Cultural Resources Assessment of the Riverside-Corona Feeder Realignment, San Bernardino and Riverside Counties, California

Amanda C. Cannon and Michael K. Lerch

Prepared for

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Technical Report 09-06

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April 2009

CONTENTS

LIST OF FIGURES

LIST OF TABLES

MANAGEMENT SUMMARY

A cultural resources survey for a proposed pipeline realignment of a portion of the Western Municipal Water District (WMWD) Riverside-Corona Feeder (RCF) Project was conducted by Statistical Research, Inc. (SRI), for Albert A. Webb and Associates (Webb) to provide data for a Supplemental Environmental Impact Report (SEIR) for the project. The cultural resources investigation involved an archaeological survey of an alternative RCF pipeline alignment for a portion of the RCF, totaling 20.4 miles, with an additional 3.4-mile RC Feeder Monroe Street Alternative for part of the realigned pipeline route. Fieldwork involved an intensive pedestrian survey of all accessible portions of a 100-foot- (30-m-)-wide corridor on either side of the area of potential effects (APE).

Depending on access and ground visibility, portions of the 23.8-mile corridor encompassing the feeder realignments were surveyed, spot checked, or not surveyed. Areas that were spot-checked included sections of the survey corridor that were partially obscured by landscaping or other development or had chain link fences restricting full access to the survey corridor.

Two cultural resources have been previously recorded within the APE of the Proposed Riverside-Corona Feeder Realignment: Victoria Avenue (P-33-11361) and the Riverside Lower Canal (RIV-4791H). These two cultural resources, as well as the Riverside Upper Canal (RIV-4495H), are also located within the APE of the RC Feeder Monroe Street Alternative. The Proposed Riverside-Corona Feeder Realignment will pass directly beneath one railway segment (SBR-6847H) and two canals (SBR-6859H and RIV-4495H); consequently, these resources are considered to be outside of the APE. Additionally, four previously recorded cultural resources (SBR-6101H, CPHI-SBR-21, SBR-6859H, and P-36-015221) were documented within the APE based on records search data; however, no physical evidence of them was identified during the pedestrian survey. These resources may have been previously destroyed or are present beneath the ground surface.

In addition to previously recorded sites identified within the project survey area, eight previously unrecorded sites were located during the SRI pedestrian survey. Four of the newly recorded sites (SBR-13148H, P-36-014920, RIV-9105, and P-33-17540) consist of historical-period structure foundations identified outside of the APE of the Proposed Riverside-Corona Feeder Realignment. The remnants of an irrigation system of a former citrus orchard (RIV-9106) was identified within the APE of the RC Feeder Monroe Street Alternative. Additionally, two concrete-lined canals (P-33-17542 and P-33-17543) were identified within the APE of the RC Feeder Monroe Street Alternative and one (P-33-17544) was identified outside of the APE of the Proposed Riverside-Corona Feeder Realignment.

As currently proposed, Victoria Avenue (P-33-11361) would not be subject to adverse effects from the project. The Riverside Upper Canal (RIV-4495H), however, may be subject to adverse effects if the RC Feeder Monroe Street Alternative is selected and traditional trenching techniques are used at the canal crossing. If the RC Feeder Monroe Street Alternative is selected, we recommend jack-and-bore methods at the Riverside Upper Canal crossing to avoid adverse effects. Finally, P-33-17542 and P-33-17543 must be evaluated for NRHP or CRHR eligibility and the appropriate mitigation measures developed and implemented if needed. No additional recommendations are made for further cultural resources investigations prior to project construction on the remaining cultural resources located within the RCF Realignment Project APE.

ACKNOWLEDGMENTS

The Riverside-Corona Feeder project involved the cooperative efforts of many people. Richard J. MacHott, Chief Environmental Planner at Albert A. Webb Associates, provided us with project details and background information, and patiently answered our questions about the project configuration. Robin Laska, San Bernardino Archaeological Information Center; Kay White, Eastern Information Center; and Dave Singleton, Native American Heritage Commission; responded quickly and efficiently to our records search requests. Eric Scott and Craig R. Maker, of the Division of Geological Sciences, San Bernardino County Museum, conducted the literature review and records search for paleontological resources.

At SRI, Amanda Cannon served as project director and was assisted with the field survey by Ellen Chapman. Carrie Gregory conducted a field review for historical resources. Emma Britton carried out buried sites sensitivity analyses. Mapping and geospatial analysis were conducted by William Hayden, Stephen Norris, and Marie Echevarria-Delgado, and graphics were prepared by Steve Bradberry. Ken Becker served as project manager. Michael Lerch was principal investigator and assisted Amanda Cannon with writing the technical report.

CHAPTER 1

Introduction

This technical report presents the cultural resources survey results for a proposed pipeline realignment of a portion of the Western Municipal Water District (WMWD) Riverside-Corona Feeder (RCF) Project (Figure 1). The survey was conducted by Statistical Research, Inc. (SRI), for Albert A. Webb and Associates (Webb), and the results will provide data for a Supplemental Environmental Impact Report (SEIR) for the project. Prior to the current investigation, cultural resources studies were conducted for the previously proposed pipeline alignment of the RCF and the results were reported in WMWD's 2005 Programmatic Environmental Impact Report (PEIR) (Figure 2). No new cultural resources were identified as a result of the investigations for the 2005 PEIR. Four previously recorded historical-period resources, however, were identified within the project area, including three immediately adjacent to the alignments and one—the Gage Canal—within the R-C Feeder Alignment (WMWD 2005).

The current cultural resources investigation involved an archaeological survey of an alternative RCF pipeline alignment for a portion of the RCF, totaling 20.4 miles, with an additional 3.4-mile RC Feeder Monroe Street Alternative for part of the realigned pipeline route (see Figure 2). Fieldwork involved an intensive pedestrian survey of all accessible portions of a 100-foot- (30-m-)-wide corridor on either side of the area of potential effects (APE).

This cultural resources technical report documents the results of the current study, and provides an assessment of the potential effect of the proposed realignment on significant cultural resources. This report is intended to serve as a supporting document for the SEIR prepared by Webb. The SEIR will be submitted for certification by WMWD, the lead agency for the project environmental review under the California Environmental Quality Act (CEQA).

Project Location

The project area extends from the southwestern portion of San Bernardino County into northwestern Riverside County, California, and crosses three U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (see Table 1). The study area includes RCF alignments that traverse commercial, residential, and undeveloped portions of the cities of San Bernardino, Colton, Rialto and Riverside, as well as unincorporated areas of San Bernardino County and Riverside County. The Proposed Riverside-Corona Feeder Realignment begins in the city of San Bernardino near the intersection of Waterman Avenue and Orange Show Road and runs west in Orange Show Road/Auto Plaza Drive and then south to Fairway Drive, continuing west in Fairway Drive to Sperry Drive, south in Sperry Drive to Valley Boulevard, then west in Valley Boulevard to La Cadena Drive, and south in La Cadena Drive. The Proposed alignment then heads west in "N" Street to South Rancho Avenue, continues south in South Rancho Avenue and then southwest in Agua Mansa Road to Market Street, west in Market Street to Rubidoux Boulevard, continuing within Rubidoux Boulevard to 30th Street, then northwest in 30th Street to Avalon Street.

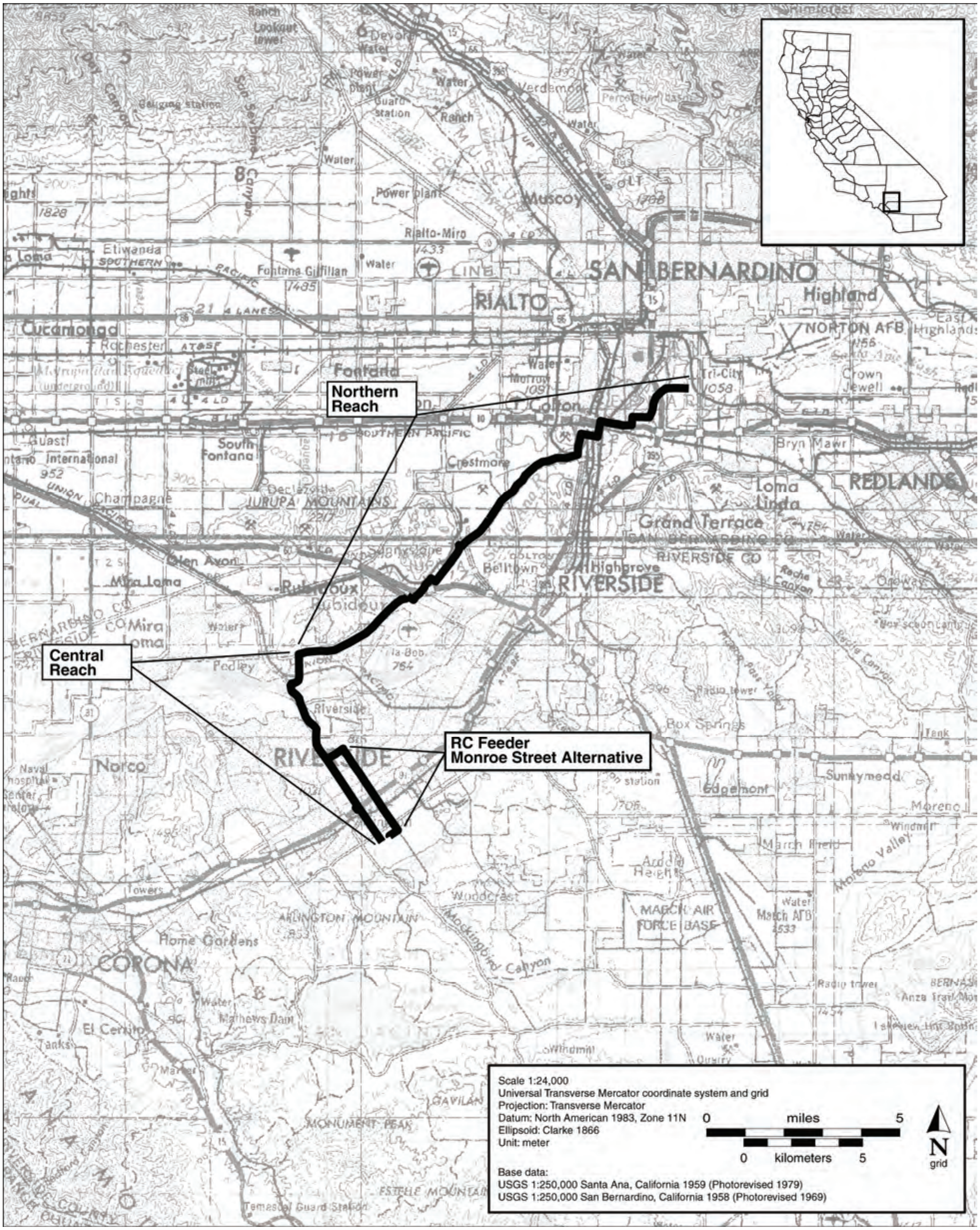

Figure 1. Map of the project vicinity.

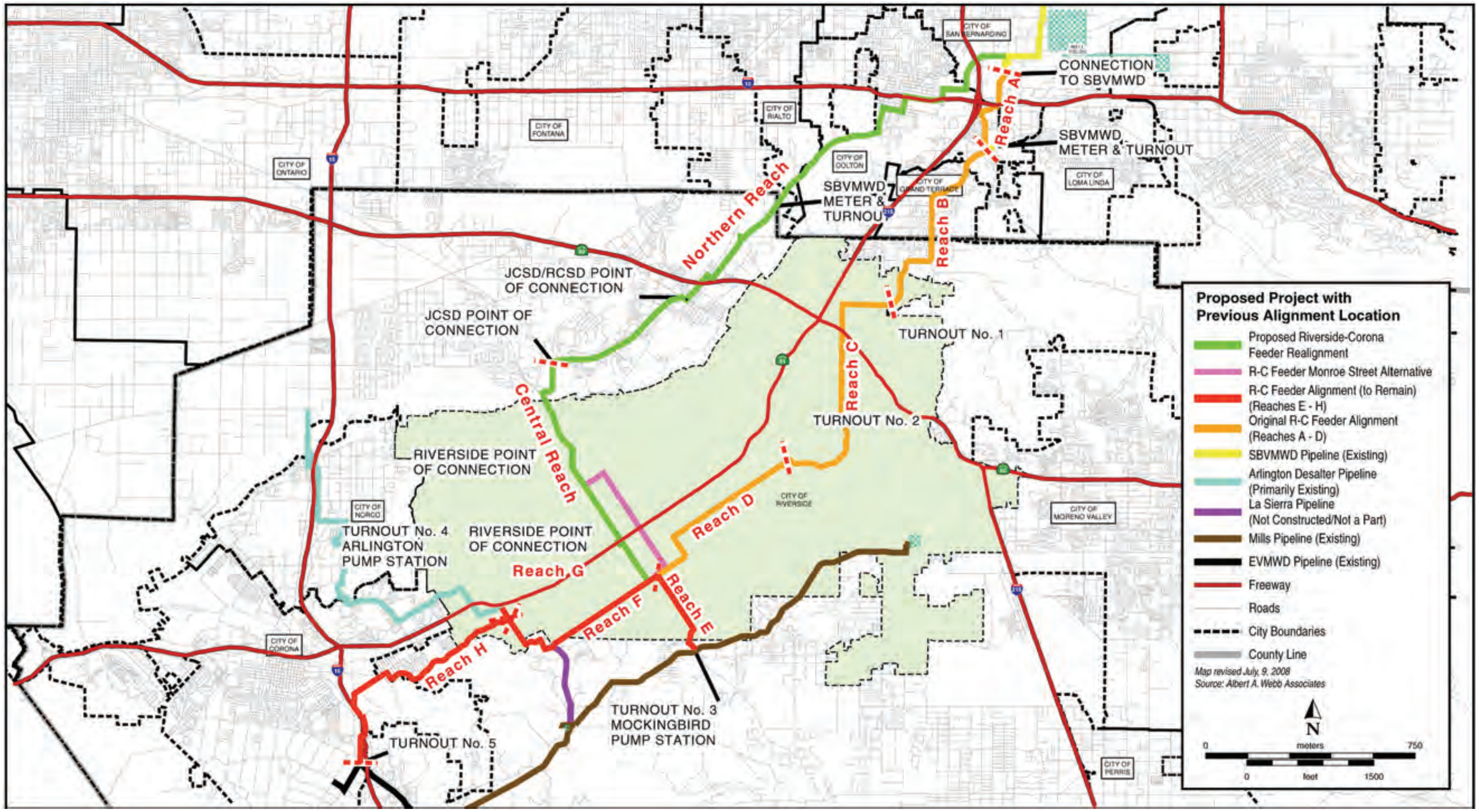

Figure 2. Map of the Riverside-Corona Feeder current and previous alignments in San Bernardino and Riverside counties, California.

Table 1. Project Area Location in Riverside and San Bernardino Counties (San Bernardino Base and Meridian)

USGS 7.5-minute Topographic Quadrangle	Section	Township	Range
	San Bernardino		
San Bernardino South	2	2 South	5 west
San Bernardino South	15, 16, 20, 21, 29, 30	1 South	4 west
San Bernardino South	25, 35, 36	1 South	5 west
Fontana	2	2 South	5 west
Fontana	35	1 South	5 west
	Riverside		
Fontana	2, 3, 9, 10, 16, 17	2 South	5 West
Fontana	35	1 South	5 West
Riverside West	1	3 South	6 West
Riverside West	5, 6, 7, 8,	3 South	5 West
Riverside West	16, 17	3 South	5 West
Riverside West	16, 17, 19, 20	2 South	5 West
Riverside West	24, 25, 36	2 South	6 West
San Bernardino South	2	2 South	5 West
San Bernardino South	35	1 South	5 West

Key: USGS = U.S. Geological Survey.

From Avalon Street, the alignment goes under State Route 60 and continues to the intersection of Avalon Street and Mission Boulevard, then west in Mission Boulevard to its intersection with Riverview Drive/Limonite Avenue. The alignment continues in Riverside Drive/Limonite Avenue to 42nd Street and continues southwest along Limonite Avenue, then south in Clay Street and crosses under the Santa Ana River near Van Buren Boulevard. At the Santa Ana River crossing, the alignment runs immediately parallel to the east side of Van Buren Boulevard Bridge, crosses the river and continues within Van Buren Boulevard to Doolittle Avenue. The alignment then traverses south on Van Buren Boulevard, continues southeast in Jackson Street, west in Diana Avenue to Wilbur Street, then south under State Route 91. South of State Route 91, the alignment traverses northeast in Indiana Avenue, continues southeast in Jackson Street, and connects to the approved RCF alignment near the intersection of Jackson Street and Cleveland Street.

As an alternative to the Jackson Street portion of the Proposed alignment, the RC Feeder Monroe Street Alternative follows the alignment described above from Van Buren Boulevard southeast in Jackson Street to Colorado Avenue, continuing northeast in Colorado Avenue to Monroe Street and then southeast in Monroe Street, under the State Route 91. The alignment continues in Monroe Street and then heads southwest in Cleveland Avenue to Irving Street where it will then connect with the approved RCF alignment.

