina trivirgata</td>
<td>Mojave &amp; Colorado Deserts, esp in moderate to dense vegetation &amp; rocky cover; habitats w/mix of brushy cover &amp; rocky soil like coastal canyons &amp; hillsides, desert canyons, washes &amp; mountains</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coast Patch-nosed Snake</td>
<td>FSC/None/SSC</td>
<td>Brushy or shrubby vegetation in</td>
<td>No</td>
<td>No</td>
<td>Site lacks intact shrub habitat this species requires</td>
</tr>
<tr>
<td>Salvadora hexalepis virgulta</td>
<td>coastal so. CA, esp. uses small mammal burrows for refuge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-striped Gartersnake</td>
<td>FSC/None/SSC</td>
<td>Coastal CA., fr/ Salinas to NW</td>
<td>No</td>
<td>No</td>
<td>Site lacks riparian habitat that typically support this species</td>
</tr>
<tr>
<td>Thamnophis hammondii</td>
<td>Baja, fr/sea level to approx. 7000 ft typically support this species; esp. highly aquatic, found in or near permanent fresh water, often along streams w/rocky beds &amp; riparian growths</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Red Diamond</td>
<td>FSC/None/SSC</td>
<td>Chaparral, woodland, grassland &amp;</td>
<td>No</td>
<td>No</td>
<td>Site lacks adequate cover.</td>
</tr>
<tr>
<td>Rattlesnake</td>
<td>desert areas, esp in rocky areas &amp; dense vegetation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crotalus [exsul] ruber</td>
<td>ruber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>None/None/SSC</td>
<td>Coastal salt marsh &amp; fresh-water</td>
<td>No</td>
<td>No</td>
<td>Site lacks open grassland or marshlands that typically support this species</td>
</tr>
<tr>
<td>Circus cyaneus (nestling)</td>
<td>marsh, nest and forage in grasslands and farmlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooper’s Hawk</td>
<td>None/None/SSC</td>
<td>Woodland, usu. open, interrupted</td>
<td>No</td>
<td>Low</td>
<td>This species could utilize site for foraging and roosting</td>
</tr>
<tr>
<td>Accipiter cooperi</td>
<td>or marginal type, nests mainly in riparian areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burrowing Owl</td>
<td>FSC/None/SSC</td>
<td>Open dry annual or perennial</td>
<td>No</td>
<td>No</td>
<td>Site lacks open grassland or marshlands that typically support this species</td>
</tr>
<tr>
<td>Athene [Speotyto] curiculaira (burrow sites)</td>
<td>grasslands, desert &amp; scrublands w/low growing vegetation, uses ground squirrel burrows for nesting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
<table>
<thead>
<tr>
<th>Common and Scientific Name</th>
<th>Sensitivity Code &amp; Status (Federal, State, Local, other)</th>
<th>Habitat Preferences/Requirements</th>
<th>Verified On Site Yes/No (Direct/Indirect Evidence)</th>
<th>Potential to Occur On Site</th>
<th>Factual Basis for Determination of Occurrence Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least Bell's Vireo</td>
<td>FE/SE/None</td>
<td>Summer resident in So. Cal., inhabits low riparian growth in vic. of water or in dry river bottoms, below 2000 ft, usu. willow, baccharis, mesquite</td>
<td>No</td>
<td>No</td>
<td>Site lacks riparian habitat that typically support this species</td>
</tr>
<tr>
<td>Vireo bellii pusillus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Horned Lark</td>
<td>None/None/SSC</td>
<td>Barren ground with short grass or scattered bushes.</td>
<td>No</td>
<td>No</td>
<td>Site lacks open grassland or marshlands that typically support this species</td>
</tr>
<tr>
<td>Eremophila aposara actae</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Cactus Wren</td>
<td>None/None/SSC</td>
<td>So. Cal. coastal sage scrub, esp w/ tall Opuntia cactus for nesting</td>
<td>No</td>
<td>No</td>
<td>Site lacks extensive cactus stands that this species requires</td>
</tr>
<tr>
<td>Campylorhynchus brunneicapillus courteous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal California Gnatcatcher</td>
<td>FT/None/SSC</td>
<td>Coastal sage scrub, below 2,500 ft in So. Cal., esp low coastal scrub in arid washes, mesas &amp; slopes</td>
<td>No</td>
<td>No</td>
<td>Searched for but not found. Site appears to lack intact, dense shrub habitat this species requires</td>
</tr>
<tr>
<td>Polioptila californica californica</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow-breasted Chat</td>
<td>None/None/SSC</td>
<td>Summer resident in riparian thickets of willow &amp; other brushy tangles near watercourses, nests in low, dense riparian habitat.</td>
<td>No</td>
<td>No</td>
<td>Site lacks riparian habitat that typically support this species</td>
</tr>
<tr>
<td>Icteria virens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern California Rufous-crowned Sparrow</td>
<td>FSC/None/SSC</td>
<td>Coastal sage scrub, sparse chaparral, esp rel. steep, often rocky hillsides w/grass &amp; forb patches</td>
<td>No</td>
<td>No</td>
<td>Site lacks intact shrub habitat this species requires</td>
</tr>
<tr>
<td>Aimophila ruficeps canescens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexican Long-tongued Bat</td>
<td>None/None/None</td>
<td>Occasionally found in SD Co., which is on periphery of range. Feeds on nectar &amp; pollen of night-blooming succulents. Roosts in relatively well-lit caves, &amp; in &amp; around blidges.</td>
<td>No</td>
<td>Low</td>
<td>Site lacks appropriate foraging or roosting habitats for this species</td>
</tr>
<tr>
<td>Choeronycteris mexicana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yuma Myotis</td>
<td>FSC/None/SSC</td>
<td>Open forest &amp; woodlands. Closely tied to bodies of water.</td>
<td>No</td>
<td>Low</td>
<td>Site lacks appropriate foraging or roosting habitats for this species</td>
</tr>
<tr>
<td>Myotis yumanensis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small-footed Myotis</td>
<td>FSC/None/SSC</td>
<td>Cliffs, rock crevices, possibly in caves &amp; mines. Variety of habitats from sea level to 8000 ft</td>
<td>No</td>
<td>Low</td>
<td>Site lacks appropriate foraging or roosting habitats for this species</td>
</tr>
<tr>
<td>Myotis ciliolabrum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Red Bat</td>
<td>None/None/None</td>
<td>Trees along or near waterways with open foraging areas. Feeds over grasslands, shrublands, woodlands &amp; forests.</td>
<td>No</td>
<td>Low</td>
<td>Site lacks appropriate foraging or roosting habitats for this species</td>
</tr>
<tr>
<td>Lasiurus boreasewillii</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Species limited to immediate coast excluded
## DEFINITIONS OF SENSITIVITY RATINGS

**California Native Plant Society (CNPS)**

**List Status**

<table>
<thead>
<tr>
<th>List</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>List 1A</td>
<td>Plants presumed extinct in California. CEQA consideration mandatory</td>
</tr>
<tr>
<td>List 1B</td>
<td>Plants rare, threatened, or endangered in California and elsewhere.</td>
</tr>
<tr>
<td>List 2</td>
<td>Plants rare, threatened, or endangered in California, but more common elsewhere. CEQA consideration mandatory</td>
</tr>
<tr>
<td>List 3</td>
<td>Plants about which we need more information - a review list. CEQA consideration strongly recommended</td>
</tr>
<tr>
<td>List 4</td>
<td>Plants of limited distribution - a watch list. CEQA consideration strongly recommended</td>
</tr>
</tbody>
</table>

**CNPS Threat Code Extensions & Meanings**

<table>
<thead>
<tr>
<th>Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1</td>
<td>Seriously endangered in California</td>
</tr>
<tr>
<td>.2</td>
<td>Fairly endangered in California</td>
</tr>
<tr>
<td>.3</td>
<td>Not very endangered in California</td>
</tr>
</tbody>
</table>

**State-Listed/Designated Plants and Animals**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE</td>
<td>State-listed, endangered</td>
</tr>
<tr>
<td>ST</td>
<td>State-listed, threatened</td>
</tr>
<tr>
<td>SR</td>
<td>State-listed, rare</td>
</tr>
<tr>
<td>SCE</td>
<td>Candidate for State listing</td>
</tr>
<tr>
<td>SSC</td>
<td>California Special Concern Species (Department of Fish and Game)</td>
</tr>
<tr>
<td>SFP</td>
<td>California Fully Protected</td>
</tr>
</tbody>
</table>

**Federally-Listed/Designated Plants and Animals**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FE</td>
<td>Federally-listed, endangered</td>
</tr>
<tr>
<td>FT</td>
<td>Federally-listed, threatened</td>
</tr>
<tr>
<td>PE</td>
<td>Federally-proposed, endangered</td>
</tr>
<tr>
<td>PT</td>
<td>Federally-proposed, threatened</td>
</tr>
<tr>
<td>FC</td>
<td>Candidate for Federal listing</td>
</tr>
<tr>
<td>FSC</td>
<td>Federal Special Concern Species</td>
</tr>
<tr>
<td>C2+</td>
<td>Threat and/or distribution data are insufficient to support federal listing, but the plant is presumed extinct</td>
</tr>
<tr>
<td>C3c</td>
<td>Too widespread and/or not threatened</td>
</tr>
</tbody>
</table>

**USFWS 2002 List**

- U. S. Fish & Wildlife Service Birds of Conservation Concern 2002 List within jurisdiction of Carlsbad FWO "...to identify species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions."

**National Audubon Society Watch List**

- **Red List** Identified by BirdLife International as Threatened or Near-threatened at the global level and by Partners in Flight as Extremely High Priority at the national level
- **Yellow List** Identified by Partners in Flight at the national level as of Moderately High Priority or Moderate Priority
In December 2015, the City adopted a Climate Action Plan (CAP) that outlines the actions that City will undertake to achieve its proportional share of State greenhouse gas (GHG) emission reductions. The purpose of the Climate Action Plan Consistency Checklist (Checklist) is to, in conjunction with the CAP, provide a streamlined review process for proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to the California Environmental Quality Act (CEQA).  

Analysis of GHG emissions and potential climate change impacts from new development is required under CEQA. The CAP is a plan for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

This Checklist is part of the CAP and contains measures that are required to be implemented on a project-by-project basis to ensure that the specified emissions targets identified in the CAP are achieved. Implementation of these measures would ensure that new development is consistent with the CAP's assumptions for relevant CAP strategies toward achieving the identified GHG reduction targets. Projects that are consistent with the CAP as determined through the use of this Checklist may rely on the CAP for the cumulative impacts analysis of GHG emissions. Projects that are not consistent with the CAP must prepare a comprehensive project-specific analysis of GHG emissions, including quantification of existing and projected GHG emissions and incorporation of the measures in this Checklist to the extent feasible. Cumulative GHG impacts would be significant for any project that is not consistent with the CAP.

The Checklist may be updated to incorporate new GHG reduction techniques or to comply with later amendments to the CAP or local, State, or federal law.

---

1 Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project’s community plan to determine applicability.
The Checklist is required only for projects subject to CEQA review. If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in Chapter 11: Land Development Procedures of the City's Municipal Code. The requirements in the Checklist will be included in the project's conditions of approval. The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

### Application Information

<table>
<thead>
<tr>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project No./Name:</strong> McCarty Estates, PTS No. 515157</td>
</tr>
<tr>
<td><strong>Property Address:</strong> 3929 Arroyo Sorrento Road, San Diego, CA 92130</td>
</tr>
<tr>
<td><strong>Applicant Name/Co.:</strong> Kent McCarty</td>
</tr>
<tr>
<td><strong>Contact Phone:</strong> (858) 967-1249</td>
</tr>
<tr>
<td><strong>Was a consultant retained to complete this checklist?</strong></td>
</tr>
<tr>
<td><strong>Consultant Name:</strong> Jorge H. Palacios</td>
</tr>
<tr>
<td><strong>Company Name:</strong> JP Engineering, Inc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. What is the size of the project (acres)?</strong> 2.36 Acres</td>
</tr>
<tr>
<td><strong>2. Identify all applicable proposed land uses:</strong></td>
</tr>
<tr>
<td>[ ] Residential (indicate # of single-family units): 2</td>
</tr>
<tr>
<td>[ ] Residential (indicate # of multi-family units):</td>
</tr>
<tr>
<td>[ ] Commercial (total square footage):</td>
</tr>
<tr>
<td>[ ] Industrial (total square footage):</td>
</tr>
<tr>
<td>[ ] Other (describe):</td>
</tr>
<tr>
<td><strong>3. Is the project or a portion of the project located in a Transit Priority Area?</strong> No</td>
</tr>
<tr>
<td><strong>4. Provide a brief description of the project proposed:</strong> Approval of a Tentative Parcel Map, Planned Development Permit, Site Development Permit and Preliminary Grading Plan for the construction of an additional single family home.</td>
</tr>
</tbody>
</table>

---

2 Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.
Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

<table>
<thead>
<tr>
<th>Checklist Item</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.</strong> Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations? ³ OR.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>B.</strong> If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment, would the proposed amendment result in an increased density within a Transit Priority Area (TPA)⁴ and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department? OR.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td><strong>C.</strong> If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

If "Yes," proceed to Step 2 of the Checklist. For question B above, complete Step 3. For question C above, provide estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation.

If "No," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

The project is consistent with the City's General Land Use Designation (Rural Residential);

The Carmel Valley Community Plan Neighborhood 8b designates this site for rural residential with a maximum density of 1 DU/ACRE. The project proposes two residential units, one of the units having already been built and which will remain, for a density of 1 DU/ACRE and therefore conforms to the prescribed land use and density. The AR-1-2 Zone implements the land use designation and the project is consistent with zoning designation.