Project Description

In its entirety, the RCF Realignment Project entails the proposed construction of approximately 30 miles of feeder pipeline as well as turnouts, a pump station, and new and existing wells in San Bernardino and

Riverside Counties. The R-C Feeder Alignment and associated infrastructure has been previously investigated for cultural resources and the results reported in the 2005 PEIR (WMWD 2005). Under the proposed RCF Realignment, WMWD will construct only the "southern reach" of the previously approved R-C Feeder Alignment. With the proposed RCF Realignment, WMWD has proposed an alternative alignment, which is part of the current cultural resources investigation. The proposed alternative alignment totals 23.8 linear miles for the proposed realignment and an alternative alignment for a portion thereof, which for the most part, will be constructed within existing roadways.

The RCF Realignment project area is divided into three sections: northern, central, and southern reaches (see Figures 1 and 2). As shown in Figure 2, the northern reach extends from the northern most extent of the Proposed Riverside-Corona Feeder Realignment to a Jurupa Community Services District (JCSD) point of connection near the intersection of Clay Street and Limonite Avenue. The central reach begins at the JCSD point of connection near the intersection of Clay Street and Limonite Avenue and extends south to Cleveland Avenue where the southern reach of the RCF begins—encompassing the southernmost portion of the previously investigated R-C Feeder Alignment—and continues south. As currently proposed, construction of the RCF alignments will occur in two phases: Phase I begins with the construction of the central reach in 2011–2013 followed by Phase II involving the construction of the northern and southern reaches being in approximately 2021.

Area of Potential Effects

Studies to identify and evaluate cultural resources must carefully establish the impact area, referred to in federal regulations as the APE for the project or undertaking, and in the CEQA Guidelines as the affected "environment," which means "the physical conditions which will be affected by a proposed project including land, . . . and objects of historical or aesthetic interest" (California Code of Regulations [CCR] §15360). We use the concept of APE as equivalent with "project area," and refer to the regulations implementing the National Historic Preservation Act (NRHP) for the following definition of APE:

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

The APE for the proposed RCF Realignment is the area subject to ground-disturbing activities, totaling approximately 23.8 linear miles (38.3 km). In addition to construction of the pipeline, surface disturbance will include stockpiles of spoils, spoil-removal activities, and equipment and materials storage. These areas are limited to the existing road rights-of way (ROWs), which vary in width from 56 to 152 feet (17.1 to 46.3 m).

Proposed feeder pipeline diameter will vary, ranging from 54 to 78 inches (137–198 cm), with pipeline diameter decreasing from north to south (Black and Veatch 2007:4-5). From the north end of the northern reach to the intersection of Valley Boulevard and Sperry Drive, pipeline diameter is expected to be 78 inches. From this intersection continuing to the JCSD/Rubidoux Community Services District Point of Connection at the intersection of Mission Boulevard and Avalon Street (see Figure 2), pipeline diameter is reduced to 60 inches. Proposed pipeline diameter for the remaining portion of the northern reach and the entirety of the central reach will measure 54 inches. Sections of pipes measuring 40 feet long will be used throughout the northern and central project reaches.

For the most part, pipeline construction will be confined to the existing roadway using traditional trenching techniques. Trench width and depth will vary, depending on the presence of existing utilities within city streets, equipment accessibility within the construction area, types of equipment used to consolidate trench bedding and backfill, and conditions of soils (Black and Veatch 2007:4-9–4-10, Figures 4-4 and 4-5). At minimum, width of the trench at top and bottom would be the pipe diameter plus an additional 20 inches on either side of the pipe. For trenches with flat bottoms, trenches will be excavated 4 inches below the bottom of the pipe at established grade. However, in areas with poor soils, excavation will occur an additional 3 feet below the base of the pipe. For open trenches with flared walls—used mostly in open terrain—at minimum 5 feet of overburden will cover the pipe. For trenches with straight sides and shoring—used in most of the project area due to confined construction areas and restricted ROWs—at minimum 6 feet of overburden will cap the pipe.

As an alternative to traditional trenching, micro-tunneling or jack-and-bore methods are proposed for the Santa Ana River crossing as well as for railroad, canal, and highway crossings to reduce surface disturbance (Black and Veatch 2007:4-14–4-23, Figures 4-8–4-10) (Table 2). During tunneling, the pipe will be placed within a casing measuring 66, 72, or 90 inches in diameter for pipes measuring 54, 60, or 78 inches in diameter, respectively. Tunneling would require room for jack and receiving pits (i.e., open trench with shoring measuring approximately 20-feet-by-40-feet), temporary spoils piles, equipment, and materials. For highway and canal crossings, the casing will be bored at a minimum of 6 feet below the roadbed or canal, whereas casings must be at minimum 5.5 feet below railroad crossings. For the Santa Ana River crossing, a 66-inch-diameter casing pipe is expected to be used. The pipe will placed beneath scouring depth to avoid exposure to the river. The scouring depth is currently unknown and will require analysis of the river bed.

Because pipeline construction—using traditional trenching as well as jack-and-bore techniques—will be temporary and, for the most part, confined to existing roadways, permanent effects within the project area viewshed are not anticipated. Additionally, because the pipeline will tunnel beneath other linear resources that cross the alignment, such as railroads, canals, and freeways, these resources are not considered to be within the APE. Similarly, because the pipeline will not result in any permanent changes to the viewshed adjacent to the alignment, any nearby architectural or other historical resources will not be affected directly, nor with there be any changes to their feeling, setting, or association. As such, the APE does not include architectural or other historical resources adjacent to the pipeline corridor.

Applicable Regulations

The proposed construction of the proposed RCF Realignment is a “project” subject to compliance with CEQA (Public Resources Code §21000 et seq.) and the CEQA Guidelines (CCR §15000 et seq.), as amended to date. For potential impacts to an archaeological or historical cultural resource to be considered significant under CEQA, the resource in question must be found to be a “historical resource,” that is, one that is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR), included in a local register of historical resources, or determined by the lead agency to be a historical resource. The term “historical resource” may apply to archaeological sites. However, for an archaeological site that does not meet the criteria for consideration as a “historical resource,” a determination must be made as to whether it qualifies as a “unique archaeological resource.”

This study involves several roadways currently under the jurisdiction of the California Department of Transportation (Caltrans District 08) and the Federal Highway Administration (FHWA) as well as channels and drainages monitored by the U.S. Army Corps of Engineers, Los Angeles District. Project compliance with the National Environmental Policy Act (NEPA) will be provided by the U.S. Bureau of Reclamation, Lower Colorado Region. Development, funding, and permitting of a project component would be considered an “undertaking” by these federal agencies and subject to compliance with Section 106 of the NHPA of 1966, as amended (16 U.S. Code [USC] 470) and its implementing regulations, published as Title 36, Part 800 of the Code of Federal Regulations (36 CFR 800). Federal agencies must take into account the

Table 2. Summary of Major Pipeline Crossings North-South, Using Jack and Bore Construction Techniques (adapted from Black and Veatch 2007:Table 4-4)

Crossing No.	Crossing Location	Description of Crossing	Approximate Crossing Width (feet)
	North		
1	Twin Creek Channel and Orange Show Rd.	channel crossing	400
2	Interstate 215 and Orange Show Rd.	highway underpass	800
4	Fairway Dr. and Warm Creek	channel crossing	300
8	UPRR and Rancho Ave.	railroad crossing	80
9	Riverside Canal and Agua Mansa Rd.	channel crossing	40
10	Agua Mansa Rd. and Rialto Channel	channel crossing	40
11	Agua Mansa Rd. and UPRR	single railroad	80
12	Highway 60	highway underpass	400
	Central		
13	Flood control channel and Limonite Ave.	channel crossing	40
15	Clay St. and UPRR	railroad overpass	80
16	Santa Ana River	river crossing	1,600
17	Arlington and Van Buren culvert	channel crossing	40
18	Highway 91	highway underpass	300
19	Riverside Canal and Jackson St.	canal crossing	40
20	BNSF RR and Jackson St.	railroad crossing	80

Key: BNSF = Burlington Northern Santa Fe; UPRR = Union Pacific Railroad.

effects of the proposed undertaking on historic properties, that is, cultural resources included in or eligible for listing in the National Register of Historic Places (NHRP). To accomplish this, the agency must first identify cultural resources that could be affected by the undertaking, then evaluate the significance of the resources to determine whether they are historic properties.

A cultural resource property that is listed in or determined eligible for the NRHP also is listed automatically in the CRHR (PRC 5024.1(d)). Thus, for the purposes of this study, cultural resources are evaluated for significance with reference to their eligibility for listing in the NRHP, according to criteria published in 36 CRF 60.4. Cultural resources found to be ineligible for listing in the NRHP are also considered with respect to eligibility only for the CRHR, as CEQA criteria for integrity, age, and representation of local and California history set different thresholds for significance than the NHPA.

Organization of the Report

Following this introductory chapter, environmental and cultural background information is presented in Chapter 2, followed by the research design and methods of data collection in Chapter 3. The results of the survey are presented in Chapter 4, followed by recommendations for eligibility for listing in the NRHP and CRHR for each of the identified resources, a discussion of potential impacts, and recommended mitigation measures in Chapter 5. The report concludes with a list of references cited. Copies of correspondence related to the archaeological and paleontological records searches and Native American consultation, as well as cultural resource location maps and historical resource inventory records (DPR 523 forms) for all recorded cultural resources, are included in confidential appendixes.

CHAPTER 2

Background Information

This chapter presents background information on the environmental and cultural settings of the study area. This review is not meant to be an exhaustive synthesis, but a basic background as relevant to this particular project. The project area begins in San Bernardino County within the city of San Bernardino and extends through the cities of Colton and Rialto and unincorporated San Bernardino County into Riverside County, continuing into the unincorporated Jurupa community and ending in the Arlington area within the city of Riverside.

Environmental Setting

The proposed RCF Realignment Project is located within the San Bernardino Valley and adjacent uplands. The proposed alignment roughly parallels the Santa Ana River, traversing floodplains and flat terraces as well as rural, residential, commercial, industrial, and historic landscapes. Within the vicinity of the northern reach of the project area, a few hills and mountains rise above the valley floor, including Slover Mountain and La Loma Hills. The cities of San Bernardino, Colton and Rialto are separated from Riverside and surrounding communities by the Jurupa Mountains to the west of the project and the Box Springs Mountains to the east. The Riverside area opens up to the east onto the San Jacinto Valley. Elevations in the project area range from 1,000 feet above mean sea level (AMSL) in the northern portion to 900 feet AMSL in the southern portion, and drops to approximately 700 feet AMSL at the Santa Ana River crossing.

The Santa Ana River is the major drainage in the project area. The river system flows in an overall general northeast to southwest direction, emptying into the Pacific Ocean near Newport Beach and Huntington Beach. However, while the Santa Ana River has attracted settlement throughout history, it has also been deemed the most dangerous, flood-prone river system west of the Mississippi (Lin 2005). Severe flood events in the area and resulting deaths prompted the construction of the Prado Dam in 1936 and its later completion in 1941 (Ahlborn 1982).

Overall, the region enjoys a mild Mediterranean climate characterized by warm, dry summers and cool, moist winters. The average annual temperatures are between 59° and 65° F, with upwards of 300 frost-free days a year. Precipitation in the region is variable, depending largely on elevation and aspect. Higher mountain elevations and coastal facing slopes receive the most annual precipitation, including the occasional summer thundershower. At lower elevations, annual precipitation varies from 12 to 20 inches, and most if not all rain falls in the winter months (Bailey 1966).

Vegetation in much of the study area has been altered by historical and modern development. The area was once a rich zone of native grasses and riparian species bordered by chaparral-covered hillsides. Patches of buckwheat (*Eriogonum* spp.) and prickly pear (*Opuntia occidentalis*) still survive along with a variety of sages (*Salvia* spp.), oaks (*Quercus* spp.), and other native species (Clarke et al. 2007). The wide array of plant species was used by the ethnohistoric inhabitants of the study area. Of these, acorns, yucca, cactus buds and fruit, sages, and various grasses and berries were the most important and the most likely to be found with any frequency in the project area (Bean and Saubel 1972; Drucker 1937; Kroeber 1925:649–650).

In addition to scrub and nonnative grass communities, the central reach of the project area contains historic citrus landscapes. These landscapes include groves of orange trees (*Citrus sinensis*) bordered by windrows of eucalyptus (*Eucalyptus* spp.), southern magnolias (*Magnolia grandiflora*), crape myrtles (*Lagerstroemia indica*), Brazilian and California pepper trees (*Schinus terebinthifolius* and *S. molle*), and Mexican fan palms (*Washingtonia robusta*) (Bricker et al. 2000).

Native fauna in the project area has also been limited in numbers and range over the past 100 years due to human encroachment. Previously, deer (*Odocoileus hemionus*), rabbits and hares (*Sylvilagus* spp. and *Lepus californicus*), small game birds, and freshwater fishes would have been important components in the prehistoric diet. A number of predators were also common in the area historically, including grizzly bears (*Ursus arctos horribilis*), wolves (*Canis lupus*), coyotes (*Canis latrans*), and wild cats (e.g., *Felis concolor*, *Lynx rufus*). Today, many native species are found only in undeveloped mountainous regions, and the once prevalent deer are now extremely rare.

Geologic Setting

The RCF Realignment project area, in general, runs parallel to the Santa Ana River in the Peninsular Ranges physiographic province. The Peninsular Ranges is a zone characterized by elongated mountain ranges and intervening basins and valleys oriented northwest-southeast. Structurally, the Peninsular Ranges consist of an uplifted, west-trending plateau that has broken into a number of large, subparallel blocks along major fault lines, including the Perris and Santa Ana Mountains blocks (Jahns 1954). The project area is located within the Perris Block—an erosional surface composed primarily of materials associated with the Southern California Batholith, including diorite, granodiorite, and quartz monzonite. Holocene alluviation has deposited large quantities of poorly sorted granitic gravels and quartz-rich sands along the northeastern margins of the Elsinore Mountains and the southwestern side of the hills east of Lake Elsinore (Engel 1959). Unconformably overlying the Martinez formation on the low hills of the Temescal Valley are cobbles and boulders of quartz latite porphyry (Greenwood and Morton 1991). Angular to sub-rounded pebble conglomerates occur as alluvial fans in the Temescal Valley, on the northeast side of the Santa Ana and Elsinore mountains and on the southwest side of the hills east of Lake Elsinore. The younger alluvial fans in the area have a greater abundance of granodiorites, metamorphic, and quartz sediments than older fanglomerates.

To the west of the Perris Block is the Santa Ana Mountains Block. Although mostly eroded, Quaternary-period basalt flows once capped an extensive portion of the Santa Ana Mountain Block. Remnant flows have been documented in portions of the southeastern Elsinore Mountains and northwest of Lake Elsinore on Trabuco Peak (Engel 1959). Also visible in the Elsinore and Temescal mountains are Lower Jurassic-period diorite and gabbro, suitable for ground stone production. Intrusive upon these formations are a variety of igneous rocks, including quartz latite, andesite, and dacite that rose upward as magma and solidified in dikes and sills before reaching the surface. On the margins of the Santa Ana Mountain block is the Upper Cretaceous period Chico formation, consisting of sedimentary rocks such as poorly bedded sandstone and conglomerates. The Chico formation is usually found unconformably overlying Triassic-period rocks. Farther down the mountain slopes, the Paleocene Martinez formation includes sandstones, shales, and mudstones that occur on top of the metamorphic igneous basement and below the quaternary fanglomerates, primarily on the west side of the Elsinore Trough.

Paleoenvironment

An understanding of the changing environmental conditions during the Holocene is necessary when discussing archaeological context. Fortunately, archaeologists working in southern California can draw upon a relatively high-resolution paleoenvironmental record. Several paleoenvironmental reconstructions are available and have played a major role in our understanding of prehistoric adaptations.

The paleoenvironmental record for southern California is best documented along the coast and in the desert regions. Along the coast, studies typically involve either the determination of sea surface temperature based on sediment cores from offshore locations (Hubbs 1967; Kahn et al. 1981; Pisias 1978), or the study of fossil pollen collected from similar cores (Davis 1992; Heusser 1978). In the deserts, paleoenvironmental reconstructions are generally based on tree-ring studies that document annual rainfall (Altschul et al. 1998; Feng and Epstein 1994; Larson and Michaelsen 1989). In both of these regions, paleoenvironmental reconstructions have had a profound effect on the development of archaeology. Applications of these data to the San Bernardino Mountains and Valley have been made by Altschul et al. (1984:37–44), and to western Riverside County by Goldberg (2001).

For the inland region, the transition from the Pleistocene to the Holocene (12,000–8000 B.P.) was a time of major environmental change. Although varying in magnitude and duration, warming trends in the Holocene led to the evaporation of pluvial lakes, changes in drainage patterns, and dramatic changes in both flora and fauna (Altschul et al. 1984, 1998; Antevs 1953; Axelrod 1981; Deevy and Flint 1957; Glassow et al. 1988; Koerper et al. 1986; Van Devender and Spaulding 1979). This broad environmental shift seems to have affected the human population and led to a number of adaptive responses that are often visible in the archaeological record (Heizer 1967; Janetski 1983; Madsen 1979, 1982; Thomas 1981).

Prehistory

The prehistory of the project region was reviewed by Altschul et al. (1984) in a cultural resources overview prepared for the San Bernardino Valley which included the project alignment within its general study area. A more general synthesis that places the inland southern California region into a larger context is provided by Moratto (1984). Recent summaries of the prehistory of the region for large-scale surveys of the Santa Ana River drainage (Brock et al. 1986; Hampson et al. 1988) and western Riverside County areas also are relevant (Goldberg 2001; Lerch and Cannon 2008). The reader is referred to those studies for detailed information on regional prehistory and previous archaeological investigations.