³ This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

⁴ This category applies to all projects that answered in the affirmative to question 3 on the previous page: Is the project or a portion of the project located in a transit priority area.
Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures. All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

<table>
<thead>
<tr>
<th>Step 2: CAP Strategies Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checklist Item</td>
</tr>
<tr>
<td>(Check the appropriate box and provide explanation for your answer)</td>
</tr>
</tbody>
</table>

Strategy 1: Energy & Water Efficient Buildings

1. Cool/Green Roofs.
   - Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A); OR
   - Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code; OR
   - Would the project include a combination of the above two options?

Check “N/A” only if the project does not include a roof component.

Strategy 1: Energy & Water Efficient Buildings

This project will include roofing materials with a minimum 3-year age solar reflection and thermal emittance or solar reflection index equal or greater than the values specified in the voluntary measures under California Green Building Standards.

5 Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits or other permits that do not result in the expansion or enlargement of a building (e.g., decks, garages, etc.), and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

City Council Approved July 12, 2016
Revised June 2017
2. **Plumbing fixtures and fittings**

With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following:

<table>
<thead>
<tr>
<th>Residential buildings:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Standard dishwashers: 4.25 gallons per cycle;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Compact dishwashers: 3.5 gallons per cycle; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Clothes washers: water factor of 6 gallons per cubic feet of drum capacity?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nonresidential buildings:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Check “N/A” only if the project does not include any plumbing fixtures or fittings.

With respect to plumbing fixtures and fittings provided as part of this project, the low-flow fixture/appliances will be consistent with each of the following:

- Kitchen faucets: Maximum flow rate not to exceed 1.5 gallons per minute at 60 psi
- Standard dishwashers: 4.25 gallons per cycle
- Compact dishwashers: 3.5 gallons per cycle
- Clothes washers: water factor of 6 gallons per cubic feet of drum capacity
### Strategy 3: Bicycling, Walking, Transit & Land Use

#### 3. Electric Vehicle Charging

- **Multiple-family projects of 17 dwelling units or less**: Would 3% of the total parking spaces required, or a minimum of one space, whichever is greater, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?

- **Multiple-family projects of more than 17 dwelling units**: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents?

- **Non-residential projects**: Of the total required listed cabinets, boxes or enclosures, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use?

Check "N/A" only if the project is a single-family project or would not require the provision of listed cabinets, boxes, or enclosures connected to a conduit linking the parking spaces with electrical service, e.g., projects requiring fewer than 10 parking spaces.

Exempt, the project is a residential project.

#### 4. Bicycle Parking Spaces

Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)?

Check “N/A” only if the project is a residential project.

Exempt, the project is a residential project.

---

6 Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.
5. **Shower facilities**

If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower facilities in accordance with the voluntary measures under the California Green Building Standards Code as shown in the table below?

<table>
<thead>
<tr>
<th>Number of Tenant Occupants (Employees)</th>
<th>Shower/Changing Facilities Required</th>
<th>Two-Tier (12&quot; X 15&quot; X 72&quot;) Personal Effects Lockers Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11-50</td>
<td>1 shower stall</td>
<td>2</td>
</tr>
<tr>
<td>51-100</td>
<td>1 shower stall</td>
<td>3</td>
</tr>
<tr>
<td>101-200</td>
<td>1 shower stall</td>
<td>4</td>
</tr>
<tr>
<td>Over 200</td>
<td>1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants</td>
<td>1 two-tier locker plus 1 two-tier locker for each 50 additional tenant-occupants</td>
</tr>
</tbody>
</table>

Check “N/A” only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).

**Exempt, the project is a residential project.**
6. **Designated Parking Spaces**

If the project includes a nonresidential use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?

<table>
<thead>
<tr>
<th>Number of Required Parking Spaces</th>
<th>Number of Designated Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>0</td>
</tr>
<tr>
<td>10-25</td>
<td>2</td>
</tr>
<tr>
<td>26-50</td>
<td>4</td>
</tr>
<tr>
<td>51-75</td>
<td>6</td>
</tr>
<tr>
<td>76-100</td>
<td>9</td>
</tr>
<tr>
<td>101-150</td>
<td>11</td>
</tr>
<tr>
<td>151-200</td>
<td>18</td>
</tr>
<tr>
<td>201 and over</td>
<td>At least 10% of total</td>
</tr>
</tbody>
</table>

This measure does not cover electric vehicles. See Question 4 for electric vehicle parking requirements.

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces. The required designated parking spaces are to be provided within the overall minimum parking requirement, not in addition to it.

Check "N/A" only if the project is a residential project, or if it does not include nonresidential use in a TPA.

Exempt, the project is a residential project.
7. Transportation Demand Management Program

If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes:

At least one of the following components:

- Parking cash out program
- Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools
- Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development

And at least three of the following components:

- Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees
- On-site carsharing vehicle(s) or bikesharing
- Flexible or alternative work hours
- Telework program
- Transit, carpool, and vanpool subsidies
- Pre-tax deduction for transit or vanpool fares and bicycle commute costs
- Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use?

Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees).

Exempt, the project is a residential project.
Step 3: Project CAP Conformance Evaluation (if applicable)

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option B. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. In general, a project that would result in a reduction in density inside a TPA would not be consistent with Strategy 3. The following questions must each be answered in the affirmative and fully explained.

1. Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?
   Considerations for this question:
   - Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
   - Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
   - Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

2. Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit?
   Considerations for this question:
   - Does the proposed project support/incorporate identified transit routes and stops/stations?
   - Does the project include transit priority measures?

3. Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities?
   Considerations for this question:
   - Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
   - Does the proposed project urban design include features for walkability to promote a transit supportive environment?

4. Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities?
   Considerations for this question:
   - Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
   - Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

5. Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development?
   Considerations for this question:
   - Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
   - Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
   - Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

6. Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage?
   Considerations for this question:
   - Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
   - Does the proposed project include policies or strategies for preserving existing trees?
   - Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?
This attachment provides performance standards for applicable Climate Action Plan (CAP) Consistency Checklist measures.

### Table 1: Roof Design Values for Question 1: Cool/Green Roofs supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Roof Slope</th>
<th>Minimum 3-Year Aged Solar Reflectance</th>
<th>Thermal Emittance</th>
<th>Solar Reflective Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Rise Residential</td>
<td>≤ 2:12</td>
<td>0.55</td>
<td>0.75</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>&gt; 2:12</td>
<td>0.20</td>
<td>0.75</td>
<td>16</td>
</tr>
<tr>
<td>High-Rise Residential Buildings,</td>
<td>≤ 2:12</td>
<td>0.55</td>
<td>0.75</td>
<td>64</td>
</tr>
<tr>
<td>Hotels and Motels</td>
<td>&gt; 2:12</td>
<td>0.20</td>
<td>0.75</td>
<td>16</td>
</tr>
<tr>
<td>Non-Residential</td>
<td>≤ 2:12</td>
<td>0.55</td>
<td>0.75</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>&gt; 2:12</td>
<td>0.20</td>
<td>0.75</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 residential and non-residential voluntary measures shown in Tables A4.106.5.1 and A5.106.11.2.2, respectively. Roof installation and verification shall occur in accordance with the CALGreen Code.

CALGreen does not include recommended values for low-rise residential buildings with roof slopes of ≤ 2:12 for San Diego's climate zones (7 and 10). Therefore, the values for climate zone 15 that covers Imperial County are adapted here.

Solar Reflectance Index (SRI) equal to or greater than the values specified in this table may be used as an alternative to compliance with the aged solar reflectance values and thermal emittance.
<table>
<thead>
<tr>
<th>Fixture Type</th>
<th>Maximum Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showerheads</td>
<td>1.8 gpm @ 80 psi</td>
</tr>
<tr>
<td>Lavatory Faucets</td>
<td>0.35 gpm @ 60 psi</td>
</tr>
<tr>
<td>Kitchen Faucets</td>
<td>1.6 gpm @ 60 psi</td>
</tr>
<tr>
<td>Wash Fountains</td>
<td>1.6 [rim space (in.)/20 gpm @ 60 psi]</td>
</tr>
<tr>
<td>Metering Faucets</td>
<td>0.18 gallons/cycle</td>
</tr>
<tr>
<td>Metering Faucets for Wash Fountains</td>
<td>0.18 [rim space (in.)/20 gpm @ 60 psi]</td>
</tr>
<tr>
<td>Gravity Tank-type Water Closets</td>
<td>1.12 gallons/flush</td>
</tr>
<tr>
<td>Flushometer Tank Water Closets</td>
<td>1.12 gallons/flush</td>
</tr>
<tr>
<td>Flushometer Valve Water Closets</td>
<td>1.12 gallons/flush</td>
</tr>
<tr>
<td>Electromechanical Hydraulic Water Closets</td>
<td>1.12 gallons/flush</td>
</tr>
<tr>
<td>Urinals</td>
<td>0.5 gallons/flush</td>
</tr>
</tbody>
</table>

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the California Plumbing Code for definitions of each fixture type.

Where complying faucets are unavailable, aerators rated at 0.35 gpm or other means may be used to achieve reduction.

Acronyms:
gpm = gallons per minute
psi = pounds per square inch (unit of pressure)
in. = inch
### Table 3

**Standards for Appliances and Fixtures for Commercial Application related to Question 2:**


<table>
<thead>
<tr>
<th>Appliance/Fixture Type</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clothes Washers</strong></td>
<td>Maximum Water Factor (WF) that will reduce the use of water by 10 percent below the California Energy Commissions’ WF standards for commercial clothes washers located in Title 20 of the California Code of Regulations.</td>
</tr>
<tr>
<td><strong>Conveyor-type Dishwashers</strong></td>
<td>0.70 maximum gallons per rack (2.6 L) (High-Temperature)</td>
</tr>
<tr>
<td><strong>Door-type Dishwashers</strong></td>
<td>0.95 maximum gallons per rack (3.6 L) (High-Temperature)</td>
</tr>
<tr>
<td><strong>Undercounter-type Dishwashers</strong></td>
<td>0.90 maximum gallons per rack (3.4 L) (High-Temperature)</td>
</tr>
<tr>
<td><strong>Combination Ovens</strong></td>
<td>Consume no more than 10 gallons per hour (38 L/h) in the full operational mode.</td>
</tr>
<tr>
<td><strong>Commercial Pre-rinse Spray Valves (manufactured on or after January 1, 2006)</strong></td>
<td>Function at equal to or less than 1.6 gallons per minute (0.10 L/s) at 60 psi (414 kPa) and • Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate. • Be equipped with an integral automatic shutoff. • Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gallons per minute (0.08 L/s) or less.</td>
</tr>
</tbody>
</table>

**Source:** Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the California Plumbing Code for definitions of each appliance/fixture type.

**Acronyms:**
- L = liter
- L/h = liters per hour
- L/s = liters per second
- psi = pounds per square inch (unit of pressure)
- kPa = kilopascal (unit of pressure)
REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION

McCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

PREPARED FOR

McCARTY FAMILY TRUST
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA 92130

PREPARED BY

CHRISTIAN WHEELER ENGINEERING
3980 HOME AVENUE
SAN DIEGO, CALIFORNIA 92105
April 5, 2017

McCarty Family Trust
3929 Arroyo Sorrento Road
San Diego, California 92130
Attention: Kent McCarty

Subject: Report of Preliminary Geotechnical Investigation
McCarty Estates, 3929 Arroyo Sorrento Road, San Diego, California

Ladies and Gentlemen:

In accordance with your request and our proposal dated February 9, 2017, we have completed a geotechnical investigation for the subject project. We are presenting herewith a report of our findings and recommendations.

It is our professional opinion and judgment that no geotechnical conditions exist on the subject property that would preclude the construction of the proposed residence provided the recommendations presented herein are followed.

If you have questions after reviewing this report, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,
CHRISTIAN WHEELER ENGINEERING

Daniel B. Adler, RCE # 36037
DBA:tsw
cc: kent@alfpi.com
jps@jpseng.com

Troy S. Wilson, CEG #2551

3980 Home Avenue • San Diego, CA 92105 • 619-550-1700 • FAX 619-550-1701
# TABLE OF CONTENTS

Introduction and Project Description ................................................................. 1
Scope of Services .................................................................................................. 2
Findings .................................................................................................................. 3
Site Description ..................................................................................................... 3
General Geology and Subsurface Conditions ...................................................... 3
  Geologic Setting and Soil Description ................................................................. 3
    Artificial Fill ........................................................................................................ 4
    Alluvium ............................................................................................................. 4
    Torrey Sandstone ............................................................................................... 4
    Groundwater ..................................................................................................... 4
Tectonic Setting ..................................................................................................... 5
General Geologic Hazards .................................................................................... 5
  General ................................................................................................................ 5
  Surface Rupture .................................................................................................. 5
  Slope Stability .................................................................................................... 5
  Liquefaction ........................................................................................................ 6
  Flooding .............................................................................................................. 6
  Tsunamis ............................................................................................................ 6
  Seiches ................................................................................................................ 6
Conclusions ............................................................................................................ 6
Recommendations .................................................................................................. 7
Grading and Earthwork ......................................................................................... 7
  General ................................................................................................................ 7
  Pregrade Meeting ............................................................................................... 7
  Observation of Grading ....................................................................................... 8
  Clearing and Grubbing ....................................................................................... 8
  Site Preparation ................................................................................................. 8
  Test Pit Backfill .................................................................................................. 8
  Processing of Fill Areas ..................................................................................... 8
  Compaction and Method of Filling ..................................................................... 9
  Surface Drainage ............................................................................................... 9
Foundations .......................................................................................................... 10
  General .............................................................................................................. 10
    Dimensions ....................................................................................................... 10
    Bearing Capacity ............................................................................................. 10
    Footing Reinforcing ......................................................................................... 10
    Lateral Load Resistance .................................................................................. 10
Foundation Excavation Observation .................................................................... 11
Settlement Characteristics .................................................................................. 11
Expansive Characteristics ................................................................................... 11
Foundation Plan Review ....................................................................................... 11
Seismic Design Factors ......................................................................................... 12
On-Grade Slabs .................................................................................................... 12
  General .............................................................................................................. 12
  Interior Floor Slabs ............................................................................................. 12
INTRODUCTION AND PROJECT DESCRIPTION

This report presents the results of a preliminary geotechnical investigation performed for a proposed residential project to be located at 3929 Arroyo Sorrento Road, San Diego, California. The following Figure No. 1 presents a vicinity map showing the location of the property.

We understand that it is proposed to split the property into two lots. The southern lot will encompass the existing improvements. The northern lot will cover about one acre and will be graded to receive a single family residence. It is assumed that the structure will be one-and/or two-stories high and of wood-frame construction. Shallow foundations and conventional concrete slab-on-grade floor systems are anticipated. Grading will consist of cuts and fills up to about 7 feet and 3 feet from existing grade, respectively.

To assist in the preparation of this report, we were provided with a set of miscellaneous plans prepared by JP Engineering, dated January 25, 2017. A copy of the tentative parcel map included in the set was used as a base map for our Site Plan and Geologic Map, and is included herein as Plate No. 1. A geologic cross section is included herein as Plate No. 2.

This report has been prepared for the exclusive use of McCarty Family Trust, and its design consultants, for specific application to the project described herein. Should the project be modified, the conclusions and recommendations presented in this report should be reviewed by Christian Wheeler Engineering for conformance with our recommendations and to determine whether any additional subsurface investigation, laboratory testing and/or recommendations are necessary. Our professional services have been performed, our findings obtained and our recommendations prepared in accordance
SITE VICINITY
© OpenStreetMap contributors

MCCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

DATE: APRIL 2017
JOB NO.: 2170119.01
BY: SRD
FIGURE NO.: 1

CHRISTIAN WHEELER
ENGINEERING
with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, expressed or implied.

SCOPE OF SERVICES

Our preliminary geotechnical investigation consisted of surface reconnaissance, subsurface exploration, obtaining representative soil samples, laboratory testing, analysis of the field and laboratory data, and review of relevant geologic literature. Our scope of service did not include assessment of hazardous substance contamination, recommendations to prevent floor slab moisture intrusion or the formation of mold within the structures, evaluation or design of storm water infiltration facilities, or any other services not specifically described in the scope of services presented below.

More specifically, the intent of our proposed investigation was to:

- Drill three small-diameter borings and excavate one hand-dug test pit to explore the subsurface conditions of the site and to obtain samples for laboratory testing.
- Backfill the boring holes using a grout or a grout/bentonite mix as required by the County of San Diego Department of Environmental Health.
- Backfill the test pit with the removed soil. It should be noted that the soil was not compacted and will have to be removed and replaced as compacted fill during the planned construction.
- Evaluate, by laboratory tests and our past experience with similar soil types, the engineering properties of the various soil strata that may influence the proposed construction, including bearing capacities, expansive characteristics and settlement potential.
- Describe the general geology at the site including possible geologic hazards that could have an effect on the proposed construction, and provide the seismic design parameters as required by the 2016 edition of the California Building Code. Our scope of work does not include an evaluation of existing cut slopes at the property.
- Address potential construction difficulties that may be encountered due to soil conditions, groundwater or geologic hazards, and provide geotechnical recommendations to deal with these difficulties.
- Provide site preparation and grading recommendations, as necessary, for the anticipated work.
- Provide foundation recommendations for the type of construction anticipated and develop soil engineering design criteria for the recommended foundation designs.
• Provide earth retaining wall design recommendations.
• Provide a preliminary geotechnical report that presents the results of our investigation which includes a plot plan showing the location of our subsurface explorations, excavation logs, laboratory test results, and our conclusions and recommendations for the proposed project.

Although a test for the presence of soluble sulfates within the soils that may be in contact with reinforced concrete was performed as part of the scope of our services, it should be understood Christian Wheeler Engineering does not practice corrosion engineering. If a corrosivity analysis is considered necessary, we recommend that the client retain an engineering firm that specializes in this field to consult with them on this matter. The results of our sulfate testing should only be used as a guideline to determine if additional testing and analysis is necessary.

FINDINGS

SITE DESCRIPTION

The subject site is an irregular-shaped parcel located 3929 Arroyo Sorrento Road, San Diego, California. The southern portion of the property presently supports a residential structure, a detached garage, and associated improvements. The northern portion of the property is the subject of this proposal. This area supports some auxiliary structures and horse corrals. The site is bounded on the north by Arroyo Sorrento Road, and is otherwise bounded by residential developments. Topographically, the northern portion of the property slopes gently to the southwest. Elevations range from about 190 feet at the northeastern corner of the property to about 180 feet at the southern edge of the proposed development area.

GENERAL GEOLOGY AND SUBSURFACE CONDITIONS

GEOLOGIC SETTING AND SOIL DESCRIPTION: The subject site is located in the Coastal Plains Physiographic Province of San Diego County. Based upon the findings of our subsurface explorations and review of readily available, pertinent geologic and geotechnical literature, it was determined that the project area is generally underlain by artificial fill, alluvium and Torrey Sandstone. These materials are described below:
ARTIFICIAL FILL (Qaf): Artificial fill was encountered at the approximate center portion of the proposed building pad. As encountered in boring B-2, the artificial fill extended a depth of about 3½ feet from existing grade. Deeper fill soils may exist in areas of the site not investigated. The fill materials generally consisted of light brown, medium dense to dense, moist, silty sand (SM). The artificial fill was judged to have a very low expansion potential (EI < 20).

ALLUVIUM (Qal): Alluvial soils were encountered underlying the proposed building pad. The alluvium exceeded the maximum exploration depth of 30 feet in borings B-1 and B-2. In boring B-3 and test pit P-1, the alluvium extended to a depth of about 15½ feet and 1 foot from existing grade, respectively. The alluvium generally consisted of light brown, brown, yellowish-brown, and grayish-brown, medium dense, damp to very moist, silty sand (SM). In test pit P-1 the alluvium was loose. The alluvium was judged to have a very low expansion potential (EI < 20).

TORERYSANDSTONE (Tt): Tertiary-age Torrey Sandstone deposits were encountered underlying the alluvium in boring B-3 and test pit P-1, and is anticipated to underlie the alluvium throughout the site. These soils generally consisted of white yellowish-brown, moist, very dense, well graded sand with silty (SW/SM). The formational soils were judged to have a very low expansion potential (EI < 20).

GROUNDWATER: In general, no free groundwater was encountered in our subsurface explorations. However, very moist soils were encountered in boring B-3 at the contact with Torrey Sandstone. It is our opinion that water may perch and move along the contact between the alluvium and the less permeable Torrey Sandstone. We do not expect any significant groundwater related conditions during or after the proposed construction. However, it should be recognized that minor groundwater seepage problems might occur after construction and landscaping are completed, even at a site where none were present before construction. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water. Based on the anticipated construction and the permeability of the on-site soils, it is our opinion that any seepage problems that may occur will be minor in extent. It is further our opinion that these problems can be most effectively corrected on an individual basis if and when they occur.
TECTONIC SETTING: It should be noted that much of Southern California, including the San Diego County area, is characterized by a series of Quaternary-age fault zones that consist of several individual, en echelon faults that generally strike in a northerly to northwesterly direction. Some of these fault zones (and the individual faults within the zone) are classified as active while others are classified as only potentially active according to the criteria of the California Division of Mines and Geology. Active fault zones are those which have shown conclusive evidence of faulting during the Holocene Epoch (the most recent 11,000 years) while potentially active fault zones have demonstrated movement during the Pleistocene Epoch (11,000 to 1.6 million years before the present) but no movement during Holocene time. Inactive faults are those faults that can be demonstrated to have no movement in the past 1.6 million years.

It should be recognized that the active Rose Canyon Fault Zone is located approximately 5½ miles southwest of the site. Other active fault zones in the region that could possibly affect the site include the Coronado Bank, San Diego Trough, and San Clemente Fault Zones to the west, the Palos Verdes and Newport Inglewood Fault to the northwest, and the Elsinore, Earthquake Valley, San Jacinto, and San Andreas Fault Zones to the northeast. A small, unnamed fault is located approximately 800 feet southwest of the site. The northwest projection of this fault would extend within approximately 80 feet west of the subject site. Based upon the previous fault trenching on the subject site located three parcels south of the site (CWE 2140414.02), it is our professional opinion that this unnamed fault does not traverse the subject site.

GENERAL GEOLOGIC HAZARDS

GENERAL: A review of the City of San Diego Seismic Safety Study (Sheet 38) indicated that the site is located in Geologic Area 53. Hazard Category 53 is assigned to level or sloping terrain with unfavorable geologic structure and low to moderate risk.

SURFACE RUPTURE: There are no known active faults that traverse the subject site; therefore, the risk for surface rupture at the subject site is considered low.

SLOPE STABILITY: As part of this investigation we reviewed the publication, “Landslide Hazards in the Southern Part of the San Diego Metropolitan Area” by Tan and Giffen, 1995. This reference is a
comprehensive study that classifies San Diego County into areas of relative landslide susceptibility. The subject site is located in Area 3-1, which is considered to be “generally susceptible” to slope failures. However, based on our findings, the topography of the site and adjacent areas, and the proposed construction, it is our opinion that the likelihood of slope stability related problems at the site is very low at the subject site. It is our professional opinion that the site will have a factor-of-safety of 1.5 or greater for both gross and surficial stability following the project completion as currently designed. Any adjustments to existing slope configurations from the current design should be reviewed by our firm.

LIQUEFACTION: The earth materials underlying the site are not considered subject to liquefaction due to such factors as soil density, grain-size distribution, the absence of shallow groundwater conditions.

FLOODING: As delineated on the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency, the site is not located within either the 100-year flood zone or the 500-year flood zone.

TSUNAMIS: Tsunamis are great sea waves produced by submarine earthquakes or volcanic eruptions. Due to the site’s setback from the ocean and elevation, it will not be affected by a tsunami.

SEICHES: Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. Due to the site’s location, it will not be affected by seiches.

CONCLUSIONS

In general, it is our professional opinion and judgment that the subject property is suitable for the construction of the proposed residential structure provided the recommendations presented herein are implemented. The main geotechnical conditions affecting the proposed project consist of potentially compressible surficial soils and a cut/fill transition. These conditions are discussed hereinafter.

The central portion of the proposed building pad is underlain by potentially compressible artificial fill. As encountered in our subsurface explorations this material extends to a maximum depth of about 3½
feet from existing site grade. Deeper fill soils may exist in areas of the site not investigated. In addition, it is assumed that the surficial alluvial soils are also potentially compressible. The potentially compressible are considered unsuitable, in their present condition, for the support of settlement sensitive improvements. It is recommended that these materials be removed and replaced as compacted fill as recommended hereinafter.

The proposed grading of the site will result in a cut/fill transition. This configuration may result in differential settlements due to the potential of fill soils and native soils to settle differently. In order to mitigate this condition, it is recommended that the cut portion of the pad be undercut. It is anticipated that the site preparation recommendations provided hereinafter will mitigate this condition.

The site is located in an area that is relatively free of geologic hazards that will have a significant effect on the proposed construction. The most likely geologic hazard that could affect the site is ground shaking due to seismic activity along one of the regional active faults. However, construction in accordance with the requirements of the most recent edition of the California Building Code and the local governmental agencies should provide a level of life-safety suitable for the type of development proposed.

RECOMMENDATIONS

GRADING AND EARTHWORK

GENERAL: All grading should conform to the guidelines presented in the current edition of the California Building Code, the minimum requirements of the City of San Diego, and the recommended Grading Specifications and Special Provisions attached hereto, except where specifically superseded in the text of this report.

PREGRADE MEETING: It is recommended that a pregrade meeting including the grading contractor, the client, and a representative from Christian Wheeler Engineering be performed, to discuss the recommendations of this report and address any issues that may affect grading operations.
OBSERVATION OF GRADING: Continuous observation by the Geotechnical Consultant is essential during the grading operation to confirm conditions anticipated by our investigation, to allow adjustments in design criteria to reflect actual field conditions exposed, and to determine that the grading proceeds in general accordance with the recommendations contained herein.

CLEARING AND GRUBBING: Site preparation should begin with the removal of existing improvements slated for demolition. The resulting debris and any existing vegetation and other deleterious materials in areas to receive proposed improvements or new fill soils should be removed from the site.

SITE PREPARATION: It is recommended that existing fill soils underlying the proposed structure, associated improvements and new fills should be removed in their entirety. Based on our findings, the maximum removal depth is about 3½ feet below existing grade. In addition, existing alluvial deposits should be removed to a minimum depth of 4 feet below existing or proposed grade, whichever is more. Deeper removals may be necessary in areas of the site not investigated or due to unforeseen conditions. Lateral removals limits should extend at least 5 feet from the perimeter of the proposed structure, associated improvements and new fills or equal to removal depth, whichever is more. No removals are recommended beyond property lines. All excavated areas should be approved by the geotechnical engineer or his representative prior to replacing any of the excavated soils. The excavated materials can be replaced as properly compacted fill in accordance with the recommendations presented in the “Compaction and Method of Filling” section of this report.