The general pattern of cultural development in the region is one of early hunting cultures beginning more than 8,500 years ago, followed by the development of a diversified hunting and gathering subsistence system. Over time, emphasis on plant food resources increased somewhat, with a generalized hunting and gathering way of life persisting into historical times and characterizing the lifeways of the ethnographic inhabitants of the upland areas adjacent to the Santa Ana River.

Early Holocene cultures date from about 11,000–8000 B.P. (Moratto 1984:110–113) and were adapted to the post-Pleistocene environment in which the megafauna had largely disappeared and a hotter, drier climate forced groups to settle near reliable water sources. The local expression of these early cultures, known as San Dieguito, was a hunting culture with a flaked-stone industry that included large flake-and-core scrapers, choppers, hammer stones, drills, and gravers (Warren 1967). Ground-stone implements are virtually absent from the assemblage described by Warren, although there is now little doubt that these cultures used plant resources when available (Basgall 1993; Grenda 1997). Far from being narrowly focused on big game and oriented around pluvial lakes, early groups may have been just as diverse in their adaptations as groups that inhabited the region in much later times. Sites from this time period are usually found along ancient lake terraces, in coastal San Diego County, or on the islands off the shore of the Pacific coast. Within the study region, two early Holocene sites have been identified: CA-RIV-2798/H, located along the margins of Lake Elsinore (Grenda 1997); and CA-RIV-6069,[1] located south of Mystic Lake in the San Jacinto

[1] Hereafter, the “CA-“ portion of the trinomial designation for archaeological sites will be omitted.

Valley (Horne and McDougall 2008). Both sites contain deeply stratified deposits, intact features, and ground-stone implements at the earliest levels.

Most archaeologists agree that prehistoric subsistence patterns show marked changes starting around 6500 B.C., roughly corresponding to the transition between early and middle Holocene cultures. Whatever their origin, these changes were almost certainly in response to warming climatic conditions and the changing flora and fauna, and are visible in the archaeological record as a reduced number of projectile points, scrapers, and choppers, and an increased number of ground stone artifacts. Although hunting and fishing were not entirely replaced by plant processing, the relative importance of animals in the prehistoric diet decreased. Grenda (1997) asserted that subsistence essentially stabilized after about 8,500 years ago. Moving into the middle Holocene, regional adaptations became ever more diverse.

Middle Holocene cultures from 5250 to 1500 B.C., often referred to as the Millingstone cultures, are well described and much better understood than cultures from the preceding period. The La Jolla and Topanga cultures are the coastal representatives from this period and suggest an ecological adaptation to shellfish and other coastal resources. Inland sites are typically described as belonging to the Pauma or Sayles cultures. These sites have a similar material culture but may be more sedentary and lack shellfish (Kowta 1969; True 1980). Sayles culture sites may represent a blend of the desert Pinto culture and the cultures of the coastal region (Kowta 1969). In the immediate study area, this period may be represented by the McCue site (RIV-112), a buried archaic-period deposit located adjacent to a seasonal drainage in Riverside northeast of Mockingbird Canyon, near the junction of the central and southern reaches of the RCF alignments. Although it has not been dated absolutely, the site yielded a collection of 58 projectile points, 36 of which are classified in the Elko series, two in the Pinto Shoulderless type, and one in the Gypsum Cave type. These large, bifacially flaked dart points of local lithic materials are dated ca. 4,000 to 1,500 years ago in sites in the Great Basin, and possibly are even earlier. The collection from the McCue site also includes 48 manos and 12 metates, with basin depths up to 4.7 cm (McDonald et al. 1987).

Middle Holocene sites in the project area should fit the pattern of the Pauma Culture. Pauma sites are described as reflecting a relatively more sedentary lifestyle and a greater reliance on gathering when compared to the San Dieguito sites. Grenda (1997) agreed with the trend toward greater sedentism, although he argued that subsistence is relatively unchanged. These sites also contain many ground stone artifacts, a greater tool variety, and lack shellfish remains. The most distinctive artifacts thought to be representative of middle Holocene cultures are ground-stone discoidals and cogged stones. Although many uses have been proposed, the actual function of these stone artifacts is unknown. Thus far, all of the well-provenienced cogged stones have come from prehistoric sites in the Los Angeles Basin and tend to cluster along the Santa Ana River drainage; they may represent a proto-Gabrielino culture group. Discoidals appear to be more extensive in their distribution across southern California.

The latter part of the middle Holocene, from 3,500 to 1,500 years ago, was named the Intermediate horizon by Wallace (1955). The people of this time broadened their subsistence base, indicated by the appearance of the mortar and pestle in the archaeological record. Some archaeologists believe these were used to process acorns (*Quercus* spp.) as a staple food source (Basgall 1987). Others, however, have argued that the earliest use of mortars and pestles was to process root products from bulrush (*Scirpus* spp.) and cattail (*Typha* spp.) and that the use of mortars and pestles to process acorns came somewhat later (Glassow 1996). Use of mortars to process dried pits of holly-leaved cherries (*Prunus ilicifolia*) has been recorded in ethnographic times in the Transverse Ranges, the Peninsular Ranges, and surrounding valley areas. In any case, the introduction of such innovations suggests an intensification of food production and a concomitant increase in population.

In many areas of southern California, the Millingstone cultures survived into the early part of the late Holocene, although by A.D. 500 clear changes in material culture become obvious. Late Holocene cultures in southern California reflect both in situ cultural adaptations in response to environmental changes as well as outside influences from the influx of Shoshonean (Takic-speaking) populations from the desert regions (Moratto 1984). As with the earlier periods, cultural distinctions are often blurry and based on subtle differences. The late Holocene period in the project area is likely represented by the San Luis Rey (SLR) culture. Originally defined by survey data (Meighan 1954), the SLR culture was refined by True and his colleagues (True et al. 1974, 1991; True and Waugh 1981, 1982) and has been equated with the historically-known Luiseño (True 1966). Based on the results of numerous surveys and excavations, Meighan (1954) and True and his colleagues (1974) divided the culture into two phases, (SLR I) (A.D. 1400–1750) and (SLR II) (A.D. 1750–1850), based on the absence (SLR I) or presence (SLR II) of ceramics, cremation urns, and rock paintings.

Sites from the SLR I phase typically contain bedrock mortars and associated ground stone implements, triangular projectile points, bone awls, stone and shell artifacts, and cremations. SLR II sites contain much of the same material culture, but also yield pottery vessels (including cremation urns), pictographs, and nonaboriginal items such as glass beads and metal knives. A relatively sharp distinction can be drawn between SLR I and II based on material culture. Whether this distinction reflects important cultural changes or simply temporal differences remains to be seen (cf. True and Waugh 1981, 1982). In the study area, these late-period sites are well-represented in the Perris Reservoir area, where most of the sites were found to date later than 300 B.C. (O'Connell et al. 1974). Recent work on the Eastside Reservoir Project (Goldberg 2001) and The Villages of Lakeview Specific Plan (Lerch and Cannon 2008) also revealed a number of late Holocene sites. These contain bedrock milling features, rock art, and significant midden development, similar to SLR II sites elsewhere.

Ethnography and Ethnohistory

The RCF alignments are located in an area of uncertain ethnographic occupancy (Bean 1972:map facing page 1). To the north and east were the Serrano, who occupied the San Bernardino Valley and Mountains. To the east were the Cahuilla, whose territory encompassed the San Gorgonio Pass, San Jacinto Mountains, and Colorado Desert. The Luiseño lived to the south, and the Gabrielino extended westward from the Jurupa area to the Pacific Coast. Some ethnographic studies have attributed the project area to the Gabrielino (Johnston 1962: map facing page 1; McCawley 1996:Map 7; Strong 1929:Map 7), another shows it extending from Serrano territory on the north to Gabrielino territory on the south (Drucker 1937: Figure 1), and yet another shows it extending from Serrano territory on the north to Luiseño territory on the south (Kroeber 1925:Plate 57). Finally, the area is also sometimes shown in Cahuilla territory (Heizer 1978:ix), although this may reflect presence of Cahuillas from the San Jacinto Mountains who moved in the San Bernardino Valley and Riverside areas during historical times to work in agriculture and as domestic help (Beattie 1953; Goodman 1993).

Aboriginally, all were hunters and gatherers who utilized both large and small game, as well as numerous plant resources, for food. Large animals such as deer, pronghorn, and mountain sheep were hunted with bows and arrows, while smaller animals such as rabbits, hares, and various rodents were taken with throwing sticks, nets, and snares. Piñon nuts and acorns from several species of oak formed the staples of the diet, supplemented by yucca stalks and flowers, seeds from holly-leaved cherries, chia and other sages, fruits and berries, and roots, tubers, and greens.

The ethnohistoric settlement pattern consisted of permanent villages located in proximity to reliable sources of water, and within range of a variety of floral and faunal food resources, which were exploited from temporary camp locations surrounding the main village. There is some suggestion in the ethnographic record that a Gabrielino village know as Hurungna, for which the later Jurupa Rancho was named, was located along the Santa Ana River in the vicinity of the project's river crossing (Johnston 1962: map facing page 1; McCawley 1996:Map 7). However, well-documented ethnographic village sites are otherwise absent in the project area (Bean 1978:Figure 1; Kroeber 1925:Plate 57), possibly as a result of early disruption of native culture in the area by Spanish mission activities. Detailed information on the lifeways of all the groups from the project area may be found in Kroeber (1925) and Heizer (1978), among other sources.

Today, the descendants of the Native American groups from the project region are affiliated with the federally recognized San Manuel Band of Mission Indians in Highland, the Soboba Band of Luiseño Indians in San Jacinto, and the Pechanga Band of Luiseño Indians in Temecula, as well as unrecognized Serrano and Gabrielino individuals and groups, such as the Gabrielino/Tongva San Gabriel Band of Mission Indians

History

The historical era in San Bernardino and Riverside counties can be divided into three distinct periods: the Spanish Mission period, the Mexican Rancho period, and the American period. The following summary is derived from accounts by Beattie and Beattie (1939), Brown (1985), Brown and Boyd (1922), Guinn (1902), Gunther (1984), and Lech (2004), among other sources.

Spanish Mission Period

The Spanish Mission period in San Bernardino and Riverside counties can be defined by the Spanish exploration of the area beginning in 1769 and the establishment of the San Diego Presidio and the Missions San Diego, SLR, and San Juan Capistrano. The establishment of missions progressed to the north eventually reaching the larger, inland valleys. San Gabriel Mission was established in the heart of the Los Angeles Basin in 1771 and served as a staging area for local exploration and settlement in the years that followed. In 1772, Lieutenant Pedro Fages, military governor at San Diego, was the first Spaniard to pass through San Bernardino Valley. He crossed the Santa Ana River from the southeast in the vicinity of what is now Colton in pursuit of deserters from the San Diego presidio (Jones 1973:30). Fages continued north through Cajon Pass into the Mojave Desert (Whitehead 1978:39).

Two years later, in 1774, the expedition of San Bautista de Anza crossed the Santa Ana River in the Colton-Riverside area on its way to the San Gabriel Mission. The priest serving the expedition, Father Francisco Garcés, noted in his journal an Indian village, or *ranchería*, near the river. The *ranchería* was later identified as Jurupa, located at a constriction in the Santa Ana River now known as the Riverside or Pedley Narrows (Coues 1900:38-46; Patterson 1964:120).

Following several expeditions to find a suitable location for an *asistencia*, or mission outpost in the San Bernardino Valley, in 1810, Father Francisco Dumetz established a small *capilla* (chapel) on high ground between what is now Colton and the community of Urbita Springs at Bunker Hill (Vickery 1977:9). With the chapel established, called Politana, Dumetz began the work of missionizing the local Serranos. However, he soon returned to Mission San Gabriel. His work was continued by a mission-trained Indian named Hipolito Espinoza.

In 1818, Leandro Serrano, Riverside County's first European resident, obtained permission from the padres at Mission SLR to take five leagues of land in Temescal Valley. His proven ability with the Christianized native population during his service as majordomo at the mission made him a logical choice for settling the valley and securing the territory north of the mission for the Spanish crown.

In 1821, Mexico successfully fought for independence from Spain. The subsequent Secularization Act of 1833 marked the end of the Mission period and the return of the secularized mission lands to Mexico's citizenry in the form of land grants or "ranchos."

Mexican Rancho Period

The Mexican Rancho period (1821–1848) began subsequent to the dismantling of the mission system throughout California in the mid-1830s. Following the abandonment of the San Bernardino *asistencia*, the valley was left to its half-missionized Indian inhabitants and occasional desert marauders. This situation began to change in the last years of the 1830s as private land owners were given grants of land to take over the cattle ranching begun by the mission clergy.

In Riverside County, the first land grant was to Leandro Serrano who established Rancho Temescal (Gunther 1984:532). Land rights were a constant problem for Serrano. Mission SLR had issued him the grant but Mission San Juan Capistrano claimed ownership of the land. Attempts to secure title were unsuccessful and eventually the dispute over the rancho lands was settled in the Supreme Court. In 1855, three years after Serrano's death, the United States Land Commissioners rendered their decision to deny Serrano's title. However, the bureaucratic battle over the land continued and in 1859, the District Court reversed the earlier decision and granted the land to Serrano's heirs (Ellerbe 1920:15; Gunther 1984:533).

In San Bernardino County, the first land grant carved out of the holdings of the San Bernardino Rancho was made to Juan Bandini in 1838. Known as the Jurupa Grant, its 32,000 acres were situated along the Santa Ana River, primarily on the north and west side, between Slover Mountain to the north and a point just north of the Chino Hills to the south.

Around 1843, 17 families from the New Mexican frontier arrived in the San Bernardino Valley and settled at Politana, located along the Santa Ana River just south of the present city of Colton (Vickery 1977:23). Following conflict with the land owner—Vicente Lugo—over damages his cattle caused to the settlers' irrigation ditches as well as his failure to keep his promise to donate land, the New Mexican settlers left Politana in 1844 and settled downstream on the southeast side of the Santa Ana River. The new establishment, settled between 1844–1845, was called La Placita. On the northwest side of the river, a second New Mexican settlement was established during the same time—Agua Mansa.

Agua Mansa was set up as a semicircle of building organized around a central plaza (Caballeria 1902:102). Radiating out from this nucleus were plots of land owned by individual families. Small farms dotted the vicinity, supplied with irrigation water via ditches dug from the Santa Ana (Patterson 1964:124). The Agua Mansa Ditch, serving the community, and the Trujillo Ditch serving La Placita, were excavated around 1845 (Scott 1976:70). In 1851–1852, the settlers of both towns constructed a chapel at Agua Mansa on a bluff above the river. Known as the Church of San Salvador, it became the focus of New Mexican settlements. Eventually the name "San Salvador" was used to describe the two communities together (Caballeria 1902:105; Patterson 1964:23-24). In 1862, following 15 days of continuous rain, the Santa Ana River rose and destroyed the Agua Mansa settlement. Only the chapel and cemetery, located on high ground, survived the flood. Today, the cemetery and remains of the chapel are a California State Historical Landmark (CSHL-121) maintained by the San Bernardino County Museum.

The Mexican Rancho period ended in confusion and bloodshed in 1848 as the Mexican War, which had been raging for nearly two years, came to a close. Alliances between the Mexicans, Americans, and Indians shifted often. After the Battle of San Pasqual, several Californios hid in Serrano's rancho. Taking advantage of the vulnerable rancho, the nearby Luiseños and Cupeños attacked. The fugitives were killed and the stock was stolen. As an act of retribution, Jose del Carmen Lugo, of the nearby Rancho San Bernardino, and his Cahuilla warriors captured and slaughtered nearly one hundred Luiseño and Cupeños in what became known as the "Temecula Massacre" (Brown 1985:42).

The Mexican Rancho period was a brief but lively and colorful period of California history. The rancheros were known for unrivaled horsemanship and unending hospitality, not to mention a penchant for long celebrations in the form of week-long rodeos and fiestas to celebrate weddings and holy days. After Mexico was defeated and the Treaty of Guadalupe Hidalgo was signed in 1848, California was ceded to the United States, ushering in the American Period (1848–present).

American Period

The effects of California's statehood in 1850 were twofold. For the rancheros, the end of the Rancho period was met with financial ruin. The validity of the land grants issued by Mexican governors was questioned by the Land Commission. Many of the rancheros never officially gained their land patents. With the flood of new settlers, the American period was marked by unprecedented growth and industry. In San Bernardino and Riverside counties, increased settlement, the growth of commercial resource extraction, and the development of transportation occurred during the American period.

In February and March of 1851 a Mormon expedition left Salt Lake City for California and San Bernardino. Compared to the rapid development of Central California fueled by the Gold Rush, the relative isolation of the San Bernardino Valley appealed to the Mormon party. They arrived in San Bernardino Valley on June 9, 1851. Following several months of searching to find a suitable location for permanent settlement, the family purchased land from the Lugo family and settled in the area where downtown San Bernardino is now situated.