TEST PIT BACKFILL: Backfill associated with our subsurface exploration underlying settlement-sensitive improvements not removed as part of site preparation operations should be removed and replaced as compacted fill.

PROCESSING OF FILL AREAS: Prior to placing any new fill soils or constructing any new improvements in areas that have been cleaned out to receive fill, the exposed soils should be scarified to a depth of 12 inches, watered thoroughly, and compacted to at least 90 percent relative compaction. In areas to support fill slopes, keys should be cut into the competent supporting materials. The keys should be at least 10 feet wide, and be sloped back into the hillside at least 2 percent. The keys should extend at least 1 foot into the competent supporting materials. Where the existing ground has a slope
of 5:1 (horizontal to vertical) or steeper, it should be benched into as the fill extends upward from the keyway.

**COMPACTION AND METHOD OF FILLING:** In general, all structural fill placed at the site should be compacted to a relative compaction of at least 90 percent of its maximum laboratory dry density as determined by ASTM Laboratory Test D1557. Fills should be placed at or slightly above optimum moisture content, in lifts 6 to 8 inches thick, with each lift compacted by mechanical means. Fills should consist of approved earth material, free of trash or debris, roots, vegetation, or other materials determined to be unsuitable by the Geotechnical Consultant. Fill material should be free of rocks or lumps of soil in excess of 3 inches in maximum dimension.

Utility trench backfill within 5 feet of the proposed structure and beneath all concrete flatwork or pavements should be compacted to a minimum of 90 percent of its maximum dry density.

**SURFACE DRAINAGE:** The drainage around the proposed improvements should be designed to collect and direct surface water away from proposed improvements toward appropriate drainage facilities. Rain gutters with downspouts that discharge runoff away from the structure and the top of slopes into controlled drainage devices are recommended.

The ground around the proposed improvements should be graded so that surface water flows rapidly away from the improvements without ponding. In general, we recommend that the ground adjacent to structure slope away at a gradient of at least 5 percent for a minimum distance of 10 feet. If the minimum distance of 10 feet cannot be achieved, an alternative method of drainage runoff away from the building at the termination of the 5 percent slope will need to be used. Swales and impervious surfaces that are located within 10 feet of the building should have a minimum slope of 2 percent.

Drainage patterns provided at the time of construction should be maintained throughout the life of the proposed improvements. Site irrigation should be limited to the minimum necessary to sustain landscape growth. Over watering should be avoided. Should excessive irrigation, impaired drainage, or unusually high rainfall occur, zones of wet or saturated soil may develop.
FOUNDATIONS

GENERAL: Based on our findings and engineering judgment, the proposed structure and associated improvements may be supported by conventional shallow continuous and isolated spread footings. The following recommendations are considered the minimum based on the anticipated soil conditions, and are not intended to be lieu of structural considerations. All foundations should be designed by a qualified engineer.

DIMENSIONS: Spread footings supporting the proposed structure should be embedded at least 18 inches below lowest adjacent finish pad grade. Spread footings supporting the proposed light exterior improvements should be embedded at least 12 inches below lowest adjacent finish pad grade. Continuous and isolated footings should have a minimum width of 12 inches and 24 inches, respectively. Retaining wall footings should be at least 18 inches deep and 24 inches wide. Footings located adjacent or within slopes should be extended to a depth such that a minimum horizontal distance of 10 feet exists between the bottom of the footing and the face of the slope.

BEARING CAPACITY: Spread footings supporting the proposed structure may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot (psf). This value may be increased by 600 pounds per square foot for each additional foot of embedment and 400 pounds per square foot for each additional foot of width up to a maximum of 4,000 pounds per square foot. Spread footings supporting the proposed light exterior improvements may be designed for an allowable soil bearing pressure of 2,000 pounds per square foot (psf). These values may be increased by one-third for combinations of temporary loads such as those due to wind or seismic loads.

FOOTING REINFORCING: Reinforcement requirements for foundations should be provided by the structural designer. However, based on the expected soil conditions, we recommend that the minimum reinforcing for continuous footings consist of at least 2 No. 5 bars positioned near the bottom of the footing and 2 No. 5 bars positioned near the top of the footing.

LATERAL LOAD RESISTANCE: Lateral loads against foundations may be resisted by friction between the bottom of the footing and the supporting soil, and by the passive pressure against the footing. The coefficient of friction between concrete and soil may be considered to be 0.30. The passive
resistance may be considered to be equal to an equivalent fluid weight of 300 pounds per cubic foot. These values are based on the assumption that the footings are poured tight against undisturbed soil. If a combination of the passive pressure and friction is used, the friction value should be reduced by one-third.

FOUNDATION EXCAVATION OBSERVATION: All footing excavations should be observed by Christian Wheeler Engineering prior to placing of forms and reinforcing steel to determine whether the foundation recommendations presented herein are followed and that the foundation soils are as anticipated in the preparation of this report. All footing excavations should be excavated neat, level, and square. All loose or unsuitable material should be removed prior to the placement of concrete.

SETTLEMENT CHARACTERISTICS: The anticipated total and differential settlement is expected to be less than about 1 inch and 1 inch over 40 feet, respectively, provided the recommendations presented in this report are followed. It should be recognized that minor cracks normally occur in concrete slabs and foundations due to concrete shrinkage during curing or redistribution of stresses, therefore some cracks should be anticipated. Such cracks are not necessarily an indication of excessive vertical movements.

EXPANSIVE CHARACTERISTICS: The prevailing foundation soils are assumed to have a very low expansive potential (EI < 20). The recommendations within this report reflect these conditions.

FOUNDATION PLAN REVIEW: The final foundation plan and accompanying details and notes should be submitted to this office for review. The intent of our review will be to verify that the plans used for construction reflect the minimum dimensioning and reinforcing criteria presented in this section and that no additional criteria are required due to changes in the foundation type or layout. It is not our intent to review structural plans, notes, details, or calculations to verify that the design engineer has correctly applied the geotechnical design values. It is the responsibility of the design engineer to properly design/specify the foundations and other structural elements based on the requirements of the structure and considering the information presented in this report.
SEISMIC DESIGN FACTORS

The seismic design factors applicable to the subject site are provided below. The seismic design factors were determined in accordance with the 2016 California Building Code. The site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters are presented in the following Table I.

<table>
<thead>
<tr>
<th>Site Coordinates: Latitude</th>
<th>32.928°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitude</td>
<td>-117.237°</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Class</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Coefficient $F_x$</td>
<td>1.048</td>
</tr>
<tr>
<td>Site Coefficient $F_v$</td>
<td>1.564</td>
</tr>
<tr>
<td>Spectral Response Acceleration at Short Periods $S_s$</td>
<td>1.130 g</td>
</tr>
<tr>
<td>Spectral Response Acceleration at 1 Second Period $S_t$</td>
<td>0.436 g</td>
</tr>
<tr>
<td>$S_{MS} = F_x S_s$</td>
<td>1.184 g</td>
</tr>
<tr>
<td>$S_{M1} = F_v S_t$</td>
<td>0.682 g</td>
</tr>
<tr>
<td>$S_{DS} = 2/3 S_{MS}$</td>
<td>0.790 g</td>
</tr>
<tr>
<td>$S_{DI} = 2/3 S_{M1}$</td>
<td>0.455 g</td>
</tr>
</tbody>
</table>

Probable ground shaking levels at the site could range from slight to moderate, depending on such factors as the magnitude of the seismic event and the distance to the epicenter. It is likely that the site will experience the effects of at least one moderate to large earthquake during the life of the proposed improvements.

ON-GRADE SLABS

GENERAL: It is assumed that the floor system of the proposed structure will consist of a concrete slab. The following recommendations are considered the minimum slab requirements based on the soil conditions and are not intended in lieu of structural considerations. These recommendations assume that the site preparation recommendations contained in this report are implemented.

INTERIOR FLOOR SLABS: The minimum slab thickness should be 5 inches (actual) and the slab should be reinforced with at least No. 4 bars spaced at 18 inches on center each way. Slab reinforcement should be supported on chairs such that the reinforcing bars are positioned at mid-
height in the floor slab. The slab reinforcement should extend down into the perimeter footings at least 6 inches.

**UNDER-SLAB VAPOR RETARDERS:** Steps should be taken to minimize the transmission of moisture vapor from the subsoil through the interior slabs where it can potentially damage the interior floor coverings. Local industry standards typically include the placement of a vapor retarder, such as plastic, in a layer of coarse sand placed directly beneath the concrete slab. Two inches of sand are typically used above and below the plastic. The vapor retarder should be at least 15-mil Stegowrap® or similar material with sealed seams and should extend at least 12 inches down the sides of the interior and perimeter footings. The sand should have a sand equivalent of at least 30, and contain less than 10% passing the Number 100 sieve and less than 5% passing the Number 200 sieve. It is suggested that pea gravel be used in lieu of sand underneath the southern addition. Filter fabric should be placed between the gravel and the soil. The membrane should be placed in accordance with the recommendation and consideration of ACI 302, “Guide for Concrete Floor and Slab Construction” and ASTM E1643, “Standards Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs.” It is the flooring contractor’s responsibility to place floor coverings in accordance with the flooring manufacturer specifications.

**EXTERIOR CONCRETE FLATWORK:** Exterior concrete slabs on grade should have a minimum thickness of 4 inches and be reinforced with at least No. 3 bars placed at 18 inches on center each way (ocew). Driveway slabs should have a minimum thickness of 5 inches and be reinforced with at least No. 4 bars placed at 12 inches ocew. Driveway slabs should be provided with a thickened edge a least 12 inches deep and 6 inches wide. All slabs should be provided with weakened plane joints in accordance with the American Concrete Institute (ACI) guidelines. Special attention should be paid to the method of concrete curing to reduce the potential for excessive shrinkage cracking. It should be recognized that minor cracks occur normally in concrete slabs due to shrinkage. Some shrinkage cracks should be expected and are not necessarily an indication of excessive movement or structural distress.
EARTH RETAINING WALLS

FOUNDATIONS: Foundations for any proposed retaining walls should be constructed in accordance with the foundation recommendations presented previously in this report.

PASSIVE PRESSURE: The passive pressure for the anticipated foundation soils may be considered to be 300 pounds per square foot per foot of depth. The upper foot of embedment should be neglected when calculating passive pressures, unless the foundation abuts a hard surface such as a concrete slab. The passive pressure may be increased by one-third for seismic loading. The coefficient of friction for concrete to soil may be assumed to be 0.30 for the resistance to lateral movement. When combining frictional and passive resistance, the friction should be reduced by one-third.

ACTIVE PRESSURE: The active soil pressure for the design of “unrestrained” and “restrained” earth retaining structures with level backfill may be assumed to be equivalent to the pressure of a fluid weighing 43 and 64 pounds per cubic foot, respectively. These pressures do not consider any other surcharge. If any are anticipated, this office should be contacted for the necessary increase in soil pressure. These values are based on a drained backfill condition.

Seismic lateral earth pressures may be assumed to equal an inverted triangle starting at the bottom of the wall with the maximum pressure equal to 9H pounds per square foot (where H = wall height in feet) occurring at the top of the wall.

WATERPROOFING AND WALL DRAINAGE SYSTEMS: The need for waterproofing should be evaluated by others. If required, the project architect should provide (or coordinate) waterproofing details for the retaining walls. The design values presented above are based on a drained backfill condition and do not consider hydrostatic pressures. Unless hydrostatic pressures are incorporated into the design, the retaining wall designer should provide a detail for a wall drainage system. Typical retaining wall drain system details are presented as Plate No. 3 of this report for informational purposes. Additionally, outlets points for the retaining wall drain system should be coordinated with the project civil engineer.
BACKFILL: Retaining wall backfill soils should be compacted to at least 90 percent relative compaction. Expansive or clayey soils should not be used for backfill material. The wall should not be backfilled until the masonry has reached an adequate strength.

LIMITATIONS

REVIEW, OBSERVATION AND TESTING

The recommendations presented in this report are contingent upon our review of final plans and specifications. Such plans and specifications should be made available to the geotechnical engineer and engineering geologist so that they may review and verify their compliance with this report and with the California Building Code.

It is recommended that Christian Wheeler Engineering be retained to provide continuous soil engineering services during the earthwork operations. This is to verify compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

UNIFORMITY OF CONDITIONS

The recommendations and opinions expressed in this report reflect our best estimate of the project requirements based on an evaluation of the subsurface soil conditions encountered at the subsurface exploration locations and on the assumption that the soil conditions do not deviate appreciably from those encountered. It should be recognized that the performance of the foundations and/or cut and fill slopes may be influenced by undisclosed or unforeseen variations in the soil conditions that may occur in the intermediate and unexplored areas. Any unusual conditions not covered in this report that may be encountered during site development should be brought to the attention of the geotechnical engineer so that he may make modifications if necessary.
CHANGE IN SCOPE

This office should be advised of any changes in the project scope or proposed site grading so that we may determine if the recommendations contained herein are appropriate. This should be verified in writing or modified by a written addendum.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Government Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a period of two years without a review by us verifying the suitability of the conclusions and recommendations.

PROFESSIONAL STANDARD

In the performance of our professional services, we comply with that level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions and in the same locality. The client recognizes that subsurface conditions may vary from those encountered at the locations where our borings, surveys, and explorations are made, and that our data, interpretations, and recommendations be based solely on the information obtained by us. We will be responsible for those data, interpretations, and recommendations, but shall not be responsible for the interpretations by others of the information developed. Our services consist of professional consultation and observation only, and no warranty of any kind whatsoever, express or implied, is made or intended in connection with the work performed or to be performed by us, or by our proposal for consulting or other services, or by our furnishing of oral or written reports or findings.