In 1870, the pioneer family of Luther C. and Eliza Tibbets settled in Riverside. What made this event noteworthy was the planting shortly thereafter of the first Washington Navel orange graft on their property. When the fruit was first introduced to the public in 1878, the demand was enormous and almost instantaneous (Robinson 1957). The citrus industry was born in Riverside and spread throughout southern California; thousands of acres were plowed and planted to the new crop. Water became the controlling issue and the construction of water canals proved to be the solution. In 1884, Matthew Gage began the first large-scale artesian water project in southern California. He engineered a twenty-mile canal to bring Santa Ana river water across the Grand Terrace bluffs to the undeveloped upper plain of Riverside. Initially successful at first, Gage found himself overextended by the financial panic of 1888 and sought partners to continue his development plans. Unable to obtain local financing, Gage hooked up with England-based Riverside Trust Company (Patterson 1983). Although relegated to a minor role in the company and eventually losing everything to them, Gage is remembered for having pioneered the water system that paved the way for other large irrigation projects (Brown 1985:65). Water from the Gage Canal encouraged large-scale citrus growing in the Riverside area and brought English investors into the picture, both of which had a profound effect on the growing area.

In 1893, the California legislature formed Riverside County out of 6,044 square miles of San Diego County and 590 square miles of San Bernardino County (Robinson 1957:35); the project area was formerly part of San Diego County. Citrus orchards occupied the hilly sections within reach of the canal system, while stock raisers and grain farmers spread across the eastern plains to Perris and beyond. Dry farmers settled north and east of the project area by the early 1890s in the area now known as Woodcrest.

Cities and Communities along the Project Route

The project route extends from San Bernardino County, where it originates in the southern portion of the city of San Bernardino and crosses through the cities of Colton and Rialto, to Riverside County and the city of Riverside. In San Bernardino County, the route traverses Agua Mansa Road through the former community by the same name, and in Riverside County, the route passes through the unincorporated communities of Jurupa and Rubidoux.

Settlement in the Jurupa area dates to prehistoric times in the village of Hurungna, which was located in the vicinity of the pipeline crossing of the Santa Ana River. The same region was later part of the Mexican-period Jurupa Rancho, a part of the earlier San Bernardino Rancho. Agua Mansa also was settled during the Rancho period.

The establishment of San Bernardino ushered in the American period, followed by railroad towns such as Colton and agricultural centers such as Riverside. All of these early centers developed and grew during the “boom of the 1880s,” and the entire project route was settled by the turn of the twentieth century. With this long history of human use and settlement, much of the project route would appear to have the potential to contain prehistoric and early historical-period cultural resources that might be preserved in areas conducive to preservation of buried resources.

CHAPTER 3

Research Design

A research design is an explicit statement of the theoretical and methodological approaches to be followed in an archaeological study (Office of Historic Preservation [OHP] 1989a). For inventory studies such as this one, where the data are limited to archaeological and historical resources visible on or above the ground surface, supplemented by archival research and literature review, the focus of the research design is to ensure the adequacy of the identification effort and to examine hypotheses concerning settlement patterning and resource exploitation that can be tested using inventory data (OHP 1991). Additionally, should any of the identified resources within the project APE have sufficient age and integrity to warrant consideration for NRHP eligibility, the research questions and data requirements posed below can be used for preliminary evaluations of significance or can lead to the development of more detailed research questions for determinations of eligibility.

The theoretical approach used in this survey was based on archaeological landscape theory (Knapp and Ashmore 1999). Archaeological landscapes are the cultural landscapes of the past. The concept of cultural landscape—how people perceive of and interact with environments in the present—is a recent interpretive framework that derives from the juxtaposition of history, ecology, anthropology, and evolutionary theory. Although it is descended in part from the theory of cultural ecology (Steward 1938, 1955), in which culture is seen as adapting to the environment, landscape theory emphasizes that cultures also change the environment, and recognizes this two-way interaction.

Research Questions

For purposes of guiding the archaeological survey of the project site, several research questions were considered. For prehistoric archaeological resources, the following questions were posed:

1. What is the nature of prehistoric land use in the project area?
2. What is the relationship of prehistoric sites within the RCF Realignment Project to other sites in the region?
3. What are the ages of prehistoric sites in the project area?
4. What is the potential for buried cultural deposits to be preserved in the project area?
5. For historical-period resources, a different set of questions was asked:
6. What is the nature of historical-period land use in the project area?
7. What are the ages of historical-period (i.e., older than 50 years) resources located in the RCF Realignment Project?

Data Requirements

To address the above sets of questions, prehistoric sites with functionally and temporally diagnostic artifacts and features must be identified during the surface survey of the project site. Information from previous investigations in the project vicinity must be reviewed for comparative data for purposes of considering the significance of the resources on the project site. For historical-period resources, information must be drawn from both archival sources and field observations. If resources older than fifty years of age are identified during the field survey, archival information in the form of maps, deeds, tax assessments, and newspaper accounts may allow for dating the resources and documenting their possible associations with important historical events or persons in the study area.

Methods of Data Collection

The various methods of data collection and evaluation used in this study are discussed below. Methods used included a review of relevant literature, an archaeological records check and update, review of archival materials, an intensive pedestrian survey of all accessible portions of the project APE, and a review of soils and geologic maps to assess the probability of buried cultural resources along the project alignments.

Definitions

Properties considered for inclusion in the NRHP and CRHR can be classified as buildings, structures, objects, sites, or districts. These property types can be classified on the basis of their relationships to various historic contexts that apply to the project area. For purposes of this report, the following types of properties are defined. The collective term "cultural resources" as used herein includes prehistoric archaeological resources, traditional cultural properties, historical archaeological resources, and historical buildings and structures. Definitions of each of these types of resources are listed below.

"Prehistoric and protohistoric archaeological resources" may date from prior to 10,000 years ago to the time of historic disruption of aboriginal lifeways (ca. A.D. 1800 in the project region). They may include the remains of villages and campsites, food-processing locations, lithic-resource procurement and tool-making locations, burial and cremation areas, trails, rock art, and isolated artifacts. Property types within this category can be considered as sites, districts, or objects. Prehistoric archaeological resources are the result of cultural activities of the ancestors and predecessors of contemporary Native Americans, and often retain traditional and sacred significance for members of those communities.

"Traditional cultural places" are locations or resources that are eligible for inclusion in the CRHR or NRHP because of their association with cultural practices or beliefs of a living community that: (a) are rooted in that community's history; and (b) are important in maintaining the continuing cultural identity of the community (Parker and King 1998). They may or may not contain physical remains. For this project area, traditional cultural properties are most likely to be associated with Native American cultures.

"Historical archaeological resources" include refuse deposits such as can and bottle dumps, filled-in privy pits and cisterns, melted adobe walls and foundations, collapsed structures and associated features, and roads and trails. They may date from the earliest Spanish explorations in the area (A.D. 1772) to the post-World War II era (ca. A.D. 1945+). Property types within this category can be considered as sites, districts, or objects.

"Historical buildings and structures" include intact buildings and structures of any type that are 45 or more years of age. Sometimes referred to as the "built environment," these resources include houses, barns, and other buildings, and structures such as irrigation works, bridges, and other engineering features. In the project area, buildings and structures are nearly always historical, as prehistoric buildings are unknown for this area, and prehistoric structures are generally recorded as archaeological sites or features.

A *Historic Property* is any cultural resource that has been listed, or determined eligible for listing, in the National Register of Historic Places, according to the criteria contained in 36 CFR 60.4.

A *Historical Resource* is any cultural resource that has been listed, or determined eligible for listing, in the CRHR, according to the criteria contained in Public Resources Code §5024.1, Title 14 CCR, Section 4852).

For purposes of this study, an archaeological site is defined according to the criteria listed in the California Archaeological Inventory Handbook for Completing an Archaeological Site Record (OHP 1989). A site must:

1. consist of at least three associated artifacts or a single feature; and
2. be at least 45 years of age. The age of the site may be determined by artifactual evidence, documentary evidence, or similarity of the site to others which have firm dating.

Historical Resources Records Search

At the outset of the study, SRI requested a historical resources records search from the California Historical Resources Information System (CHRIS) San Bernardino Archaeological Information Center (SBAIC), San Bernardino County Museum, Redlands, and the Eastern Information Center (EIC), University of California, Riverside. The letter requests were submitted by e-mail on June 2, 2008, and specified a search area of a one-mile radius encompassing the proposed RCF Realignment and RC Feeder Monroe Street Alternative. The SBAIC responded on June 6, 2008, with information on previously recorded resources and studies in the San Bernardino County portion of the RCF Realignment project area. The EIC responded on June 11, 2008, with information on previously recorded resources and studies in the Riverside County portion of the RCF Realignment project area.

The records searches included reviews of the SBAIC and EIC databases of archaeological sites and reports; the National Register of Historic Places (NRHP) and the Directory of Archaeological Determinations of Eligibility for California through March 2008; the California Register of Historic Resources (CRHR), California Historical Landmarks, and Points of Historical Interest; the California Inventory of Historic Resources; and the Historic Property Date Files for San Bernardino County through March 20, 2008 and Riverside County through December 20, 2008. The EIC records search also included copies of the 1901 and 1942 USGS Riverside 15-minute quadrangle and the 1901 USGS Elsinore 30-minute topographic quadrangle. The SBAIC review of historical-period maps included the 1878 plat of Rancho Jurupa; the 1857 plat of Rancho San Bernardino; 1888 California State Engineering Department Irrigation maps for San Bernardino, Riverside, and Ontario; 1898 USGS Lippincott Water Supply Survey Paper; 1901 (reprinted 1929, 1946) and 1954 USGS San Bernardino 15-minute quadrangle; 1943 USGS Colton 15-minute topographic quadrangle; and 1942 US Army San Bernardino 15-minute topographic quadrangle. Copies of all records search correspondence with the SBAIC and EIC are included in Appendix A.

Paleontological Resources Records Search

To determine the paleontological sensitivity of the project area, a request was made to the San Bernardino County Museum (SBCM) on June 2, 2008, to review the Regional Paleontologic Locality Inventory (RPLI) files for the project components and surrounding areas. That correspondence and the SBCM response on July 9, 2008, are included in Appendix B.

Literature Review

Conducting background research is a vital step in any archaeological project. This work was designed to document the state of current knowledge concerning the prehistory and history of the local area, including previous research and results of such work. Available archaeological, ethnographic, and historical literature was reviewed in order that known or expected property types for the region could be anticipated and accurately identified during the field survey. Sources consulted are listed in the References Cited section of this report.

Field Survey

Prior to the field survey, maps of the project areas were produced showing the locations of previously recorded sites and other major modern features. An intensive pedestrian survey of all accessible portions of the project APE and a buffer area on each side of it was conducted on June 24–25 and September 2, 2008, by an SRI crew of two. Because the APE itself is paved for the most part, the pedestrian survey also included a 100-foot-wide corridor on each side of the centerline of the Proposed Riverside-Corona Feeder Realignment and the RC Feeder Monroe Street Alternative alignment. The purpose for including a buffer in the survey area was to determine whether sites that might be located adjacent to the APE might extend into it.

The survey of the APE and buffer consisted of intensive coverage using 15-m transect intervals in open, undeveloped areas with exposed ground surface (Figures 3 and 4). In some portions of the project area, access to the full 100-foot-wide buffer was restricted by chain link fences. In these areas, the ground surface on the opposite side of the fence was visually inspected through the fence, or spot-checked. Areas within the 100-foot-wide corridor where the ground surface was complete obscured by pavement were not surveyed. Areas where the ground surface was partially obscured by landscaping were spot-checked. Newly recorded sites identified within the 100-foot-wide survey corridor were fully recorded and evaluated for NRHP eligibility.

Buried Sites-Sensitivity Analysis

Pedestrian surveys are typically used to document the distribution of archaeological sites with surface expression in areas where the ground surface is visible. Because the ground surface of most of the RCF Realignment project area APE is obscured by existing pavement or is otherwise disturbed, in part due to flood events and development within the area, the literature review included a review of soils and geological maps to assess the probability of buried cultural resources along the project alignments. The buried sites-sensitive analysis included a review of the 2004 USDA-NRCS Soil Survey Geographic (SSURGO) database soils data for southern San Bernardino County and western Riverside County as well as the 2006 USGS San Bernardino and Santa Ana 30-by-60-minute geologic quadrangles. Soils and geologic deposits, coupled with the distribution of archaeological sites expressed on the ground surface, were evaluated for their potential to contain buried archaeological deposits.

Native American Consultation

A letter, submitted by e-mail, was sent to the Native American Heritage Commission (NAHC) on June 2, 2008. The letter described the project and requested a review of the Sacred Lands Inventory files for the project area. The letter also requested a list of interested Native American tribal groups and individuals for the project area. Dave Singleton, Program Analyst for the NAHC, responded on July 2, 2008, with a letter that indicated no Native American cultural resources were recorded in the NAHC sacred lands file. He enclosed a list 11 California Native American tribes, organizations, and individuals who may have knowledge of cultural resources in the project area, and recommended that all should be contacted.

Letters describing the project and including a map of previously considered alignments as well as the current alignments were sent to each of the 11 contacts recommended by the NAHC. A letter of response was received from the Soboba Cultural Resource Department, and telephone calls were received from Anna Hoover, with Pechanga Cultural Resources, and Anthony Morales, representing the Gabrielino/ Tongva San Gabriel Band of Mission Indians. A letter sent to Cindi Alvitre of the Ti'At Society was returned undelivered. A voice mail message left on her cell phone has not been returned. Similar letters were sent to area tribes by Webb as part of the Notice of Preparation (NOP) for the SEIR. Responses to the NOP were received from the Morongo, Pechanga, and Soboba tribes. Correspondence related to Native American consultation to date is contained in Appendix C of this report.

CHAPTER 4

Results

This chapter presents the results of the records search, field survey, and buried-sites sensitivity analysis, and includes a discussion of the archaeological resources, including historical-period and prehistoric sites. Because the APE does not include parcels adjacent to the project alignments, architectural resources were not considered.

Records Search

The records searches for the Proposed Riverside-Corona Feeder Realignment and the RC Feeder Monroe Street Alternative alignment encompassed an area with a one-mile radius around each of the alignments. For San Bernardino County, 115 previous cultural resources studies have been conducted within the records search area. Of these, 37 extended into the APE. A total of 78 cultural resource properties have been previously recorded within the records search area. The results of the SBAIC records search also included pending archaeological sites—prehistoric and historical-period resources identified in literature and map reviews. These pending archaeological sites; however, have not been verified as a result of field surveys. A total of 41 pending archaeological sites are plotted within the records search radius. Of the previously recorded sites, 11 are located within the 100-foot-wide survey corridor (Table 3; Figure D-1). None of these previously recorded sites are located within the APE itself. Of note, however, portions of the Proposed Riverside-Corona Feeder Realignment constructed using jack-and-bore techniques will pass beneath segments of a railroad alignment (SBR-6847H), and the Riverside Canal (SBR-6859H). The Proposed Riverside-Corona Feeder Realignment may pass through the historical locations of the Union Pacific Railroad (SBR-6101H), San Bernardino-Sonora Road (CPHI-SBR-21), and Agua Mansa town site (P-36-015221); however, no physical evidence of these resources was noted during the SRI pedestrian survey of the APE or the buffer area.

Additionally, four pending historical-period archaeological sites are reported to be within the APE along Agua Mansa Road: a road (P1074-61H) that begins just north of Agua Mansa Road; the Old Meeks and Daley Ditch (P1074-104H); the Agua Mansa Ditch (P1074-106H); and the Parks Connection irrigation canal (P1074-109H). These four resources were not located during the pedestrian survey for the current project or surveys conducted for other cultural resources studies, suggesting that the resources have been previously destroyed or buried.

The Riverside County records search revealed 127 previous cultural resources studies conducted within the one-mile search radius. Of these, 15 were conducted within the project APE. A total of 154 cultural resource properties have been previously recorded within the records search area. Five of the previously recorded cultural resources are located within the 100-foot-wide survey corridor (see Table 3; Figures D-1 and D-2). Of these, three are located within the APE of the Proposed Riverside-Corona Feeder Realignment and the RC Feeder Monroe Street Alternative alignment, Victoria Avenue (P-33-11361), Riverside

Table 3. Cultural Resources Identified within the Riverside-Corona Feeder Project Area

Resource Designation	Within APE	Within 100-Foot-Wide Survey Corridor	Within Proposed Alternative	Description
			San Bernardino County, Previously Recorded	
P-36-013627	no	yes	PRCF[a]	Southern Sierras Power line.
P-36-015221	no[b]	no[b]	PRCF	Agua Mansa (New Mexican settlement founded in 1845).
CHL-121	no	yes	PRCF	Agua Mansa Cemetery and Ruins of Old San Salvador Church.
CPHI-SBR-21	no[b]	no[b]	PRCF	San Bernardino–Sonora Road (northern branch of the Emigrant Trail).
SBR-1575	no	yes	PRCF	Prehistoric isolate—manos.
SBR-2623	no	yes	PRCF	Prehistoric site—milling tools (metate, mortar, mano).
SBR-4952H	no	yes	PRCF	Agua Mansa Chapel.
SBR-6101H	no[b]	no[b]	PRCF	Union Pacific Railroad.
SBR-6847H	no	no	PRCF & Monroe[c]	Atchison, Topeka, and Santa Fe Railway.
SBR-6858H	no	yes	PRCF	Historical-period trash scatter.
SBR-6859H	no	yes	PRCF	Riverside Canal.
SBR-10330H	no	yes	PRCF	Southern Pacific Railroad.
			San Bernardino County, Newly Recorded	
SBR-13148H	no	yes	PRCF	Historical-period foundation.
P-36-014920	no	yes	PRCF	Historical-period foundation.
			Riverside County, Previously Recorded	
P-33-11033	no	yes	PRCF	Historical-period residence.
P-33-11361	yes	yes	PRCF & Monroe	Victoria Avenue (defining element of Riverside's historic citrus landscape).
P-33-13974	no	yes	PRCF	Historical-period residence.
RIV-4495H	yes[d]	no	PRCF & Monroe	Riverside Upper Canal.
RIV-4791H	yes[d]	yes	PRCF & Monroe	Riverside Lower Canal.
RIV-8513H	no	yes	PRCF	Features associated with sand quarrying activities: steel tank, steel pipe junction, large patch of asphalt pavement, two borrow pits, steel rail, several steel iron pipes, dirt access road.
			Riverside County, Newly Recorded	
RIV-9105	no	yes	PRCF	Historical-period foundation.
P-33-17540	no	yes	PRCF	Historical-period foundation.
P-33-17541	yes	yes	Monroe	Remnants of irrigation system in former citrus orchard.
P-33-17542	yes[d]	yes	Monroe	Monroe Street Canal.
P-33-17543	yes[d]	yes	Monroe	Monticello Street Canal.
P-33-17544	no	yes	PRCF	Sunnyslope Channel.

[a] Proposed Riverside-Corona Feeder Realignment.
[b] Proposed alignment may pass through the historical location; however, no physical evidence was noted during the SRI pedestrian survey.
[c] RC Feeder Monroe Street Alternative alignment.
[d] Currently, project details for the proposed RC Feeder Monroe Street Alternative alignment are not available; consequently, the cultural resource is assumed to be located within the APE. Status of the cultural resource within the RC Feeder Monroe Street Alternative APE may change, however, once project details have been made available and reviewed.

Lower Canal (RIV-4791H), and Riverside Upper Canal (RIV-4495H)[2]. The section of the Riverside Upper Canal (RIV-4495H) that crosses the Proposed Riverside-Corona Feeder Realignment within Jackson Street, however, is considered to be located outside of the APE as jack-and-bore techniques will be used at this crossing.

Previously Recorded Cultural Resources within the APE

As noted above, two cultural resources have been previously recorded within the APE of the Proposed Riverside-Corona Feeder Realignment, Victoria Avenue (P-33-11361) and the Riverside Lower Canal (RIV-4791H). These two cultural resources, as well as the Riverside Upper Canal (RIV-4495H), are also located within the APE of the RC Feeder Monroe Street Alternative. The Proposed Riverside-Corona Feeder Realignment will pass directly beneath one railway segment (SBR-6847H) and two canals (SBR-6859H, RIV-4495H); consequently, these resources are considered to be outside of the APE. Additionally, four previously recorded cultural resources (SBR-6101H, CPHI-SBR-21, SBR-6859H, P-36-015221) were documented within the APE based on records search data; however, no physical evidence of them was identified during the pedestrian survey. These resources may have been previously destroyed or are present beneath the ground surface. Because there is a potential for these resources to be present beneath the ground surface, they are discussed along with the other previously recorded resources identified during the pedestrian survey.

SBR-6101H

A portion of the Southern Pacific Railway, SBR-6101H, is reported to cross East Valley Road at North 9th Street. Although SBR-6101H is reported to be within the APE of the Proposed Riverside-Corona Feeder Realignment, no evidence of the crossing was noted during the pedestrian survey. The railroad tracks may have been paved-over and are present beneath East Valley Road, or they may have been previously destroyed.

SBR-6847H

A segment of the Atchinson, Topeka, and Santa Fe (AT&SF) Old Kite Route railway, SBR-6847H, is located adjacent to (beneath) the APE of the Proposed Riverside-Corona Feeder Realignment. In this area, Crossing Number 8 (see Table 2), jack-and bore-techniques will be used to construct the pipeline beneath the railroad tracks to minimize surface disturbance. This segment of SBR-6847H crosses South Rancho Avenue and continues into California Portland Cement Colton (CPCC) cement plant. The segment of railway, however, is inoperative and overgrown with vegetation. Two additional segments of the AT&SF railway were located within the 100-foot-wide survey corridor: along West North Street near South 6th Street and along Monroe Street between Lincoln Avenue and Indiana Avenue. Both of these crossings occur above ground within overpasses and consequently, are outside of the project APE.

SBR-6847H, the Old Kite Route, was constructed in segments between 1880 and 1892, and offered excursions from Los Angeles through Pasadena and the citrus belt, continuing into the foothills of San Bernardino and Redlands and then circling back along a valley route passing through Riverside. Following

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[2] Currently, project details for the proposed RC Feeder Monroe Street Alternative are not available; consequently, two cultural resources are assumed to be within the APE: RIV-4495H and RIV-4791H. Additionally, Victoria Avenue (P-33-11361) is located within the APE of the Proposed Riverside-Corona Feeder Realignment and because it also crosses Monroe Street, may also be within the APE of the RC Feeder Monroe Street Alternative. Status of these cultural resources within the RC Feeder Monroe Alternative APE may change, however, once project details have been made available and reviewed.

World War I, the Old Kite Route was no longer offered as an excursion and by 1928, passenger trains were reduced to one per day (Horne 1998). Passenger use of the route steadily declined and segments were abandoned following the 1938 Santa Ana River flood. The last operating portion of the loop, in Redlands, was discontinued in 1986.

CPHI-SBR-21

A segment of the San Bernardino-Sonora Road is reported to be within the APE of the Proposed Riverside-Corona Feeder Realignment; however no physical evidence of the road was identified during the pedestrian survey. The segment of road was likely paved over with the construction of South Rancho Road and Agua Mansa Road. However, there is a possibility that evidence of the road is present beneath the pavement.

The San Bernardino-Sonora Road, the northern branch of the Emigrant Trail, was a main route between the San Bernardino Valley and San Gabriel, passing through Aguanga, Beaumont, Redlands, Old San Bernardino, Colton, Agua Mansa, and Ontario (Beattie 1925). Padres from San Gabriel used the road between approximately 1822 and 1827 to reach the San Bernardino Asistencia. Later, in 1827, Jedediah Smith followed this route on his way to southern California.

SBR-6859H

A portion of the Riverside Canal, SBR-6859H, crosses Agua Mansa Road near Slover Mountain and the Rialto Channel, the latter constructed in 1978. In this area, Crossing Number 9 (see Table 2), jack-and-bore techniques will be used to construct the pipeline beneath the canal. Consequently, the canal is considered to be outside of the APE of the Proposed Riverside-Corona Feeder Realignment. The Riverside Canal, constructed ca. 1887, consists of earthen ditch sections, cement-lined segments (ca. 1900), and sections where the original canal has been repaired or replaced (McKenna 1993). The canal extends into Riverside County along the north/west side of Agua Mansa Road.

P-36-015221

The Agua Mansa settlement, P-36-0153221, is reported to be within the APE of the Proposed Riverside-Corona Feeder Realignment; however, no physical evidence was noted during the pedestrian survey. The settlement was destroyed by the flood of 1862; however, cultural constituents may still be present below the ground surface. The Agua Mansa settlement (P-36-0153221) is listed in the NRHP.

As noted previously, the Agua Mansa settlement was established by New Mexican settlers between 1844 and 1845. The settlement was located on northwest side of the Santa Ana River along the present-day Agua Mansa Road and consisted of buildings organized around a central plaza. Family-owned plots of lands and irrigation canal surrounded the settlement. A small church and cemetery were established on the bluff above the settlement. In 1862, a flood destroyed the Agua Mansa settlement.

RIV-4791H

The original alignment of the Riverside Lower Canal (RIV-4791H) crossed the proposed Riverside-Corona Feeder project area within Jackson Street as well as Monroe Street. The Jackson Street crossing, which is not visible from street level, may occur below the ground surface or has been destroyed. The Monroe Street crossing between Indiana Avenue and Highway 91, however, occurs above ground surface and appears intact, as evidenced by a concrete-lined gravity-flow canal and culvert. The Monroe Street crossing is located within the APE of the RC Feeder Monroe Street Alternative alignment.

The Riverside Lower Canal was constructed between 1875 and 1876 by the Riverside Land and Irrigating Company. In 1878 the Riverside Land and Irrigating Company took control of the Southern California Colony Association, forming the Riverside Canal Company. The company managed both the Lower and Upper canals. The Lower Canal was later abandoned in 1914; however, sections of the earthen and cement-lined canal with associated headgates, levees, flume remains, canal intakes, gate controls, intakes, siphons, and conduits remain today. Because portions of the canal have been destroyed or replaced with newer construction materials and much of the landscape has changed from agricultural lands to residential, commercial, and industrial, the Riverside Lower Canal has been previously recommended as ineligible for listing in the NRHP (Chandler et al. 2002; Gustafson 2001). Based on assessment of the current condition of the canal, we concur with the previous evaluations and recommend that the Riverside Lower Canal be considered ineligible for listing in the NRHP or CRHR.

RIV-4495H

The Riverside Upper Canal (RIV-4495H) crosses Jackson Street outside of (beneath) the APE of the Proposed Riverside-Corona Feeder Realignment and continues westward, crossing Monroe Street within the APE of the RC Feeder Monroe Street Alternative. At the Jackson Street crossing, Crossing Number 19 (see Table 2), jack-and-bore techniques will be used to construct the pipeline beneath the canal. At the Jackson Street and Monroe Street crossings, the canal is visible only on the west sides of the streets. The street crossings are blocked by chain link fences.

The Riverside Upper Canal was constructed from 1870 to 1877 by the Southern California Colony Association to serve the needs of the colony and support the early citrus industry in La Placita, High Grove, and Riverside. The Upper Canal is a cement-lined irrigation ditch with associated headgates, levees, suction pipes, division walls, flume remains, canal intakes, and overflow gates (Starzak and Fitzgerald 1996; Wlodarski and Larson 1992). In 1913 the Upper Canal was deeded to the city of Riverside for use as a storm drain system. The Riverside Upper Canal is listed in the NRHP due to its significance as one of the earliest reliable water supplies in Southern California Colony Association and its role in the development and growth of the citrus industry in Riverside.

P-33-11361

Victoria Avenue (P-33-11361) intersects Jackson Street within the APE of the Proposed Riverside-Corona Feeder Realignment and Monroe Street within the APE of the RC Feeder Monroe Street Alternative. The segment of Victoria Avenue within the RCF Realignment project area is located in the unincorporated area of Arlington in the city of Riverside. Victoria Avenue is listed in the NRHP due to its role as a defining element of Riverside's historic citrus landscape with regard to community planning and development. Grading for the double roadway was completed in 1892. Victoria Avenue became one of the main access routes from the subdivision of Arlington—originally developed with citrus groves and associated houses—to downtown Riverside (Bricker et al. 2000). Although there have been subsequent alterations to Victoria Avenue, it maintains its original alignment. At its intersections with Jackson Avenue and Monroe Street, for example, the pavement within Victoria Avenue has been replaced. Victoria Avenue is noted for its esthetic and aesthetic qualities. A variety of different trees and shrubs were planted along Victoria Avenue, beginning in 1893, to create a Mediterranean-derived landscape typical of Victorian-era residential boulevard designs.

Field Survey

As noted above, portions of the survey corridor encompassing the 23.8 miles of feeder realignments were surveyed, spot checked, or not surveyed due to obscured ground surface visibility. Areas that were spot-checked included sections of the survey corridor that were partially obscured by landscaping or other development, or chain link fences restricted full access to the survey corridor. The pedestrian survey methods within the project area are shown in Figures 3 and 4.

In addition to previously recorded sites identified within the project survey area, eight previously unrecorded sites were located during the SRI pedestrian survey (Table 3; Figures D-1 and D-2; Appendix E). Four of the newly recorded sites (SBR-13148H, P-36-014920, RIV-9105, P-33-17540) consist of historical-period structure foundations identified outside of the APE of the Proposed Riverside-Corona Feeder Realignment. The remnants of an irrigation system of a former citrus orchard (RIV-9106), was identified within the APE of the RC Feeder Monroe Street Alternative. Additionally, two concrete-lined canals (P-33-17542 and P-33-17543) were identified within the APE of the RC Feeder Monroe Street Alternative and one was identified (P-33-17544) outside of the APE of the Proposed Riverside-Corona Feeder Realignment.

SBR-13148H

SBR-13148H, a historical-period concrete perimeter foundation and adjacent windbreak composed of a cluster of eucalyptus trees, is located in the city of Colton on the north side of the Santa Ana River near Warm Creek. Based on a historical map search, the foundation was likely constructed sometime between 1942 and 1954, when a structure first appears in the location of RFC-1 on the USGS 1954 San Bernardino 15-minute topographic quadrangle. The map shows a cluster of structures in the vicinity as well as gaging stations—one reported to be west of RFC-1 and another southeast of the resource. Considering the presence of a windbreak of trees, it is likely the foundation is the remains of a residential structure. However, it is unclear whether the foundation was a residence or an outbuilding associated with a residence. The foundation pad is located outside of the APE; consequently, it is not expected to be impacted by the construction of the Proposed Riverside-Corona Feeder Realignment.

P-36-014920

The poured concrete raised foundation pad and steps of a historical-period residence are located within the city of Colton on South La Cadena Drive in a vacant lot. The limited size of the concrete slab indicates that it was likely a foundation for an out-building, such as a workshed or garage, once associated with a residence. Many of the residences in the area appear to date to the 1940s and 1950s. Although the construction date of the foundation is unclear, it as likely constructed by at least the 1940s or 1950s. The foundation pad, in overall good condition, is located outside of the APE; consequently, it is not expected to be impacted by the construction of the Proposed Riverside-Corona Feeder Realignment.

RIV-9105

The remnants of former residence are located on Avalon Street near State Route 60. RIV-9105 consists of residential concrete foundations, including a house and outbuilding (likely a garage), as well as a cellar. Based on a review of historical and contemporary maps, the residence was constructed sometime before 1942 and razed sometime after 1980. The foundations and cellar are in poor condition as evidenced by missing sections of the foundation and modern debris present within the cellar pit. RIV-9105 is located outside of

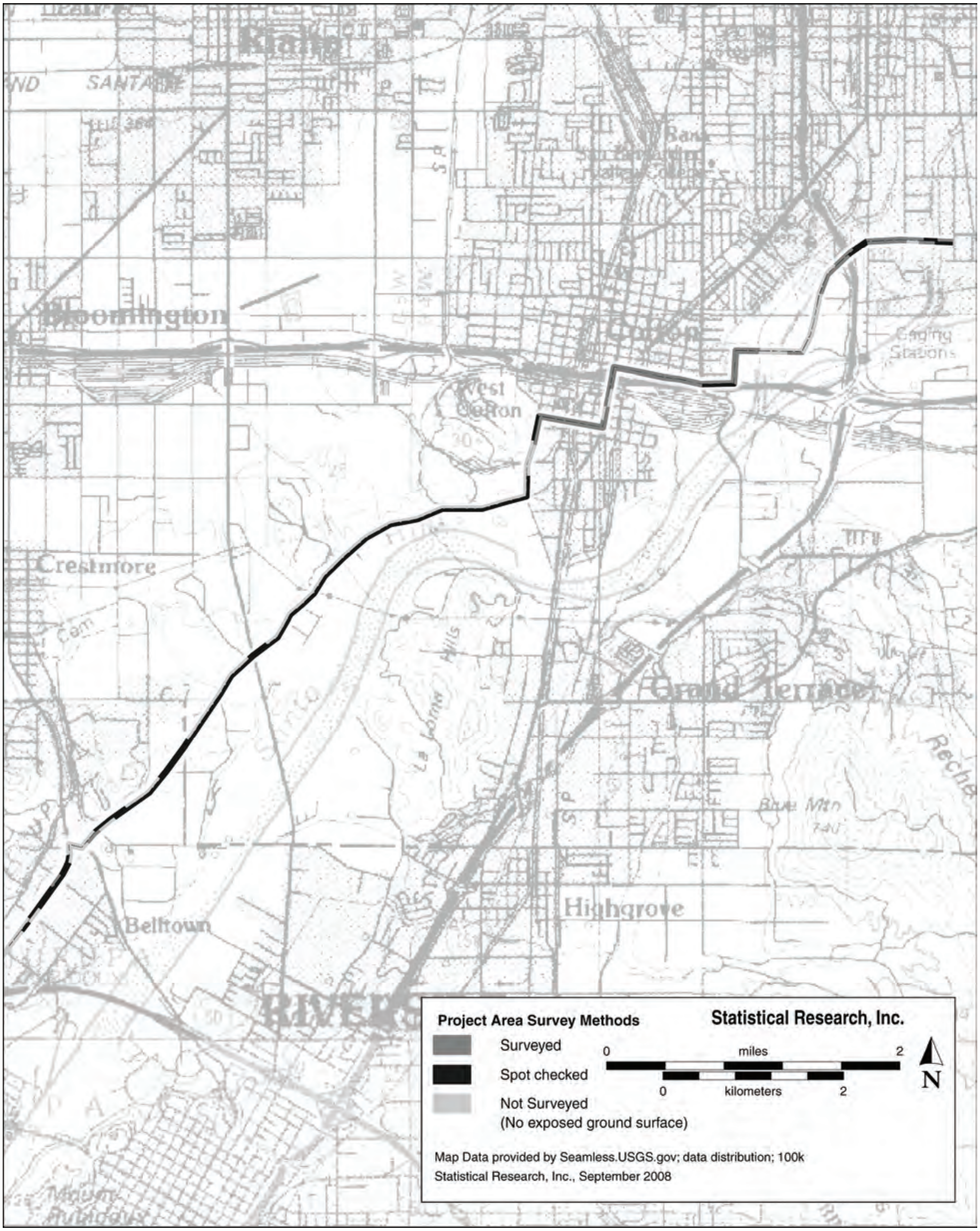

Figure 3. Pedestrian survey methods within the 100-foot-wide survey corridor of the northern reach of the Riverside-Corona Feeder project area.