CLIENT'S RESPONSIBILITY

It is the responsibility of the Clients, or his representatives, to ensure that the information and recommendations contained herein are brought to the attention of the structural engineer and
architect for the project and incorporated into the project's plans and specifications. It is further their responsibility to take the necessary measures to insure that the contractor and his subcontractors carry out such recommendations during construction.

FIELD EXPLORATIONS

Four subsurface explorations were made on March 1, 2017 at the locations indicated on the Site Plan and Geotechnical Map included herewith as Plate No. 1. These explorations consisted of three borings drilled with a John Deere 319E Skid Steer with auger attachment and one hand-dug test pit. The fieldwork was conducted under the observation and direction of our engineering geology personnel.

The explorations were carefully logged when made. The test pit logs are presented on Appendix A. The soils are described in accordance with the Unified Soils Classification. In addition, a verbal textural description, the wet color, the apparent moisture, and the density or consistency is provided. The density of granular soils is given as very loose, loose, medium dense, dense or very dense. The consistency of silts or clays is given as either very soft, soft, medium stiff, stiff, very stiff, or hard.

Relatively undisturbed drive samples were collected using a modified California sampler. The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long, thin, brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a 140-pound hammer falling 30 inches in general accordance with ASTM D 3550-84. The driving weight is permitted to fall freely. The number of blows per foot of driving, or as indicated, are presented on the boring logs as an index to the relative resistance of the sampled materials. The samples were removed from the sample barrel in the brass rings, and sealed. Bulk samples of the earth materials encountered were also collected. Samples were transported to our laboratory for testing.

LABORATORY TESTING

Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. A brief description of the tests performed and the subsequent results are presented in Appendix B.
NOTES AND DETAILS

GENERAL NOTES:
1) THE NEED FOR WATERPROOFING SHOULD BE EVALUATED BY OTHERS.
2) WATERPROOFING TO BE DESIGNED BY OTHERS (CWE CAN PROVIDE A DESIGN IF REQUESTED).
3) EXTEND DRAIN TO SUITABLE DISCHARGE POINT PER CIVIL ENGINEER.
4) DO NOT CONNECT SURFACE DRAINS TO SUBDRAIN SYSTEM.

DETAILS:
1) 4-INCH PERFORATED PVC PIPE ON TOP OF FOOTING, HOLES POSITIONED DOWNWARD (SDR 35, SCHEDULE 40, OR EQUIVALENT).
2) 1/2 INCH OPEN-GRADED CRUSHED AGGREGATE.
3) GEOFABRIC WRAPPED COMPLETELY AROUND ROCK.
4) PROPERLY COMPACTED BACKFILL SOIL.
5) WALL DRAINAGE PANELS (MIRADRAIN OR EQUIVALENT) PLACED PER MANUFACTURER’S RECS.
6) UNDERLAY SUBDRAIN WITH AND CUT FABRIC BACK FROM DRAINAGE PANELS AND WARP FABRIC AROUND PIPE.
7) COLLECTION DRAIN (TOTAL DRAIN OR EQUIVALENT) LOCATED AT BASE OF WALL DRAINAGE PANEL PER MANUFACTURER’S RECOMMENDATIONS.

CANTILEVER RETAINING WALL DRAINAGE SYSTEMS

McCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

DATE: APRIL 2017
JOB NO.: 2170119.01
BY: SRD
PLATE NO.: 3
Appendix A

Subsurface Explorations
LOG OF TEST PIT P-1

| Date Logged: 3/1/17 | Equipment: Hand Tools |
| Logged By: DJF | Auger Type: N/A |
| Existing Elevation: 180.0 feet | Drive Type: N/A |
| Finish Elevation: 180.0 feet | Depth to Water: N/A |

SUMMARY OF SUBSURFACE CONDITIONS
(based on Unified Soil Classification System)

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
<th>ELEVATION (ft)</th>
<th>USGS SYMBOL</th>
<th>GRAPHIC LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>SM</td>
<td>Alluvium (Qal): Brown, moist, loose, fine- to medium-grained, SILTY SAND.</td>
</tr>
<tr>
<td>0.5</td>
<td>0.5</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>SW/SM</td>
<td>Torrey Sandstone (Tt): White-light yellowish-brown, moist, very dense, fine- to medium-grained, WELL-GRADED SAND with silt.</td>
</tr>
<tr>
<td>1.5</td>
<td>1.5</td>
<td>SM</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td></td>
<td>Test pit terminated at 2 feet.</td>
</tr>
<tr>
<td>2.5</td>
<td>2.5</td>
<td></td>
<td>No groundwater or seepage encountered.</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>6.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Symbol Legend

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ groundwater level during drilling ]</td>
<td>Groundwater Level During Drilling</td>
</tr>
<tr>
<td>![ groundwater level after drilling ]</td>
<td>Groundwater Level After Drilling</td>
</tr>
<tr>
<td>![ apparent seepage ]</td>
<td>Apparent Seepage</td>
</tr>
<tr>
<td>![ no sample recovery ]</td>
<td>No Sample Recovery</td>
</tr>
<tr>
<td>![ non-representative blow count ]</td>
<td>Non-Representative Blow Count</td>
</tr>
</tbody>
</table>

MCCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

DATE: APRIL 2017
JOB NO.: 2170119.01
BY: SRD
FIGURE NO.: A-1
### LOG OF TEST BORING B-1

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Elevation (ft)</th>
<th>Graphic Log</th>
<th>USCS Symbol</th>
<th>Summary of Subsurface Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>SM</td>
<td>Alluvium (Qal): Light brown, damp to moist, loose to medium dense, very fine-to-medium-grained, SLIGHTLY SILTY SAND, slightly mottled with trace roots, upper 18 inches disturbed. Medium dense.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>Light brown to brown, moist, very fine-to-medium-grained, SILTY SAND.</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.5</td>
<td></td>
<td></td>
<td></td>
<td>Terminated at 31.5 feet. No groundwater or seepage encountered.</td>
</tr>
</tbody>
</table>

**Notes:**

- **Symbol Legend**
  - ▼ Groundwater Level During Drilling
  - ▼ Groundwater Level After Drilling
  - **Apparent Seepage**
  - **No Sample Recovery**
  - **Non-Representative Blow Count**

---

**Sample Type and Laboratory Test Legend**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Laboratory Test</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal</td>
<td>Modified California Sampler</td>
<td>CK Chalk</td>
</tr>
<tr>
<td>SPT</td>
<td>Standard Penetration Test</td>
<td>DR Drive Ring</td>
</tr>
<tr>
<td>ST</td>
<td>Shelby Tube</td>
<td></td>
</tr>
<tr>
<td>MD</td>
<td>Max Density</td>
<td></td>
</tr>
<tr>
<td>SO+</td>
<td>Soluble Sulfates</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>Sieve Analysis</td>
<td></td>
</tr>
<tr>
<td>HA</td>
<td>Hydraulics</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>Sand Equivalent</td>
<td></td>
</tr>
<tr>
<td>PI</td>
<td>Plasticity Index</td>
<td></td>
</tr>
<tr>
<td>CP</td>
<td>Collapse Potential</td>
<td></td>
</tr>
</tbody>
</table>

**Equipment:** Deere 319E Skidsteer

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF

**Existing Elevation:** 187.0 feet

**Proposed Elevation:** 187.0 feet

**Date Logged:** 3/1/17

**Logged By:** DJF
# LOG OF TEST BORING B-2

**Date Logged:** 3/1/17  
**Equipment:** Deere 319E Skidsteer  
**Logged By:** DJF  
**Auger Type:** Auger Attachment  
**Existing Elevation:** 182.0 feet  
**Drive Type:** 140lbs/30 inches  
**Proposed Elevation:** 182.0 feet  
**Depth to Water:** Unknown

## SUMMARY OF SUBSURFACE CONDITIONS
(based on Unified Soil Classification System)

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Elevation (ft)</th>
<th>USCS Symbol</th>
<th>Sample Type and Laboratory Test Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>SM</td>
<td><strong>Artificial Fill (Qaf):</strong> Light brown, damp to moist, medium dense to dense, fine- to medium-grained, SILTY SAND, trace gravel and metal debris.</td>
</tr>
<tr>
<td>5</td>
<td>182.0</td>
<td>SM</td>
<td><strong>Alluvium (Qal):</strong> Yellowish-brown, damp to moist, medium dense, fine- to medium-grained, SILTY SAND.</td>
</tr>
<tr>
<td>10</td>
<td>182.0</td>
<td></td>
<td>Brown, dense, increase in fine content.</td>
</tr>
<tr>
<td>15</td>
<td>182.0</td>
<td></td>
<td>Brown, medium dense, decrease in fines.</td>
</tr>
<tr>
<td>20</td>
<td>182.0</td>
<td></td>
<td>Fines increase. 1 inch thick CLAYEY SAND lenses with black organic fragments.</td>
</tr>
<tr>
<td>25</td>
<td>182.0</td>
<td></td>
<td>Terminated at 29.5 feet. No groundwater or seepage encountered.</td>
</tr>
</tbody>
</table>

**Notes:**

- No groundwater or seepage encountered.

---

### Symbol Legend
- **Groundwater Level During Drilling**
- **Groundwater Level After Drilling**
- **Apparent Seepage**
- **No Sample Recovery**
- **Non-Representative Blow Count (rocks present)**

---

**MCCARTY ESTATES**  
3929 ARROYO SORRENTO ROAD  
SAN DIEGO, CALIFORNIA

**DATE:** APRIL 2017  
**JOB NO.:** 2170119.01  
**BY:** SRD  
**FIGURE NO.:** A-3
# LOG OF TEST BORING B-3

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Elevation (ft)</th>
<th>Graphic Log</th>
<th>USCS Symbol</th>
<th>Penetration (inches/ft)</th>
<th>Sample Type</th>
<th>Bulk Density (lb/ft³)</th>
<th>Moisture Content (%)</th>
<th>Dry Density (pcf)</th>
<th>Relative Compaction (%)</th>
<th>Laboratory Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>180.0</td>
<td>SM</td>
<td>Alluvium (Qa)</td>
<td>Brown, moist, medium dense, fine- to medium-grained, SILTY SAND, trace roots.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>183.0</td>
<td></td>
<td>Grayish-brown, SILTY SAND with clay, rootlets, mottled.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>Decrease in fines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td>Very moist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>SW/SM</td>
<td>Torrey Sandstone (Tt)</td>
<td>White-yellowish-brown, moist, very dense, fine- to coarse-grained, WELL-GRADED SAND with silt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td>Terminated at 21 feet. No groundwater or seepage encountered.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## SUMMARY OF SUBSURFACE CONDITIONS
(based on Unified Soil Classification System)

<table>
<thead>
<tr>
<th>Sample Type and Laboratory Test Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal</td>
</tr>
<tr>
<td>SPT</td>
</tr>
<tr>
<td>ST</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD</td>
</tr>
<tr>
<td>SO4</td>
</tr>
<tr>
<td>SA</td>
</tr>
<tr>
<td>HA</td>
</tr>
<tr>
<td>SE</td>
</tr>
<tr>
<td>PI</td>
</tr>
<tr>
<td>CP</td>
</tr>
</tbody>
</table>

## Notes:

- **Symbol Legend**
  - Groundwater Level During Drilling
  - Groundwater Level After Drilling
  - Apparent Seepage
  - No Sample Recovery
  - Non-Representative Blow Count (rocks present)

- **McCarty Estates**
  - 3929 Arroyo Sorrento Road
  - San Diego, California

- **DATE:** April 2017
- **JOB NO.:** 2170119.01
- **BY:** SRD
- **FIGURE NO.:** A-4
Appendix B

Laboratory Test Results
Laboratory tests were performed in accordance with the generally accepted American Society for Testing and Materials (ASTM) test methods or suggested procedures. Brief descriptions of the tests performed are presented below:

a) **CLASSIFICATION:** Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System and are presented on the exploration logs in Appendix A.

b) **MOISTURE-DENSITY:** In-place moisture contents and dry densities were determined for selected soil samples in accordance with ASTM D 1188. The results are summarized in the boring and test pit logs presented in Appendix A.

c) **MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST:** The maximum dry density and optimum moisture content of a selected soil sample were determined in the laboratory in accordance with ASTM D 1557, Method A.

d) **DIRECT SHEAR:** A direct shear test was performed on a selected sample of the on-site soils in accordance with ASTM D 3080.

e) **GRAIN SIZE DISTRIBUTION:** The grain size distribution of selected samples was determined in accordance with ASTM C136 and/or ASTM D 422.

f) **COLLAPSE POTENTIAL:** Collapse potential test were performed on selected undisturbed soil samples in accordance with ASTM D 5333.

g) **SOLUBLE SULFATES:** The soluble sulfate content of a selected soil sample was determined in accordance with California Test Method 417.
LABORATORY TEST RESULTS
MCCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT (ASTM D1557)

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Boring B2 @ 0-3½'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Description</td>
<td>Light Brown Silt Sand(SM)</td>
</tr>
<tr>
<td>Maximum Density</td>
<td>126.5 pcf</td>
</tr>
<tr>
<td>Optimum Moisture</td>
<td>8.6 %</td>
</tr>
</tbody>
</table>

DIRECT SHEAR (ASTM D3080)

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Boring B2 @ 0-3½'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Type</td>
<td>Remolded to 90 %</td>
</tr>
<tr>
<td>Friction Angle</td>
<td>30°</td>
</tr>
<tr>
<td>Cohesion</td>
<td>200 psf</td>
</tr>
</tbody>
</table>