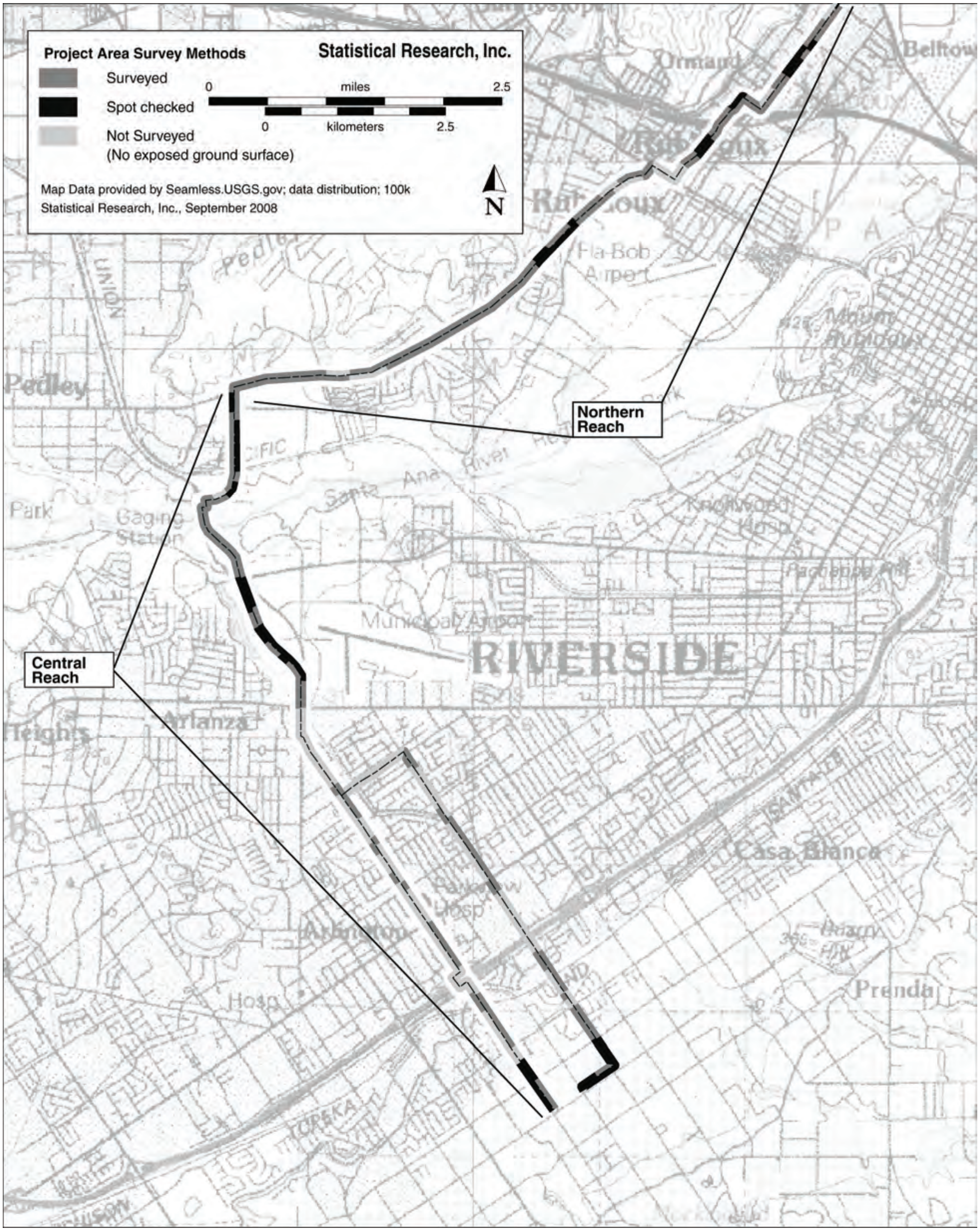

Figure 4. Pedestrian survey methods within the 100-foot-wide survey corridor of the northern and central reaches of the Riverside-Corona Feeder project area.

the APE; consequently, it is not expected to be impacted by the construction of the Proposed Riverside-Corona Feeder Realignment.

P-33-17540

A large rectangular poured concrete foundation pad was identified on Rubidoux Boulevard near the intersection with 28th Street. Based on a review of historical maps, P-33-17540 was likely constructed sometime after 1954. A structure within the current location of the pad is not depicted on the 1967 (photorevised 1980) USGS Fontana 7.5-minute quadrangle; however, a structure is shown adjacent to the southwest. Considering the proximity, P-33-17540 is likely associated with the structure depicted on the quadrangle. Given the relatively large size of the pad (62 by 35 feet), it may have been a foundation for an outbuilding, such as a storage or work shed. The concrete foundation pad is located outside of the APE; consequently, it is not expected to be impacted by the construction of the Proposed Riverside-Corona Feeder Realignment.

RIV-9106

RIV-9106 consists of the remnants of a historical-period irrigation system of a former citrus orchard located at the intersection of Irving Street and Cleveland Avenue. In this area, the RC Feeder Monroe Street Alternative alignment runs parallel just north of Cleveland Avenue. Consequently, the southern portion of RIV-9106 is located within the project APE.

The citrus grove once covered a 15-acre parcel and was likely established in the early or mid 1900s. The citrus trees in the grove have been removed as well as much of the irrigation system. Remnants of the irrigation system remain along the western edge of the parcel, adjacent to Irving Street and the southern portion of the parcel adjacent to Cleveland Avenue. A large pit has been excavated near the southwest corner of the parcel. Based on a historic maps review, a structure located in the RIV-9106 parcel first appears on the 1942 USGS Riverside 15-minute topographic quadrangle. The presence of a structure—likely a grove house associated with the citrus grove—indicates the grove was likely established some time between 1901 and 1942.

Irrigation features identified within the former citrus orchard include a weir box located near the intersections of Cleveland Avenue and Irving Street. The weir box is composed of two oblong, upright chambers measuring 4 feet long, 20 inches wide, and 2.5 feet tall. One of the chambers has a hinged lid, whereas the other is covered with wire mesh. Adjacent to the weir box is a control pipe for lateral water distribution measuring 5 feet in diameter with a hinged lid, two 6-inch-diameter valve controls, and a 6-inch-diameter standpipe. North of the weir box, flow control pipes for lateral water distribution border the western edge of the grove and parallel Irving Street. The southern most control pipe has a double chamber, the larger chamber measuring 3 feet in diameter and the smaller 10 inches in diameter. North of this, the three control pipes are single chambered, measuring 3.5 feet in diameter with a hinged lid. Running east of the control pipes, a series of 6-inch diameter standpipes are located in rows, spaced approximately 10 feet apart. Many of the standpipes are broken or missing. A wind machine is located in the eastern portion of the parcel and continues to operate. Rows of California pepper (*Schinus molle*) trees border the parcel along Irving Street and Cleveland Avenue.

Considering that the citrus trees have been removed, as well as most of the irrigation system, RIV-9106 lacks overall integrity of location, setting, and association. Based on this lack of integrity as well as the presence of several extant citrus groves in the area using similar irrigation systems, we recommend that RIV-9106 is not eligible for listing in the NRHP and CRHR.

P-33-17542

P-33-17542 consists of a gravity flow concrete-lined canal running north-south within Monroe Street, dividing the street from Magnolia Avenue to just south of California Avenue. A chain link fence currently lines the canal. P-33-17542 is located within the APE of the proposed of the RC Feeder Monroe Street Alternative. The Monroe Street canal first appears on the 1942 USGS Riverside 15-minute quadrangle map, indicating that it was constructed by the 1940s. The canal was originally a storm drain ditch and later in 1957 was improved by the City of Riverside Department of Public Works, in conjunction with the construction of the adjacent residential developments, including Monroe Park and Riverside Estates No. 1 (CRCDPW 1957). Improvements to the canal consisted of expanding the storm drain ditch, modifying the grade, adding concrete lips and box culverts, and installing a fence to restrict access to the canal. The canal consists of a form-poured trapezoidal channel measuring approximately 10 feet wide at the top and 6 feet wide at the base, with 4-foot-high walls. Weep holes for drainage are spaced approximately 6 feet apart in the side walls of the channel near the base. The overall cross-section of the channel is irregular, particularly at street over-crossings and in areas where portions of the canal have been replaced. Although some sections of the canal have been replaced, the Monroe Street canal retains much of the original construction materials used during the 1957 improvement efforts as well as its overall 1957-constructed alignment.

Prior to the extensive improvements made in the 1957, the original storm drain ditch was likely associated with the historical citrus industry in the Arlington area of Riverside. The subsequent improvements to the canal reflect the rapid residential developments that occurred within the city of Riverside following World War II. Based on association with this post-WWII urban expansion in Arlington's History, P-33-17542 may be eligible for listing in the NRHP and CRHR.

P-33-17543

A section of concrete-lined trapezoidal canal runs beneath Colorado Avenue at the intersection with Monticello Avenue, within the APE of the proposed of the RC Feeder Monroe Street Alternative. The gravity-flow channel begins at California Avenue and runs through the center of Monticello Avenue, draining into Hole Lake. The original construction of the drainage ditch is unclear; however, the channel as seen today, was improved ca. 1956 with the construction of the adjacent residential developments, including Brockton Heights and Villa D' Este (CRCDPW 1956). As with the Monroe canal, the Monticello canal is overall irregular in cross-section, particularly in areas where portions of the channel have been replaced. In general, the form-poured canal measures approximately 20 feet across at street level and 16 feet across at the base of the channel. The walls measure approximately 4 feet 6 inches in height. Weep holes as well as larger drain holes are located within the walls of the channel.

Some sections of the canal have been replaced; however, the canal appears to remain much of its 1956 construction materials and alignment. As with the Monroe Street canal, P-33-17543, is associated with the rapid urban expansion that occurred in Arlington's history following WWII. Consequently, P-33-17543 may be eligible for listing in the NRHP and CRHR.

P-33-17544

P-33-17544 is a section of a concrete-lined trapezoidal canal that crosses beneath Limonite Avenue outside of the APE of the Proposed Riverside-Corona Feeder Realignment. In this area, or Crossing Number 13 (see Table 2), jack-and-bore techniques will be used to construct the pipeline beneath the canal. The gravity-flow canal, known as the Sunnyslope Channel, was constructed in 1958 (Amy McNeill with Riverside County Flood Control, personal communication 2008) and is a lateral channel of the West Riverside Canal (RIV-5044H). The Sunnyslope Channel extends south from the West Riverside Canal, intersecting with

Jurupa Ditch (P-33-11578) before terminating along the north bank of the Santa Ana River. The form-poured channel measures approximately 26 feet wide at the top and 16 feet wide at the base and is approximately 10 feet deep. More recent modifications to the channel include replacement of some portions of the canal as well as installation of corrugated metal culverts allowing for drainage into the canal. The canal is lined on all sides by a chain link fence.

Native American Concerns

No Native American cultural resources are documented within or near the project APE in the Sacred Lands File maintained by the NAHC. However, Dave Singleton, Program Analyst for the NAHC, noted that the "absence of specific site information in the Sacred Lands File does not guarantee the absence of cultural resources in any 'area of potential effect (APE)'." He also provided contact information for 11 tribes and individuals that might have knowledge of cultural resources in the project area and recommended that they be consulted (Appendix C).

Letters describing the RCF Realignment Project as well as requests for consultation were sent by certified mail to the 11 tribes and individuals. Ten of the 11 contacts received the letters. One of the letters sent by certified mail was returned to SRI. The individual was then contacted by phone and a voice message was left on August 18, 2008. There has since been no response to the voice message.

Two tribes responded to the letters by telephone—Anthony Morales with the Gabrielino/Tongva San Gabriel Band of Mission Indians and Anna Hoover with the Pechanga Band of Mission Indians. Mr. Morales stated that he felt the entire project area was within a culturally sensitive area and requested that the entire project area be monitored by both qualified archaeologists and Native American monitors. Ms. Hoover had questions regarding the project alignments shown in Figure 2. She stated that she would review the information and contact SRI with any concerns or recommendations. Since this phone conversation, Ms. Hoover has not contacted SRI.

Paleontological Resources

Craig R. Maker, of the Division of Geological Sciences, San Bernardino County Museum (SBCM), conducted a paleontological literature review and records search of the Regional Paleontologic Locality Inventory (RPLI) for RCF Realignment project area (Appendix B). The results indicate that no known paleontologic resources have been previously recorded by the SBCM within the RCF Realignment project area. Paleontologic remains, however, have been identified approximately 3–5 miles northwest of the project area. These remains included extinct mammoth, mastodon, bison, camel, and saber-toothed cat.

The results of the records search also indicate that the proposed alignment is located on surface exposures of Pliocene or early Pleistocene age sedimentary rock units that have the high potential to contain significant paleontologic resources. Although not within the project area, paleontologic resources have been previously identified within these sediments in Riverside and San Bernardino counties. Surface exposures of Holocene eolian and alluvial deposits are also reported within the project area. These young sediments, however, have a low potential for containing paleontologic resources.

Considering the presence of surface exposures of Pleistocene sediments characterized as having a high potential for containing paleontologic resources, the Division of Geological Sciences, SBCM recommends that excavations into surface and subsurface Pleistocene deposits will require a qualified vertebrate paleontologists to develop a program to mitigate the impacts of nonrenewable paleontologic resources, including full curation of recovered significant resources. A mitigation program must be consistent with CEQA and regulations currently implemented by Riverside and San Bernardino counties.

Buried Sites-Sensitivity Analysis

Because much of the pedestrian survey corridor was obscured or partially obscured by pavement and landscaping, soils and geologic maps were examined to evaluate the potential for buried cultural resources. A total of 18 soil types or series were identified within the 100-foot-wide survey corridor of the project area (Table 4). To evaluate the potential for buried sites, the thickness of deposits overlying potential cultural materials as well as mineral composition were taken into consideration. Soils types with a low potential for buried sites were typically shallow or, based on mineral composition, primarily clay-based or derived from basic igneous rock (i.e. gabbros and basalts). Soil types that were deep and well-drained were characterized as having high potential for buried sites, whereas areas with moderate potential had soil types that were deep and poorly-drained or shallow and well-drained.

Based on soil and geologic characteristics, the project area was divided into four main areas of low, moderate, and high potential for buried sites (Figures D-3 and D-4). It should be noted, however, that areas where cultural resources are recorded within the APE of the proposed alignments are considered to have high potential for buried cultural resources. Based on soil and geologic characteristics, the northern reach of the project area is identified as having primarily low and high potential for buried sites (see Figures D-3 and D-4). The portion of the project area within the cities of San Bernardino and Colton has low potential, whereas the remaining portion of the northern reach, particularly along Agua Mansa Road, has a high potential for buried sites.

Based on soil and geologic characteristics, low, moderate, and high potential for buried sites characterizes the central reach of the project area (see Figure D-4). Moderate potential is identified along much of Limonite Avenue and Clay Street, whereas low potential is identified south of the Santa Ana River crossing along Van Buren Boulevard to just north of the intersection between Jackson Avenue and Colorado Avenue. From this intersection south, the Arlington area of Riverside is characterized as having a high potential for buried sites, as well as the Santa Ana River crossing and areas where previously identified cultural resources are located within the survey corridor.

Table 4. Soils Identified in the Riverside-Corona Feeder Project Area by Characteristics and Buried-Site Sensitivity

Soil Series	Buried-Site Sensitivity	Characteristics
Arlington	high	Deep, well-drained granitic soil located on terraces and alluvial fans with 0–35 percent slope.
Buchenau	high	Well-drained to moderately drained metasedimentary soil located on alluvial fans with 0–8 percent slope.
Buren	low	Well-drained to moderately drained igneous soil located on alluvial fans and terraces with 2–15 percent slope.
Cieneba	low	Shallow, excessively drained granitic soil located on uplands with 9–85 percent slope.
Delhi	high	Deep, excessively drained granitic soil located on alluvial fans, dunes, floodplains, and terraces with 0–15 percent slope.
Dello	moderate	Very deep, poorly drained granitic soil located on alluvial fans and floodplains with 0–5 percent slope.
Fallbrook	high	Deep, well-drained granitic soil located on uplands with 5–75 percent slope.
Grangeville	moderate	Deep, poorly drained granitic soil located alluvial fans and floodplains with 0–2 percent slope.
Greenfield	high	Deep, well-drained granitic soil located on alluvial fans and terraces on 0–30 percent slope.
Hanford	high	Deep, well-drained granitic soil located on alluvial fans, streambeds, and floodplains with 0–15 percent slope.
Madera	high	Moderately deep, well-drained granitic soil located on old alluvial fans and dissected terraces on 0–9 percent slope.
Monserate	moderate	Shallow, well-drained granitic soil located on old alluvial fans and dissected terraces on 0–25 percent slope.
Pachappa	high	Well-drained granitic soil on alluvial fans and floodplains with 0–8 percent slope.
Porterville	low	Deep, well-drained metabasic igneous soil located on alluvial fans and foothills on 0–9 percent slope.
Ramona	high	Well-drained granitic soils located on alluvial fans and terraces.
San Emigdio	high	Very deep, well-drained weakly consolidated sedimentary soil located on alluvial fans and floodplains on 0–15 percent slope.
Tujunga	high	Very deep, excessively drained granitic soil located on alluvial fans and floodplains on 0–9 percent slope.
Vista	moderate	Moderately deep, well-drained granitic soil on uplands on 2–75 percent slope.

CHAPTER 5

Management Recommendations

This chapter presents the management recommendations for the cultural resources located in the APE of the proposed RCF Realignment. The cultural resources studies resulted in the identification of six cultural resource properties located in the project APE, all of historical age: four water conveyance canals, Victoria Avenue, and the remnants of an irrigation system of a former citrus orchard. Victoria Avenue and the Riverside Upper Canal are listed in the NRHP, whereas the Riverside Lower Canal has been previously recommended as ineligible for listing in the NRHP.

Evaluations of NRHP and CRHR eligibility are presented below, followed by preliminary and previous evaluations of historical significance as well as an assessment of the potential project impacts on historical resources and recommendations for mitigation.

Evaluations of NRHP and CRHR Eligibility

The RCF Realignment Project is subject to compliance with CEQA and may be subject to compliance with Section 106 of the NHPA as well, if the project involves a federal undertaking. As described in Chapter 1, some RCF Realignment Project components may be subject to development, funding, and permitting by the FHWA and U.S. Army Corps of Engineers, Los Angeles District, which would constitute an undertaking by these agencies. The NHPA requires federal agencies to take into account the effects of an undertaking on historic properties, defined as cultural resources included in or eligible for listing in the NRHP. Because CEQA allows use of NRHP eligibility determinations for CRHR eligibility as well, we have used the NRHP criteria and the guidelines for implementation of Section 106 of the NHPA (36 CFR 800), to make recommendations for significance evaluations under CEQA.

NRHP Criteria

Determination of NRHP eligibility for cultural resources prior to making a finding of effect is made according to the following criteria:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and;

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) that are associated with the lives of persons significant in our past; or
(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history [36 CFR 60.4].

If cultural resources do not meet the above criteria, they are not historic properties and are not further considered in the Section 106 process.

CRHR Criteria

For purposes of CEQA, a historical resource is any object, building, structure, site, area, place, record, or manuscript listed in or eligible for listing in the CRHR (PRC 21084.1). A resource is eligible for listing in the CRHR if it meets any of the following criteria:

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

The California Code of Regulations further provides that cultural resources of local significance are CRHR eligible (Title 14 CCR, Section 4852).

Unique Archaeological Resources Criteria

CEQA also requires the lead agency to consider whether the project will have a significant effect on unique archaeological resources that are not eligible for listing in the CRHR, and to avoid unique archaeological resources when feasible or mitigate any effects to less than significant levels (Public Resources Code [PRC] 21083.2). As used in CEQA,

> "unique archaeological" resource means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Applying the Eligibility Criteria

Historical resources defined by the CRHR criteria listed above (PRC 5024.1) are eligible for listing in the CRHR and include resources determined eligible for listing in the NRHP (CCR 4851(a)(1)). Thus, the County may apply the determinations of NRHP eligibility to its findings of historical significance under CEQA. Cultural resources determined to be not eligible for listing in the NRHP may still qualify as historical resources under CEQA, however, and thus a separate finding that they are not historical resources must be made by the County.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance (CCR 4852).

Preliminary Evaluations of Historical Significance

Each cultural resource in the RCF Realignment Project APE, including those previously recorded within the project area and those newly identified during the current survey, was evaluated according to the NRHP criteria above to determine whether it will require further consideration in the planning process for the project, according to guidance presented in National Register Bulletin 15 (National Park Service [NPS] 1997), the CEQA Guidelines, and current literature regarding site-significance assessment (Hardesty and Little 2000).

In addition to considering whether sites might be eligible for listing in the NRHP or CRHR, we also have evaluated whether sites recommended as non-eligible for either register might still qualify as "unique archaeological resources" under CEQA. However, we conclude that none of the RCF Realignment Project cultural resources evaluated as being *not* eligible for the NRHP and the CRHR meet the criteria for consideration as "unique archaeological resources" under CEQA. Finally, we also have considered whether sites that are *not* eligible for listing in the NRHP might still meet the criteria for CRHR eligibility, and find that there are no instances where that circumstance would apply.

SRI's evaluations and recommendations are summarized in Table 5.In addition to the two historical properties that are listed in the NRHP and the one historical structure that has been previously recommended as ineligible for listing in the NRHP, the preliminary evaluation of the historical significance of the three cultural resources located within the APE resulted in the recommendation that two may be eligible for listing in the NRHP or CRHR and the remaining resource is ineligible.

The previously recorded historical structure, Riverside Lower Canal (RIV-4791H), has been evaluated in earlier studies as ineligible for listing in the NRHP. Based on assessment of the current condition, we concur with previous evaluations and recommend that the Riverside Lower Canal be considered ineligible for listing in the NRHP as well as the CRHR. The remnants of an irrigation system of a former citrus grove, RIV-9106, lack integrity of setting, and association, and therefore also is recommended as ineligible for listing in the NRHP or CRHR. It is recommended that historical resources P-33-17542 and P-33-17543 may be eligible for listing in the NRHP or CRHR based on their association with the post-WWII urban development in the Arlington area of the city of Riverside (NRHP/CRHR Criterion A/1).

Potential Impacts on Historical Resources

Physical alteration or changes in the setting, feeling, and association of resources that are determined to be historical resources by the WMWD based on the recommendations contained herein are considered to be subject to potential adverse impacts to the environment under CEQA (CEQA Guidelines §15064.5). Impacts to historical resources can occur from construction of the feeder pipeline, including trenching and micro-tunneling techniques; include stockpiles of spoils; spoil removal activities; and equipment and materials storage.

Table 5. Summary of Cultural Resource Significance and Recommendations

Resource Designation	RCF Alignment APE	NRHP/CRHR	Recommendation
Victoria Avenue (P-33-11361)	PRCF[a] & Monroe[b]	listed in NRHP	No further work.
Riverside Upper Canal (RIV-4495H)	Monroe	listed in NRHP	No further work.
Riverside Lower Canal (RIV-4791H)	Monroe	lacks integrity, not eligible	No further work.
RIV-9106	Monroe	lacks integrity, not eligible	No further work.
P-33-17542	Monroe	may be eligible under Criterion A/1	Conduct formal NRHP/CRHR eligibility study if alternative is selected for construction.
P-33-17543	Monroe	may be eligible under Criterion A/1	Conduct formal NRHP/CRHR eligibility study if alternative is selected for construction.

[a] Proposed Riverside-Corona Feeder Realignment.
[b] RC Feeder Monroe Street Alternative alignment.

Victoria Avenue (P-33-11361) is listed in the NRHP and currently located within the APE of the proposed RCF Realignment Project. Victoria Avenue intersects Jackson Street within the APE of the Proposed Riverside-Corona Feeder Realignment and Monroe Street within the APE of the RC Feeder Monroe Street Alternative. Victoria Avenue is significant due to its defining element of Riverside's historic citrus landscape with regards to community planning and development. The Mediterranean-derived landscape bordering the avenue as well as its original alignment are defining features, rather than its original road construction materials. Because the proposed pipelines would be constructed below ground surface, resulting in no permanent impact to the historical landscape, and the roadway itself has been paved over and numerous sections replaced, Victoria Avenue (P-33-11361) would not be subject to adverse effects from the project.

The Riverside Upper Canal (RIV-4495H) is also listed in the NRHP and currently located within the APE of the RC Feeder Monroe Street Alternative. If traditional trenching techniques are used in the construction of the RC Feeder Monroe Street Alternative, then the Riverside Upper Canal would be subject to adverse effects from the project.

Cement-lined canals P-33-17542 and P-33-17543 are currently located within the APE of the RC Feeder Monroe Street Alternative. If traditional trenching techniques are used in the construction of the RC Feeder Monroe Street Alternative and the two historical structures are determined eligible for listing in the NRHP or CRHR, P-33-17542 and P-33-17543 would be subject to adverse effects from the project. Because the remaining resource, RIV-9106, does not appear to meet the criteria for consideration as a historical resource, the RCF Realignment Project will have no effect on RIV-9106.

Recommendations

As noted above, as the RCF Realignment Project is currently proposed, Victoria Avenue (P-33-11361), would not be subject to adverse effects from the project. The Riverside Upper Canal (RIV-4495H), however, may be subject to adverse effects if the RC Feeder Monroe Street Alternative is selected and traditional trenching techniques are used at the canal crossing. If the RC Feeder Monroe Street Alternative is selected, we recommend jack-and-bore methods at the Riverside Upper Canal crossing to avoid adverse effects. Finally, P-33-17542 and P-33-17543 must be evaluated for NRHP or CRHR eligibility and the appropriate mitigation measures developed and implemented if needed. No additional recommendations are made for further cultural resources investigations prior to project construction on the remaining cultural resources located within the RCF Realignment Project APE.

Based on the results of the CHRIS records searches as well as buried-sites sensitivity analysis, there is a high potential for encountering buried cultural resources within the RCF Realignment project area. The results of the SBAIC records search indicate numerous previously recorded cultural resources along Agua Mansa Road within the 100-foot-wide survey corridor, including the town site of Agua Mansa, a historical road, and numerous irrigation ditches and canals. An examination of soils and geologic maps for this area, coupled with the presence of numerous previously recorded resources, indicate there is a high potential for buried cultural resources. Other areas where previously and newly recorded sites have been identified within the APE, as well as the Santa Ana River crossing and the southernmost section of the RCF Realignment Project central reach have also been identified has having high to moderate potential for buried cultural resources. In areas with high and moderate potential for buried cultural resources (see Figures 5 and 6), we recommend monitoring during any ground-disturbing activities by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards (36 CFR Part 61) and a member of the Native American community.

In the event that unanticipated discoveries are made during the course of project implementation, it is recommended that work be temporarily suspended and a qualified archaeologist (36 CFR Part 61) be contacted to evaluate the significance of the resources. If human remains are encountered during ground-disturbing activities, work in the affected area must be halted immediate and the County Coroner must be notified pursuant to State Health and Safety Code §7050.5.

To better define the scope of monitoring and the responsibilities of archaeological and Native American monitors, we recommend that an Archaeological Monitoring Plan be prepared by WMWD in consultation with Native American tribes that have responded to the NOP for the PEIR (see Appendix C). The plan shall include provisions for treatment protocol in the event of unanticipated discoveries and for the ultimate disposition of any artifacts or other cultural materials recovered during monitoring activities. The Archaeological Monitoring Plan shall be prepared, reviewed by consulting tribes, and approved by the WMWD prior to construction in any areas that require monitoring.

Additionally, there is a potential for encountering previously unidentified paleontological resources within the RCF Realignment project area during ground-disturbing activities. As noted before, surface exposures of Pliocene or early Pleistocene age sedimentary rock units that have the high potential to contain significant paleontologic resources are located within the project area and known paleontologic resources have been previously recorded within 3 to 5 miles of the project area. Considering the high potential for encountering unidentified paleontological resources, the Division of Geological Sciences, SBCM, recommends that excavations into surface and subsurface Pleistocene deposits will require a qualified vertebrate paleontologists to develop a program to mitigate the impacts of nonrenewable paleontologic resources, including full curation of recovered significant resources. A mitigation program must be consistent with CEQA and regulations currently implemented by Riverside and San Bernardino counties.

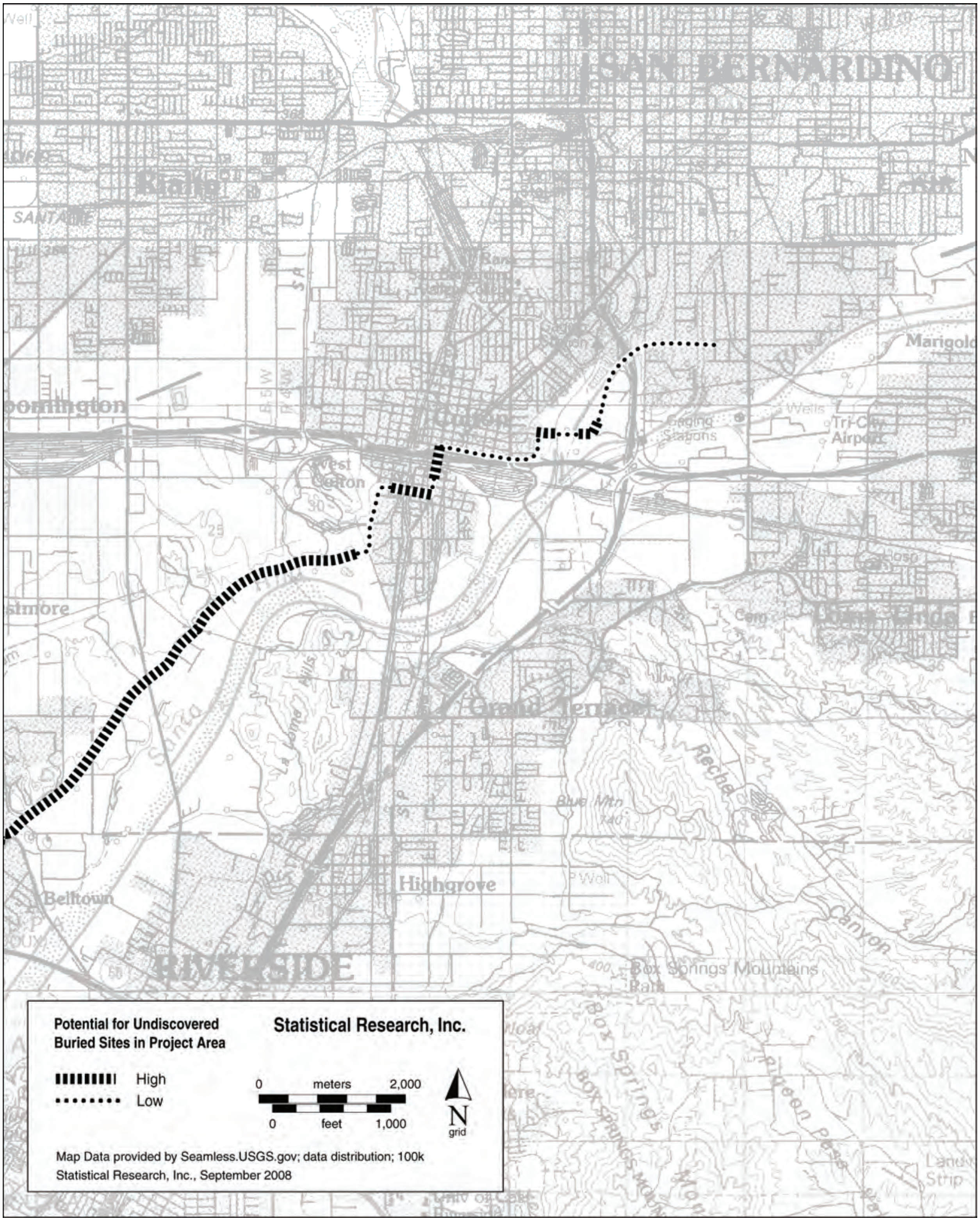

Figure 5. Predicted sensitivity for buried sites within the northern reach of the Riverside-Corona Feeder project area survey corridor and APE.