GRAIN SIZE DISTRIBUTION (ASTM D422)

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Boring B1 @ 0-5'</th>
<th>Boring B1 @ 15'</th>
<th>Boring B2 @ 0-3½'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Size</td>
<td>Percent Passing</td>
<td>Percent Passing</td>
<td>Percent Passing</td>
</tr>
<tr>
<td>¾&quot;</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>½&quot;</td>
<td>99</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>#4</td>
<td>91</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>#8</td>
<td>90</td>
<td>99</td>
<td>96</td>
</tr>
<tr>
<td>#16</td>
<td>88</td>
<td>97</td>
<td>94</td>
</tr>
<tr>
<td>#30</td>
<td>81</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>#50</td>
<td>49</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>#100</td>
<td>24</td>
<td>31</td>
<td>29</td>
</tr>
<tr>
<td>#200</td>
<td>15</td>
<td>22</td>
<td>20</td>
</tr>
</tbody>
</table>

COLLAPSE POTENTIAL (ASTM D 5333)

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Boring B1 @ 5'</th>
<th>Boring B2 @ 6½'</th>
<th>Boring B3 @ 2½'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Moisture Content</td>
<td>3.7 %</td>
<td>2.7 %</td>
<td>11.6 %</td>
</tr>
<tr>
<td>Initial Density</td>
<td>99.9 pcf</td>
<td>100.7 pcf</td>
<td>97.8 pcf</td>
</tr>
<tr>
<td>Consolidation Before Water Added</td>
<td>2.5 %</td>
<td>1.9 %</td>
<td>2.1 %</td>
</tr>
<tr>
<td>Consolidation After Water Added</td>
<td>3.6%</td>
<td>2.2 %</td>
<td>2.3 %</td>
</tr>
<tr>
<td>Final Moisture</td>
<td>18.3 %</td>
<td>18.4 %</td>
<td>19.1 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Boring B3 @ 6½'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Moisture Content</td>
<td>17.6 %</td>
</tr>
<tr>
<td>Initial Density</td>
<td>107.2 pcf</td>
</tr>
<tr>
<td>Consolidation Before Water Added</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Consolidation After Water Added</td>
<td>5.8%</td>
</tr>
<tr>
<td>Final Moisture</td>
<td>17.8 %</td>
</tr>
</tbody>
</table>

CWE 2170119.01 April 5, 2017 Plate No. B-2
SOLUBLE SULFATES (CALIFORNIA TEST 417)

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Soluble Sulfate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boring B2 @ 0-3½'</td>
<td>0.015 % (SO₄)</td>
</tr>
</tbody>
</table>

April 5, 2017 Plate No. B-3
Appendix C

References
REFERENCES


California Division of Mines and Geology, 1997, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117

California Mining and Geology Board, 1996, Guidelines for Evaluating the Hazard of Surface Fault Rupture, adopted May 9, 1996

California Division of Mines and Geology, 1998, Maps of Known Active Fault Near Source-Zones in California and Adjacent Portions of Nevada

City of San Diego, 2008, Seismic Safety Study, Sheet 38


Evans, James R., CEG 974, 1999, Engineering Geologic Investigation, Casa Vista Del Mar, City of San Diego, dated October 25, 1999

Hart, E. W. and Bryant, W. A., 1997, Fault-Rupture Hazard Zones in California; California Division of Mines and Geology Special Publication 42


Kennedy, M.P. and Peterson, G.L., 1975, Geology of the San Diego Metropolitan Area, California, California Division of Mines and Geology Bulletin 200

Kennedy, Michael P. and Tan, Siang S., 2008, Geologic Map of the San Diego 30'x60' Quadrangle, California, California Geologic Survey, Map No. 3.


PSI, 2001, Geotechnical Engineering Services and Fault Trenching Study, Bosque Del Mar, VTN 40-0334, NEC Arroyo Sorrento Road & Tierra Del Sur, San Diego, California, Project No. 062-15034, dated June 29, 2001

PSI, 2000, Geologic Reconnaissance of 7.99 Acre Proposed Bosque Del Mar, Northeast Corner of Arroyo Sorrento Road & Tierra Del Sur, San Diego, California, Project No. 062-15110, dated November 24, 2000


URS, Geotechnical Study, Sorrento Pointe, San Diego, California, URS Project No. 27669035.10000, dated December 21, 2007, revised April 28, 2010


PLANS AND TOPOGRAPHIC MAPS

City of San Diego, 1959, Topographic Map Sheet 278-1695; Scale: 1 inch = 200 feet

City of San Diego, 1977, Ortho-Topographic Map Sheet 278-1695; Scale: 1 inch = 200 feet


United States Geological Survey, 1953, Del Mar Quadrangle; Scale 1 inch = 2000 feet

United States Geological Survey, 1967, Del Mar Quadrangle; Scale 1 inch = 2000 feet

United States Geological Survey, 1975, Del Mar Quadrangle; Scale 1 inch = 2000 feet

AERIAL PHOTOGRAPHS

NETROnline, 1953, Scale: 1 inch = 300 feet (approximate)

NETROnline, 1964, Scale: 1 inch = 300 feet (approximate)

NETROnline, 1980, Scale: 1 inch = 300 feet (approximate)

NETROnline, 1990, Scale: 1 inch = 300 feet (approximate)

NETROnline, 2003, Scale: 1 inch = 300 feet (approximate)

NETROnline, 2005, Scale: 1 inch = 300 feet (approximate)
San Diego County, 1928, Flights 45A and 45B; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1970, Flight 5, Photographs 14 and 15; Scale: 1 inch = 2000 feet (approximate)

San Diego County, 1973, Flight 30, Photographs 26 and 27; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1978, Flight 18B, Photographs 37 through 39; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1983, Photographs 615 and 616; Scale: 1 inch = 2000 feet (approximate)

San Diego County, 1989, Photographs 1-167 and 1-205; Scale: 1 inch = 2640 feet (approximate)
Appendix D

Recommended Grading Specifications – General Provisions
RECOMMENDED GRADING SPECIFICATIONS - GENERAL PROVISIONS

McCARTY ESTATES
3929 ARROYO SORRENTO ROAD
SAN DIEGO, CALIFORNIA

GENERAL INTENT

The intent of these specifications is to establish procedures for clearing, compacting natural ground, preparing areas to be filled, and placing and compacting fill soils to the lines and grades shown on the accepted plans. The recommendations contained in the preliminary geotechnical investigation report and/or the attached Special Provisions are a part of the Recommended Grading Specifications and shall supersede the provisions contained hereinafter in the case of conflict. These specifications shall only be used in conjunction with the geotechnical report for which they are a part. No deviation from these specifications will be allowed, except where specified in the geotechnical report or in other written communication signed by the Geotechnical Engineer.

OBSERVATION AND TESTING

Christian Wheeler Engineering shall be retained as the Geotechnical Engineer to observe and test the earthwork in accordance with these specifications. It will be necessary that the Geotechnical Engineer or his representative provide adequate observation so that he may provide his opinion as to whether or not the work was accomplished as specified. It shall be the responsibility of the contractor to assist the Geotechnical Engineer and to keep him appraised of work schedules, changes and new information and data so that he may provide these opinions. In the event that any unusual conditions not covered by the special provisions or preliminary geotechnical report are encountered during the grading operations, the Geotechnical Engineer shall be contacted for further recommendations.

If, in the opinion of the Geotechnical Engineer, substandard conditions are encountered, such as questionable or unsuitable soil, unacceptable moisture content, inadequate compaction, adverse weather, etc., construction should be stopped until the conditions are remedied or corrected or he shall recommend rejection of this work.
Tests used to determine the degree of compaction should be performed in accordance with the following American Society for Testing and Materials test methods:

- Maximum Density & Optimum Moisture Content - ASTM D1557
- Density of Soil In-Place - ASTM D1556 or ASTM D6938

All densities shall be expressed in terms of Relative Compaction as determined by the foregoing ASTM testing procedures.

**PREPARATION OF AREAS TO RECEIVE FILL**

All vegetation, brush and debris derived from clearing operations shall be removed, and legally disposed of. All areas disturbed by site grading should be left in a neat and finished appearance, free from unsightly debris.

After clearing or benching the natural ground, the areas to be filled shall be scarified to a depth of 6 inches, brought to the proper moisture content, compacted and tested for the specified minimum degree of compaction. All loose soils in excess of 6 inches thick should be removed to firm natural ground which is defined as natural soil which possesses an in-situ density of at least 90 percent of its maximum dry density.

When the slope of the natural ground receiving fill exceeds 20 percent (5 horizontal units to 1 vertical unit), the original ground shall be stepped or benched. Benches shall be cut to a firm competent formational soil. The lower bench shall be at least 10 feet wide or 1-1/2 times the equipment width, whichever is greater, and shall be sloped back into the hillside at a gradient of not less than two (2) percent. All other benches should be at least 6 feet wide. The horizontal portion of each bench shall be compacted prior to receiving fill as specified herein for compacted natural ground. Ground slopes flatter than 20 percent shall be benched when considered necessary by the Geotechnical Engineer.

Any abandoned buried structures encountered during grading operations must be totally removed. All underground utilities to be abandoned beneath any proposed structure should be removed from within 10 feet of the structure and properly capped off. The resulting depressions from the above
described procedure should be backfilled with acceptable soil that is compacted to the requirements of
the Geotechnical Engineer. This includes, but is not limited to, septic tanks, fuel tanks, sewer lines or
leach lines, storm drains and water lines. Any buried structures or utilities not to be abandoned
should be brought to the attention of the Geotechnical Engineer so that he may determine if any
special recommendation will be necessary.

All water wells which will be abandoned should be backfilled and capped in accordance to the
requirements set forth by the Geotechnical Engineer. The top of the cap should be at least 4 feet
below finish grade or 3 feet below the bottom of footing whichever is greater. The type of cap will
depend on the diameter of the well and should be determined by the Geotechnical Engineer and/or a
qualified Structural Engineer.

FILL MATERIAL

Materials to be placed in the fill shall be approved by the Geotechnical Engineer and shall be free of
vegetable matter and other deleterious substances. Granular soil shall contain sufficient fine material
to fill the voids. The definition and disposition of oversized rocks and expansive or detrimental soils
are covered in the geotechnical report or Special Provisions. Expansive soils, soils of poor gradation,
or soils with low strength characteristics may be thoroughly mixed with other soils to provide
satisfactory fill material, but only with the explicit consent of the Geotechnical Engineer. Any
import material shall be approved by the Geotechnical Engineer before being brought to the site.

PLACING AND COMPACTION OF FILL

Approved fill material shall be placed in areas prepared to receive fill in layers not to exceed 6 inches
in compacted thickness. Each layer shall have a uniform moisture content in the range that will allow
the compaction effort to be efficiently applied to achieve the specified degree of compaction. Each
layer shall be uniformly compacted to the specified minimum degree of compaction with equipment
of adequate size to economically compact the layer. Compaction equipment should either be
specifically designed for soil compaction or of proven reliability. The minimum degree of compaction
to be achieved is specified in either the Special Provisions or the recommendations contained in the
preliminary geotechnical investigation report.
When the structural fill material includes rocks, no rocks will be allowed to nest and all voids must be carefully filled with soil such that the minimum degree of compaction recommended in the Special Provisions is achieved. The maximum size and spacing of rock permitted in structural fills and in non-structural fills is discussed in the geotechnical report, when applicable.

Field observation and compaction tests to estimate the degree of compaction of the fill will be taken by the Geotechnical Engineer or his representative. The location and frequency of the tests shall be at the Geotechnical Engineer's discretion. When the compaction test indicates that a particular layer is at less than the required degree of compaction, the layer shall be reworked to the satisfaction of the Geotechnical Engineer and until the desired relative compaction has been obtained.

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction by sheepsfoot roller shall be at vertical intervals of not greater than four feet. In addition, fill slopes at a ratio of two horizontal to one vertical or flatter, should be trackrolled. Steeper fill slopes shall be over-built and cut-back to finish contours after the slope has been constructed. Slope compaction operations shall result in all fill material six or more inches inward from the finished face of the slope having a relative compaction of at least 90 percent of maximum dry density or the degree of compaction specified in the Special Provisions section of this specification. The compaction operation on the slopes shall be continued until the Geotechnical Engineer is of the opinion that the slopes will be surficially stable.

Density tests in the slopes will be made by the Geotechnical Engineer during construction of the slopes to determine if the required compaction is being achieved. Where failing tests occur or other field problems arise, the Contractor will be notified that day of such conditions by written communication from the Geotechnical Engineer or his representative in the form of a daily field report.

If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor shall rework or rebuild such slopes until the required degree of compaction is obtained, at no cost to the Owner or Geotechnical Engineer.
CUT SLOPES

The Engineering Geologist shall inspect cut slopes excavated in rock or lithified formational material during the grading operations at intervals determined at his discretion. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be analyzed by the Engineering Geologist and Geotechnical Engineer to determine if mitigating measures are necessary.

Unless otherwise specified in the geotechnical report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of the controlling governmental agency.

ENGINEERING OBSERVATION

Field observation by the Geotechnical Engineer or his representative shall be made during the filling and compaction operations so that he can express his opinion regarding the conformance of the grading with acceptable standards of practice. Neither the presence of the Geotechnical Engineer or his representative or the observation and testing shall release the Grading Contractor from his duty to compact all fill material to the specified degree of compaction.

SEASON LIMITS

Fill shall not be placed during unfavorable weather conditions. When work is interrupted by heavy rain, filling operations shall not be resumed until the proper moisture content and density of the fill materials can be achieved. Damaged site conditions resulting from weather or acts of God shall be repaired before acceptance of work.

RECOMMENDED GRADING SPECIFICATIONS - SPECIAL PROVISIONS

RELATIVE COMPACTION: The minimum degree of compaction to be obtained in compacted natural ground, compacted fill, and compacted backfill shall be at least 90 percent. For street and
parking lot subgrade, the upper six inches should be compacted to at least 95 percent relative compaction.

EXPANSIVE SOILS: Detrimentally expansive soil is defined as clayey soil which has an expansion index of 50 or greater when tested in accordance with the Uniform Building Code Standard 29-2.

OVERSIZED MATERIAL: Oversized fill material is generally defined herein as rocks or lumps of soil over 6 inches in diameter. Oversized materials should not be placed in fill unless recommendations of placement of such material are provided by the Geotechnical Engineer. At least 40 percent of the fill soils shall pass through a No. 4 U.S. Standard Sieve.

TRANSITION LOTS: Where transitions between cut and fill occur within the proposed building pad, the cut portion should be undercut a minimum of one foot below the base of the proposed footings and recompressed as structural backfill. In certain cases that would be addressed in the geotechnical report, special footing reinforcement or a combination of special footing reinforcement and undercutting may be required.
HYDROLOGY
AND
DRAINAGE CALCULATIONS
FOR
PLANNED DEVELOPMENT PERMIT
AT
3929 ARROYO SORRENTO ROAD
SAN DIEGO
P.T.S. #515157
PROJECT NO. 1009-16

Jorge H. Palacios, RCE 32031

12-15-17
Date
# TABLE OF CONTENTS

Scope of Study ................................................................. 2  
Declaration of Responsible Charge ........................................ 3  
Vicinity Map ........................................................................ 4  
50-Year Storm Rational Method Study ...................................... 5-7  
Circular Channel and Trapezoidal Channel Analysis .................. 8-11  
Hydraulic References and Graphs .......................................... 12-19  

**ATTACHMENTS - Drainage Plan**

- Exhibit 'A'
- Exhibit 'B'
- Exhibit 'C'
- Exhibit 'D'
SCOPE OF STUDY

McCarty Estates is a 2.36 acre infill residential subdivision within the Carmel Valley Neighborhood 8 in the City of San Diego. The project consists of 2 single family residential lots, which range in size from 1.00 acre to 1.36 acres.

The property is bordered on the north by Arroyo Sorrento Road, a paved and fully improved public street. Existing development to the south, east and west consists of single family homes within lots that range in size from 1.0 acre to 3.31 acres. The southerly portion (1.69 acres) of the site sheet flows to an existing concrete ditch and storm drain system constructed by the Loma Sorrento Subdivision, TM 96-7929, Map No. 13870. The remainder of the property (2.72 acres) surface drains towards the existing 24"x24" grated catch basin adjacent to the westerly property line and into an existing 36" HDPE storm drain pipe that drains north and was constructed by City of San Diego Dwg. No. 32048-2-D and west towards the public 42" R.C.P. storm drain in Arroyo Sorrento Road that was constructed by the City of San Diego Dwg. No. 30176-6-D. Drainage for the property will follow the same pattern.

The southerly portion of the property is already developed (Lot 2) and the runoff coefficient of 0.55 is used for the runoff calculations. The remainder of the property (Lot 1 and easterly property) will drain onto the existing 24"x24" grated catch basin and the runoff coefficient of 0.55 is used for future development.

The runoff coefficient for the undeveloped site that has been used for the runoff calculations is 0.45. Runoff Calculations are based on the requirements outlined in the City of San Diego’s Drainage Design Manual, January 2017 Edition.

Rational Method runoff calculations were performed using the Rational Method. The method calculates times of concentration and runoff volumes using the criteria specified in the City of San Diego’s Drainage Design Manual, January 2017 Edition.

To comply with the California Water Quality Control requirements, Order No. 2001-01, we are proposing vegetated slopes and vegetated swales. The project is a Standard Development Project that will comply with site Design, Source Control and Structural Control BMP requirements.

The pre-development and post-development runoff summaries are as follows:

<table>
<thead>
<tr>
<th>For:</th>
<th>A (Acres)</th>
<th>(Q_{pre} (\text{cfs}))</th>
<th>(Q_{post} (\text{cfs}))</th>
<th>(Q_{diff} (\text{cfs}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-Year Storm</td>
<td>4.41</td>
<td>4.81</td>
<td>4.91</td>
<td>+0.10</td>
</tr>
</tbody>
</table>

Conclusion
The southeast portion of the site will remain the same for the 50-year runoff of 1.14 C.F.S. The northerly portion of the site will only increase the 50-year runoff by 0.10 C.F.S. The runoff will discharge to the existing 36" HDPE storm drain along the westerly property line per City of San Diego Drawing No. 32048-2-D with a 100-year runoff capacity of 51.46 C.F.S. The increase by the \(Q_{diff}\) of 0.10 C.F.S. is minimal. Therefore, no adverse impacts are being caused to neighboring and downstream properties.

See Exhibit C of City Drawing Nos. 32048-2-D and 30176-6-D in the attachments of this report. See also Exhibit D for Drainage Report for City Drawing No. 32048-2-D.
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

JP ENGINEERING, INC.
4849 RONSON COURT, SUITE 105
SAN DIEGO, CA 92111
(858) 569-7377

BY: ___________________________ DATE: 12-15-17
JORGEO H. PALACIOS
R.C.E. 32031, EXP. 12-31-18

[Stamp]
50-YEAR STORM

PRE-DEVELOPMENT

AND

POST-DEVELOPMENT
<table>
<thead>
<tr>
<th>CONCENTRATION POINT</th>
<th>AREA (ACRES)</th>
<th>REMARKS</th>
<th>RUNOFF COEFF. C</th>
<th>FLOW PATH LENGTH (FT)</th>
<th>FLOW PATH HEIGHT (FT)</th>
<th>TC (Min)</th>
<th>I (in/hr)</th>
<th>Q (cfs)</th>
<th>SIZE AND TYPE OF INLET</th>
<th>PIPE SIZE AND MATERIAL</th>
<th>SLOPE (%)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.72</td>
<td></td>
<td>0.45</td>
<td>450</td>
<td>30</td>
<td>12.5</td>
<td>3</td>
<td>3.67</td>
<td>6.7%</td>
<td></td>
<td>6.7%</td>
<td>PRE-DEVELOPMENT</td>
</tr>
<tr>
<td>2</td>
<td>1.69</td>
<td></td>
<td>0.55</td>
<td>400</td>
<td>50</td>
<td>12.5</td>
<td>3</td>
<td>1.14</td>
<td>12.5%</td>
<td></td>
<td>12.5%</td>
<td>PRE-DEVELOPMENT</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### RATIONAL METHOD STUDY

#### CITY OF SAN DIEGO DRAINAGE MANUAL

**STUDY NAME:** McCarty Estates

**CALCULATED BY:** JHP

**DATE:** 12-04-17

**JOB NO.:** 1009-16

#### 50 YR. STORM RATIONAL METHOD STUDY

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONCENTRATION POINT</strong></td>
<td><strong>AREA (ACRES)</strong></td>
<td><strong>REMARKS</strong></td>
</tr>
<tr>
<td>3</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1.69</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4.41</strong></td>
<td></td>
</tr>
</tbody>
</table>

\[ Q_{\text{post}} - Q_{\text{pre}} = 4.91 - 4.81 = +0.10 \text{ cfs} \]
CIRCULAR CHANNEL
AND
TRAPEZOIDAL CHANNEL
ANALYSIS
<table>
<thead>
<tr>
<th>CONCENTRATION POINT</th>
<th>REMARKS</th>
<th>Q (cfs)</th>
<th>SIZE AND TYPE OF INLET</th>
<th>PIPE SIZE AND MATERIAL</th>
<th>SLOPE (%)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td></td>
<td>3.67</td>
<td>24&quot; X 24' C.B.</td>
<td>12&quot; HDPE PIPE</td>
<td>2.0% MIN.</td>
<td>DN= 0.63', V= 7.00 fps</td>
</tr>
<tr>
<td>P-2</td>
<td></td>
<td>3.77</td>
<td>24&quot; X 24' C.B.</td>
<td>12&quot; HDPE PIPE</td>
<td>2.0% MIN.</td>
<td>DN= 0.65', V= 7.03 fps</td>
</tr>
</tbody>
</table>
### CIRCULAR CHANNEL ANALYSIS
#### NORMAL DEPTH COMPUTATION

December 4, 2017

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>3.67</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.02</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.013</td>
</tr>
<tr>
<td>Channel Diameter (ft)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### PROGRAM INPUT DATA

### COMPUTATION RESULTS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>0.63</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>7.0</td>
</tr>
<tr>
<td>Froude Number</td>
<td>1.673</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.76</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>1.39</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>0.52</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>0.96</td>
</tr>
</tbody>
</table>
### CIRCULAR CHANNEL ANALYSIS
### NORMAL DEPTH COMPUTATION

December 4, 2017

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>3.77</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.02</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.013</td>
</tr>
<tr>
<td>Channel Diameter (ft)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>0.65</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>7.03</td>
</tr>
<tr>
<td>Froude Number</td>
<td>1.656</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.77</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>1.41</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>0.54</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>0.96</td>
</tr>
</tbody>
</table>
HYDRAULIC REFERENCES

AND

GRAPHS
### Table A-1. Runoff Coefficients for Rational Method

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Runoff Coefficient (C)</th>
<th>Soil Type (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Family</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Multi-Units</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Mobile Homes</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td>Rural (lots greater than ½ acre)</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Commercial (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% Impervious</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Industrial (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90% Impervious</td>
<td>0.95</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

- Actual Imperviousness = 50%
- Tabulated Imperviousness = 80%
- Revised C = \( \frac{n_1/n_0 \times 0.85}{n_1/n_0} = 0.53 \)

The values in Table A-1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

### A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the Tc for a selected storm frequency. Once a particular storm frequency has been selected for design and a Tc calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).
Figure A-1. Intensity-Duration-Frequency Design Chart
Figure A-2. Nomograph for Determination of $T_c$ for Natural Watersheds

**Note:** Add ten minutes to the computed time of concentration from Figure A-2.
Figure A-4: Rational Formula - Overland Time of Flow Nomograph

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

Note: Use formula for watercourse distances in excess of 100 feet.

EXAMPLE: Given: Watercourse Distance (D) = 70 Feet, Slope (s) = 1.3%, Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

T = \frac{18.1 (1.3 + C) \sqrt{D}}{s^{3/4}}
### APPENDIX C: MANNING ROUGHNESS COEFFICIENTS

<table>
<thead>
<tr>
<th>Conduit Description</th>
<th>Manning Roughness Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforced Concrete Pipe (RCP)</td>
<td>0.013</td>
</tr>
<tr>
<td>Corrugated Metal Pipe and Pipe Arch</td>
<td></td>
</tr>
<tr>
<td>2-3/8 x 1/2 inch Corrugations</td>
<td></td>
</tr>
<tr>
<td>Unlined</td>
<td>0.024</td>
</tr>
<tr>
<td>Half Lined</td>
<td></td>
</tr>
<tr>
<td>Full Flow</td>
<td>0.018</td>
</tr>
<tr>
<td>d/D&gt;=0.60</td>
<td>0.016</td>
</tr>
<tr>
<td>d/D&lt;0.60</td>
<td>0.013</td>
</tr>
<tr>
<td>Fully Lined</td>
<td>0.013</td>
</tr>
<tr>
<td>3x1 inch Corrugations</td>
<td>0.027</td>
</tr>
<tr>
<td>6x2 inch Corrugations</td>
<td>0.032</td>
</tr>
<tr>
<td>Spiral Rib Pipe</td>
<td></td>
</tr>
<tr>
<td>Helically Wound Pipe</td>
<td></td>
</tr>
<tr>
<td>18-inch</td>
<td>0.015</td>
</tr>
<tr>
<td>24-inch</td>
<td>0.017</td>
</tr>
<tr>
<td>30-inch</td>
<td>0.019</td>
</tr>
<tr>
<td>36-inch</td>
<td>0.021</td>
</tr>
<tr>
<td>42-inch</td>
<td>0.022</td>
</tr>
<tr>
<td>48-inch</td>
<td>0.023</td>
</tr>
<tr>
<td>Plastic Pipe (HPDE and PVC)</td>
<td></td>
</tr>
<tr>
<td>Smooth</td>
<td>0.013</td>
</tr>
<tr>
<td>Corrugated</td>
<td>0.024</td>
</tr>
<tr>
<td>Vitrified Clay Pipe</td>
<td>0.014</td>
</tr>
<tr>
<td>Cast-Iron Pipe (Uncoated)</td>
<td>0.013</td>
</tr>
<tr>
<td>Steel Pipe</td>
<td>0.011</td>
</tr>
<tr>
<td>Brick</td>
<td>0.017</td>
</tr>
<tr>
<td>Cast-In-Place Concrete Pipe</td>
<td></td>
</tr>
<tr>
<td>Rough Wood Forms</td>
<td>0.017</td>
</tr>
<tr>
<td>Smooth Wood or Steel Forms</td>
<td>0.014</td>
</tr>
</tbody>
</table>

*Based on materials and workmanship required by standard specifications.*
CHART 3

\[ P = 2B + L_e \]

A = AREA OF CLEAR OPENING IN GRATE TO ALLOW FOR CLOGGING DIVIDED BY 2 BEFORE OBTAINING A.
WITHOUT CURB \[ P = 2(B + L_e) \]

**DEPTH (d) OF WATER OVER GRATE IN FEET**

**DISCHARGE PER SQUARE FOOT OF EFFECTIVE CLEAR OPENING**

**DEPTH (d) OF WATER OVER GRATE IN FEET**

**DISCHARGE PER FOOT OF EFFECTIVE PERIMETER**

USE CURVE (B) FOR DEPTHS OVER GRATE MORE THAN 0.8 FT.

USE CURVE (A) FOR DEPTHS OVER GRATE LESS THAN 0.8 FT.

BUREAU OF PUBLIC ROADS
REV. AUG. 1958

HYDRAULIC CAPACITY OF GRATE INLET IN SUMP
Type 1 - With Sill
Type 2 - Without sill

1 = Thickness of riprap
D = Pipe Diameter
L = Bottom width of concrete channel

<table>
<thead>
<tr>
<th>Velocity</th>
<th>Rock Classification</th>
<th>Riprap Thickness (1 ft)</th>
<th>Filter Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>Medium Sand</td>
<td>4.6</td>
<td>1/16</td>
</tr>
<tr>
<td>7-10</td>
<td>Fine Sand</td>
<td>11.0</td>
<td>1/4</td>
</tr>
<tr>
<td>10-14</td>
<td>Fine Gravel - Light</td>
<td>1.4</td>
<td>1/2</td>
</tr>
<tr>
<td>12-16</td>
<td>1/4 Ton</td>
<td>7.7</td>
<td>1/2</td>
</tr>
<tr>
<td>16-18</td>
<td>1/2 Ton</td>
<td>3.6</td>
<td>1/2</td>
</tr>
<tr>
<td>18-20</td>
<td>2 Ton</td>
<td>4.1</td>
<td>1/2</td>
</tr>
</tbody>
</table>

Note: Filter blanket thickness = 1 ft. or 1

Class B concrete, as shown on plans.

Section A-A

NOTES:

1. Type of riprap
   a. Regular Quarry Stone
   b. Broken Concrete if shown on plans
   c. Cobble not acceptable

2. Gradation and Placement as specified in Regional Standards Comp. Std. Spec. Prov. Sec. 200-1.6

3. Riprap to be placed over a filter blanket which may be granular material or plastic cloth
   a. Granular material specs. in Table above
   b. Plastic cloth specs. in Reg. Std. Comp. Std. Spec. Prov. Sec. 200-1.6

**Standard Specifications for Public Works**
EXHIBIT D

DRAINAGE REPORT

FOR

CITY OF SAN DIEGO

DRAWING NO. 42068-D
DRAINAGE REPORT

FOR

McCARTY STORM DRAIN

W.O. 420680

Drawing 32048-D

ARROYO SORRENTO ROAD AT TIERRA DEL SUR
CITY OF SAN DIEGO

January 9, 2003

By:

MARTIN & ZIEMNIAK
9180 Camino Santa Fe
San Diego, CA 92121

(858)831-9420
Introduction and Purpose:

The subject study area is located southeast of the intersection of Arroyo Sorrento Road and Tierra Del Sur in the Sorrento Mesa area of the City of San Diego (See enclosed vicinity map.). The project proponent owns property within the study area and desires to mitigate concentrated surface flow that interferes with their organic agricultural use of their land. The purpose of this report is to substantiate the design of a proposed private storm drain extension that satisfies this objective.

Existing Condition:

Flow tributary to the proposed storm drain system is concentrated in an existing open channel per the Torrey View Estate subdivision (W.O. 420094, Drawing 31722-D). This flow (47.6 cubic feet per second (CFS)) currently crosses the project proponent's existing driveway at the upstream project boundary via four 24”x36” CSPA culverts and continues westerly in an unlined swale to a Type B inlet in the Arroyo Sorrento Road right of way at the intersection of Tierra Del Sur, compromising organic agricultural operations and periodically depositing silt in an existing pool in property downstream of the project proponents'.

Project Description:

Upstream flow is attenuated into the storm drain at the upstream edge of the upstream driveway by plugging two of the four culverts and combining the flow of the remaining two through a modified cleanout structure to form the entrance to the proposed storm drain line. The drain line continues beyond the project site to connect to an existing storm drain in Arroyo Sorrento Road, significantly reducing concentrated surface flow into the Type B inlet there. It includes one private inlet that intercepts surface flow at the downstream edge of the project proponents’ property.

Methodology:

1. Design flow tributary to the intermediate inlet was calculated per the rational formula. Time of concentration was determined using the Kiritoch formula per the exhibit on page 84 of the City of San Diego Drainage Design Manual (Exhibit A).

2. The drain line and its single inlet was modeled for the design flow using Haestad StormCad software to calculate and tabulate the hydraulic grade line (HGL) throughout the full reach of the drain system. For simplicity, the peak inlet flow was added to the peak pipe flow without confluence considerations for the differences in peak flow times. This is conservative, as the larger pipe flow intuitively has the longer time of concentration.

3. The inlet hydrology map, charts and exhibits from the Drainage Design Manual, and StormCad output tables and profile are enclosed herein as Exhibits A through H.
Conclusions:

1. The proposed private storm drain system does not operate under downstream control, because the existing HGL at the outlet point is well below the calculated HGL at the end of the downstream proposed pipe.

2. The proposed private storm drain system has the capacity to carry the 100-year design flow with the HGL below the pipe soffit (water surface elevation less than or equal to the pipe diameter).

3. The remaining two culvert openings at the upstream edge of the upstream driveway have the capacity to accept the design flow.
FLOW CALCULATION

\[ Q_{100} = C_{100} A \]
\[ C = 0.45 \text{ PER EXHIBIT B} \]
\[ t_c = 12.5 \text{ min \ PER EXHIBIT C} \]
\[ i_{100} = 3.15 \text{ PER EXHIBIT D} \]
\[ Q_{100} = (0.45)(3.15)(2.72) \]
\[ = 3.86 \text{ CFS} \]

\[ Q_{100} = 3.86 \text{ CFS} \]

\[ A = 2.72 \text{ Ac.} \]

ELEV 207
UPPER NODE

ELEV 175
LOWER NODE (110 PER EXHIBIT F)

HYDROLOGY MAP
EXHIBIT A
# TABLE 2

**RUNOFF COEFFICIENTS (RATIONAL METHOD)**

**DEVELOPED AREAS (URBAN)**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Coefficient, C</th>
<th>Soil Type (I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential:</td>
<td></td>
<td>D</td>
</tr>
<tr>
<td>Single Family</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>Multi-Units</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>Mobile Homes</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>Rural (lots greater than 1/2 acre)</td>
<td>.45</td>
<td></td>
</tr>
<tr>
<td>Commercial (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80% Impervious</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>Industrial (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90% Impervious</td>
<td>.95</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

(1) Type D soil to be used for all areas.

(2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

\[
\text{Actual imperviousness} = 50\%
\]

\[
\text{Tabulated imperviousness} = 80\%
\]

\[
\text{Revised C} = \frac{50}{80} \times 0.85 = 0.53
\]
To obtain correct intensity, multiply intensity on chart by factor for design elevation.
NOTES:
1. WHEN DAYLIGHT IS UNDER A BUILDING, OVEREXCAVATE AND RECOMPACT A MINIMUM OF 3' UNDER BUILDING FOUNDATIONS. SEE GEOTECHNICAL INVESTIGATION REPORT.
2. SEE PROFILES OF RETAINING WALL SHEET 5.
3. ALL ONSITE, PRIVATE IMPROVEMENTS SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. THE CITY ENGINEER'S APPROVAL OF THIS DRAWING, IN NO WAY CONSTITUTE AN APPROVAL OF SAID PRIVATE IMPROVEMENTS. A SEPARATE PERMIT FOR SUCH IMPROVEMENTS MAY BE REQUIRED.
4. GRASS-LINED SWALES AND D-75 DITCHES SHALL HAVE A 1.0% MINIMUM SLOPE.

PRIVATE CONTRACT

GRADING PLAN FOR

TORREY VIEW ESTATE
LOT 6 OF MAP 8735

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT
SHEET 2 OF 14 SHEETS

<table>
<thead>
<tr>
<th>W.D.</th>
<th>420094</th>
</tr>
</thead>
<tbody>
<tr>
<td>W.D.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOR CITY ENGINEER</th>
<th>DATE</th>
<th>DESCRIPTION</th>
<th>BY</th>
<th>APPROVED</th>
<th>DATE</th>
<th>FILLED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ORIGINAL</td>
<td>CEA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1916-6257
NAD 83 COORD.

276-1697
LAMBERT COORDINATES

<table>
<thead>
<tr>
<th>CONTRACTOR</th>
<th>DATE STARTED</th>
<th>INSPECTOR</th>
<th>DATE COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>31722 - 2 - D</td>
</tr>
</tbody>
</table>

03/25/02

EXHIBIT E PG 1 OF 2
## Scenario: Base

### Combined Pipe/Node Report

<table>
<thead>
<tr>
<th>Label</th>
<th>Section Size</th>
<th>Length (ft)</th>
<th>Upstream Node</th>
<th>Upstream Invert Elevation (ft)</th>
<th>Downstream Node</th>
<th>Downstream Invert Elevation (ft)</th>
<th>Constructed Slope (ft/ft)</th>
<th>Average Velocity (ft/s)</th>
<th>Hydraulic Grade Line In (ft)</th>
<th>Hydraulic Grade Line Out (ft)</th>
<th>Total System Flow (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td>35 inch</td>
<td>6.34</td>
<td>J-1</td>
<td>147.68</td>
<td>O-1</td>
<td>147.35</td>
<td>0.052050</td>
<td>9.88</td>
<td>150.00</td>
<td>149.21</td>
<td>51.06</td>
</tr>
<tr>
<td>P-2</td>
<td>36 inch</td>
<td>03.50</td>
<td>J-2</td>
<td>153.34</td>
<td>J-1</td>
<td>148.01</td>
<td>0.051498</td>
<td>8.29</td>
<td>155.66</td>
<td>150.59</td>
<td>51.06</td>
</tr>
<tr>
<td>P-3</td>
<td>36 inch</td>
<td>83.84</td>
<td>J-3</td>
<td>168.80</td>
<td>J-2</td>
<td>153.67</td>
<td>0.051491</td>
<td>14.00</td>
<td>171.12</td>
<td>154.87</td>
<td>51.06</td>
</tr>
<tr>
<td>P-4</td>
<td>36 inch</td>
<td>17.42</td>
<td>J-4</td>
<td>169.57</td>
<td>J-3</td>
<td>169.13</td>
<td>0.025258</td>
<td>8.12</td>
<td>171.89</td>
<td>171.86</td>
<td>51.06</td>
</tr>
<tr>
<td>P-5</td>
<td>36 inch</td>
<td>43.67</td>
<td>J-5</td>
<td>170.99</td>
<td>J-4</td>
<td>169.90</td>
<td>0.024960</td>
<td>8.40</td>
<td>173.31</td>
<td>172.40</td>
<td>51.06</td>
</tr>
<tr>
<td>P-5A</td>
<td>36 inch</td>
<td>41.40</td>
<td>J-10</td>
<td>171.94</td>
<td>J-5</td>
<td>170.99</td>
<td>0.022947</td>
<td>8.26</td>
<td>174.26</td>
<td>173.60</td>
<td>51.06</td>
</tr>
<tr>
<td>P-6B</td>
<td>36 inch</td>
<td>79.80</td>
<td>J-6</td>
<td>173.64</td>
<td>J-10</td>
<td>171.94</td>
<td>0.021303</td>
<td>8.11</td>
<td>175.88</td>
<td>174.32</td>
<td>47.20</td>
</tr>
<tr>
<td>P-7</td>
<td>36 inch</td>
<td>22.00</td>
<td>J-7</td>
<td>174.60</td>
<td>J-6</td>
<td>173.97</td>
<td>0.026636</td>
<td>7.93</td>
<td>176.84</td>
<td>176.54</td>
<td>47.20</td>
</tr>
<tr>
<td>P-8</td>
<td>36 inch</td>
<td>59.00</td>
<td>J-8</td>
<td>180.91</td>
<td>J-7</td>
<td>174.60</td>
<td>0.031709</td>
<td>8.07</td>
<td>183.15</td>
<td>177.00</td>
<td>47.20</td>
</tr>
<tr>
<td>P-9</td>
<td>36 inch</td>
<td>33.40</td>
<td>J-9</td>
<td>181.91</td>
<td>J-8</td>
<td>180.91</td>
<td>0.029940</td>
<td>8.11</td>
<td>184.15</td>
<td>183.28</td>
<td>47.20</td>
</tr>
<tr>
<td>P-10</td>
<td>24x36 inch</td>
<td>4.67</td>
<td>I-1</td>
<td>165.20</td>
<td>J-9</td>
<td>184.91</td>
<td>0.062097</td>
<td>7.62</td>
<td>186.55</td>
<td>185.92</td>
<td>23.60</td>
</tr>
<tr>
<td>P-11</td>
<td>24x36 inch</td>
<td>4.67</td>
<td>I-2</td>
<td>185.20</td>
<td>J-9</td>
<td>184.91</td>
<td>0.062097</td>
<td>7.62</td>
<td>186.55</td>
<td>185.92</td>
<td>23.60</td>
</tr>
<tr>
<td>P-14</td>
<td>12 inch</td>
<td>11.17</td>
<td>I-3</td>
<td>173.16</td>
<td>J-10</td>
<td>172.94</td>
<td>0.019696</td>
<td>4.91</td>
<td>174.90</td>
<td>174.79</td>
<td>3.86</td>
</tr>
</tbody>
</table>