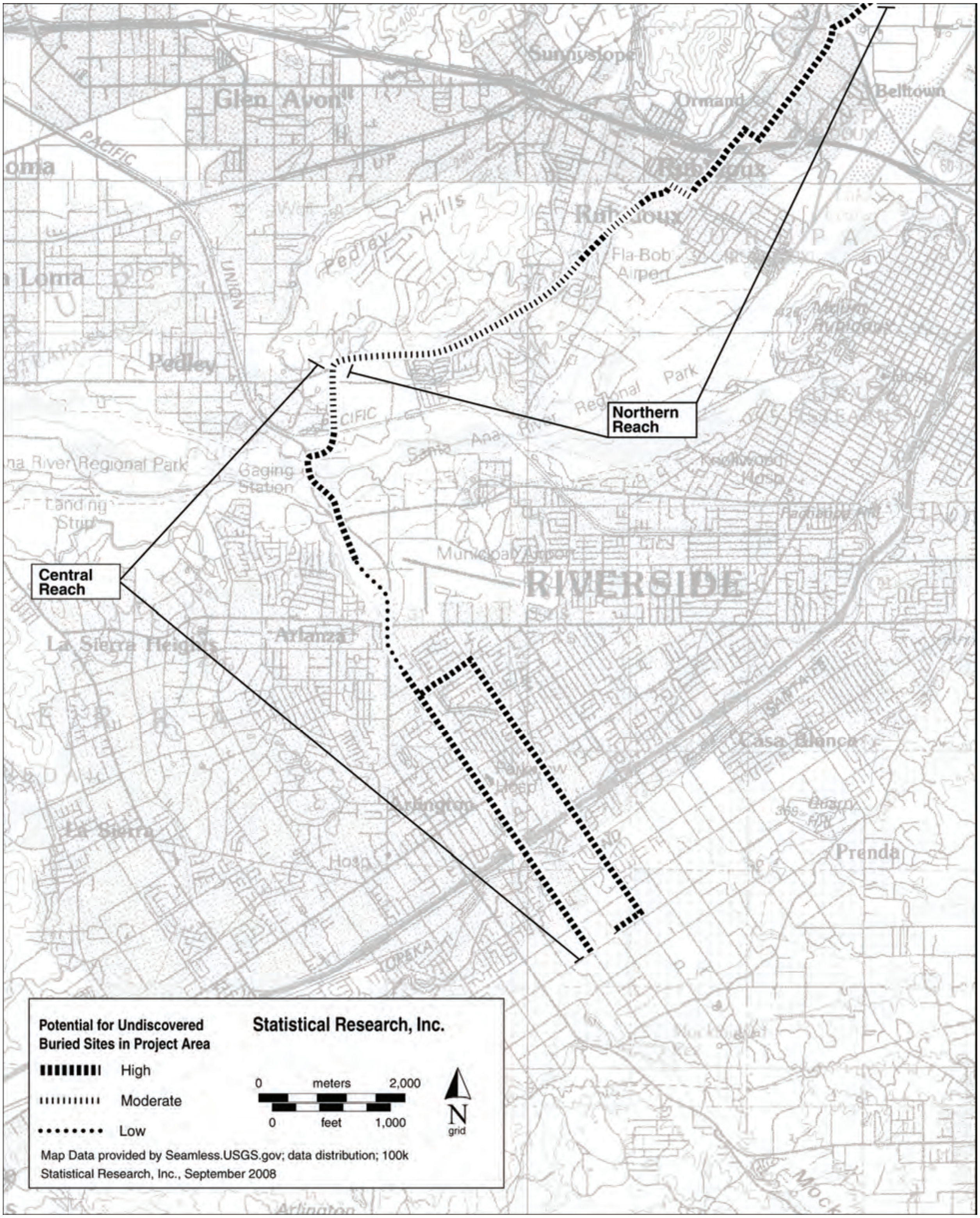

Figure 6. Predicted sensitivity for buried within the northern and central reaches of the Riverside-Corona Feeder project area survey corridor and APE.

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A CULTURAL RESOURCE REPORT FOR THE CENTRAL FEEDER CONNECTION ELEMENT OF THE RIVERSIDE-CORONA FEEDER PROJECT

SAN BERNARDINO, CALIFORNIA

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September 24, 2009; Revised April 5, 2010

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Report Date:	September 24, 2009; Revised April 5, 2010
Report Title:	A Cultural Resource Report for the Central Feeder Connection Element of the Western Municipal Water District's Riverside-Corona Feeder Project, San Bernardino, California.
Type of Study:	Phase I Archaeological Survey
New Sites:	CFC-1, CFC-2
Updated Sites:	CA-SBR-9991H
USGS Quadrangle:	*Redlands* (7.5 minute), California
Length:	6,350 feet
Key Words:	Intensive pedestrian survey; postive survey; historic foundation, historic structure, rural historic landscape, CA-SBR-9991H, testing recommended, USGS *Redlands* quadrangle (7.5 minute); San Bernardino County

Table of Contents

Page

Appendices

**Bound separately in Confidential Appendix.*

List of Figures

Page

**Bound separately in confidential appendix.*

List of Plates

List of Tables

List of Abbreviations

ACHP	Advisory Council on Historic Preservation
AMSL	Above Mean Sea Level
APE	Area of Potential Effects
BFSA	Brian F. Smith and Associates
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
USGS	Unites States Geological Survey
SBAIC	San Bernardino Archaeological Information Center
SBCM	San Bernardino County Museum
SHPO	State Historic Preservation Officer
YBP	Years Before Present

1.0 MANAGEMENT SUMMARY/ABSTRACT

In response to a request by Albert A. Webb and Associates, Brian F. Smith and Associates (BFSA) conducted an archaeological survey and records search for the Central Feeder Connection Element of the Riverside-Corona Feeder Project. The project consists of an approximately 1.2-mile linear project area located within the San Bernardino Avenue right-of-way between Alabama Street in unincorporated San Bernardino County and Webster Street in the City of Redlands. Specifically, this project is located within an unsectioned portion of the USGS 7.5-minute *Redlands*, California topographic map, Township 1 South, Range 3 West. The Central Feeder Connection would connect new or existing groundwater production wells to be located within the San Bernardino Basin Area (exact locations not determined) into the San Bernardino Valley Municipal Water District's Central Feeder Pipeline; thereby providing an additional means for transporting San Bernardino Groundwater Basin water through regional pipeline facilities that are connected to the Riverside-Corona Feeder Project. The Central Feeder Connection consists of approximately 6,350 linear feet of up to 54-inch diameter pipeline located in the San Bernardino Avenue right-of-way between Alabama Street in unincorporated San Bernardino County and Webster Street in the City of Redlands, and an associated well field.

The purpose of this investigation was to locate and record any cultural resources present within the project area as part of the environmental review process. The investigation was conducted in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800, as well as the guidelines of the California Environmental Quality Act (CEQA), and California Register of Historical Resources (CRHR). The archaeological investigation of the subject property included an archaeological records search performed at the San Bernardino Archaeological Information Center (SBAIC) at the San Bernardino County Museum (SBCM) in order to assess previous archaeological studies and identify any previously recorded sites within the project boundary or in the immediate vicinity. A previously recorded site, CA-SBR-9991H, was identified by the records search. The site is composed of rows of tall Mexican Fan Palms that line portions of Nevada Street and San Bernardino Avenue within the project area.

The archaeological survey of the approximately 1.2-mile linear project area was conducted during the week of September 7, 2009. Two unrecorded potential historic sites were identified within the project area as a result of the archaeological survey; however, until the location(s) of the well(s) and associated infrastructure to support the well(s) and water delivery system is designed, the potential impacts to the sites cannot be assessed. None of the potentially historic structures were evaluated for significance or eligibility to the state or federal registers of historic places. An evaluation program has been recommended to fully document the historic sites located within the project area to address the potential for adverse impacts should the project potentially affect the resources.

A copy of this report will be permanently filed with SBAIC. All notes, photographs, and other materials related to this project will be housed at the office of BFSA in Poway, California.

2.0 INTRODUCTION

2.1 Project Description

The archaeological survey program for the Central Feeder Connection Project was conducted in order to comply with the guidelines of the CEQA, and the California Register of Historical Resources (CRHR), as well as Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800. The project is an approximately 1.2-mile linear pipeline in San Bernardino County, California (Figure 2.1–1). The project boundary is depicted on the appropriate portions of the USGS *Redlands* 7.5-minute topographic quadrangle in Figure 2.1–2.

The proposed project would connect new or existing groundwater production wells to be located within the San Bernardino Basin Area (exact locations not determined) into the San Bernardino Valley Municipal Water District's Central Feeder Pipeline; thereby providing an additional means for transporting San Bernardino Groundwater Basin water through regional pipeline facilities that are connected to the Riverside-Corona Feeder Project. The Central Feeder Connection consists of approximately 6,350 linear feet of up to 54-inch diameter pipeline located in the San Bernardino Avenue right-of-way between Alabama Street in unincorporated San Bernardino County and Webster Street in the City of Redlands.

An archaeological records search for the project was conducted by BFSA at the SBAIC at the SBCM (Appendix II). The records search identified a portion of one previously recorded site (CA-SBR-9991H) within the project boundary. An additional ten archaeological/historic resources have been recorded within one mile of the project. There have been a total of two previous cultural resource studies that overlap portions of the proposed project area. The results of the records search are discussed in Section 2.4 of this report.

The archaeological survey conducted by BFSA took place during the week of September 7, 2009. The area surveyed consisted of existing roadway bordered by industrial developments, intermittent open spaces, citrus orchards, and general urban developments. The archaeological survey identified two previously unrecorded archaeological/historic resources within an area near the proposed well field location. Results of the survey are discussed in Section 4.0.

2.1.1 Area of Potential Effects (APE)

The project will consist of approximately 6,350 linear feet of pipeline located within public road right-of-way and within pipeline easements, and an associated well field, in unincorporated San Bernardino County and the City of Redlands. The APE "means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16[d]). The APE is depicted in Figure 2.1–2. In total, the APE includes the area within the right-of-way of a public road (San Bernardino Avenue).

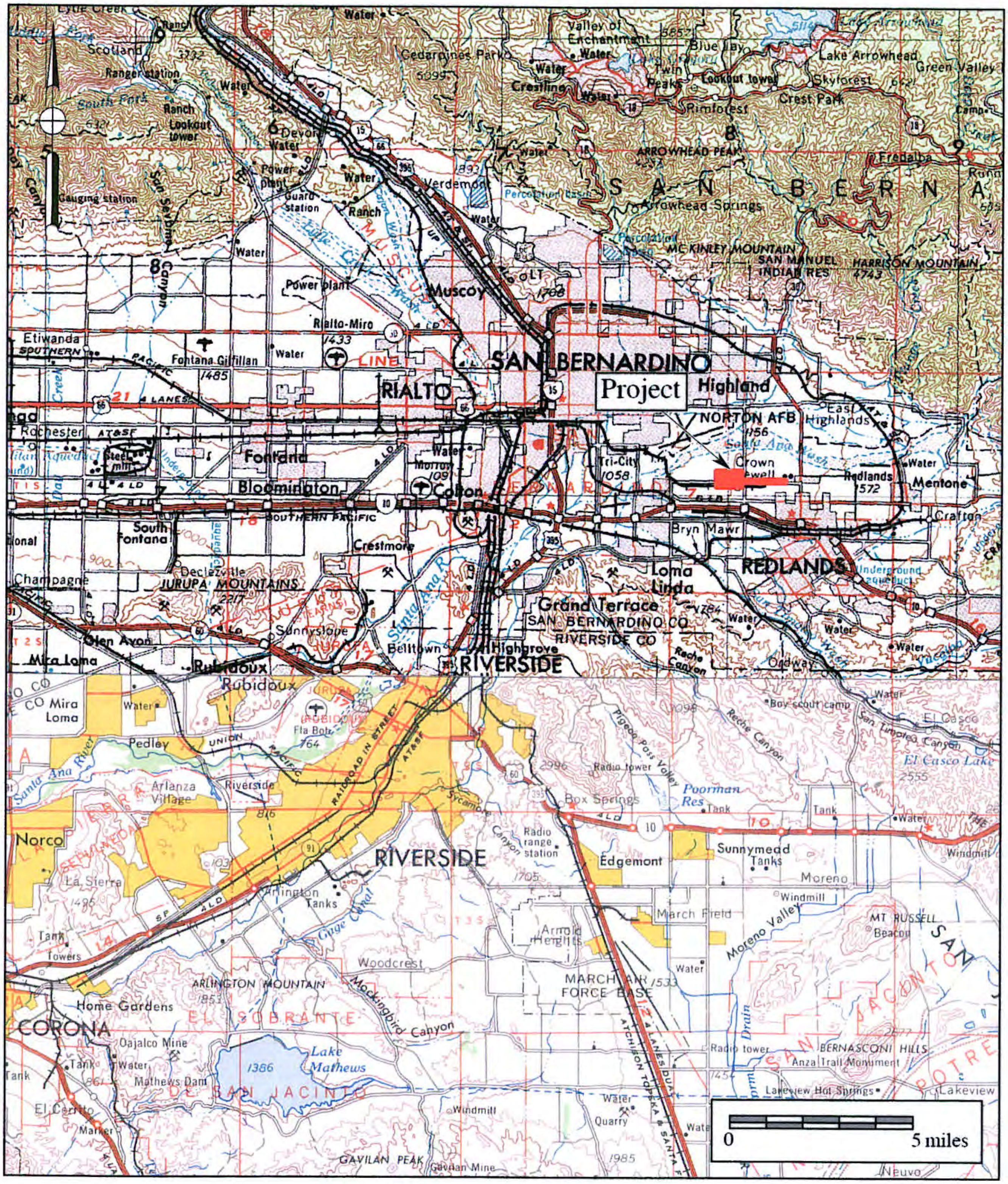

Figure 2.1–1

General Location Map

The Central Feeder Element of the Riverside-Corona Feeder Project

USGS *Santa Ana and San Bernardino* (1:250,000 series)

Brian F. Smith and Associates, Inc. Environmental Consultants

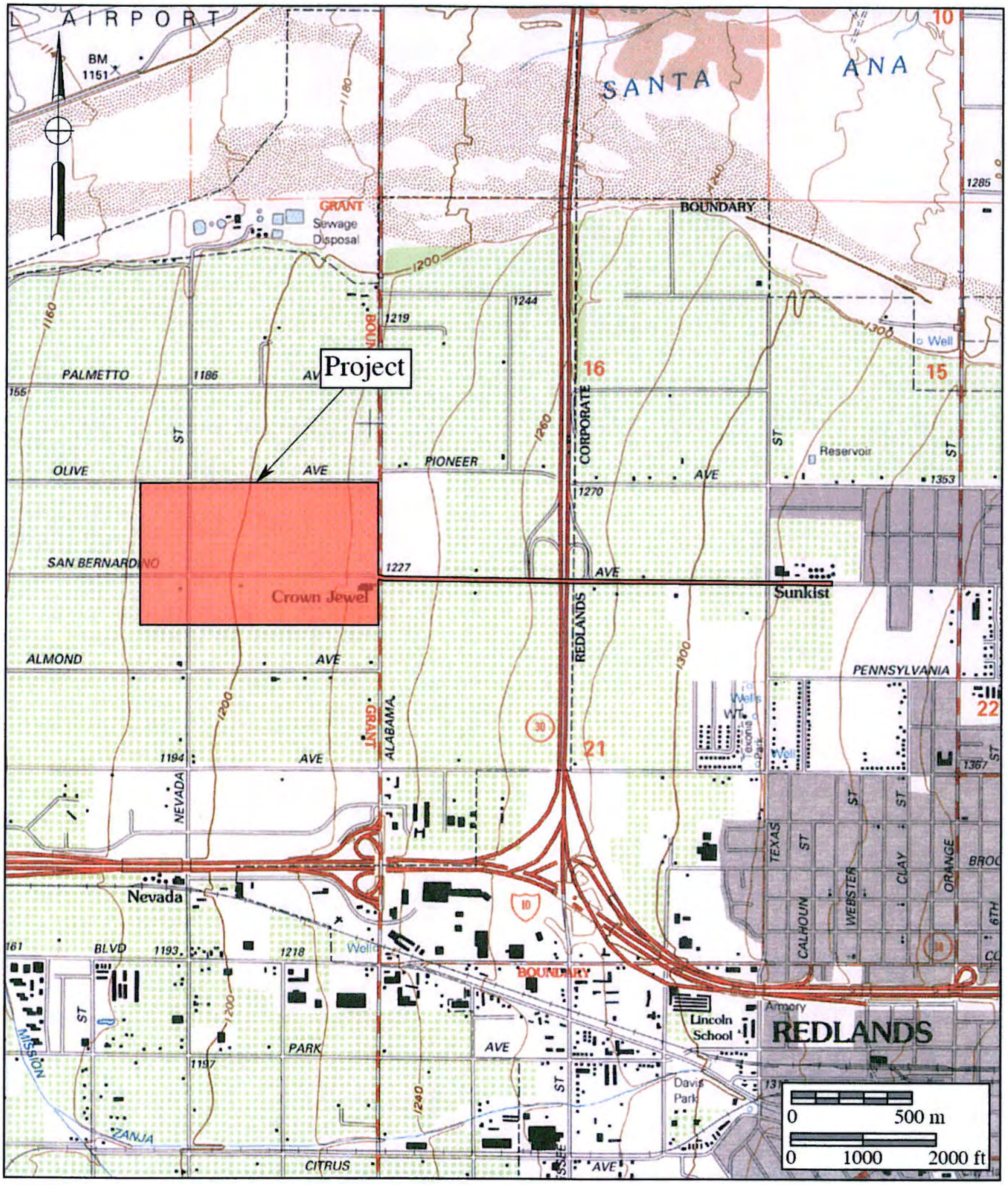

Figure 2.1–2

Project Location Map

The Central Feeder Element of the Riverside-Corona Feeder Project

USGS *Redlands* Quadrangle (7.5 minute series)

The majority of the disturbance within the APE will include primarily subsurface trenching and tunneling for the placement of all pipeline elements. For the current project, the APE does not include surface areas where the pipeline would tunnel beneath other linear resources that cross the alignment, such as railroads, canals, and freeways. In addition, the APE does not include architectural or other historical resources adjacent to the pipeline corridor as the placement of the pipeline is underground and the associated tank will be buried, eliminating any indirect impacts to the view shed/setting.

2.2 Existing Conditions

The project setting includes the natural physical, geological, and biological context of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the region. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

2.2.1 Environmental Setting

San Bernardino County lies in the Peninsular Range Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California. The Central Feeder Connection Project is genrally flat at an elevation of about 1,200 feet above mean sea level (AMSL). The project area lies approximately one mile south of the Santa Ana River Wash, which is boardered by the San Bernardino Mountains to the north, east, and northeast. The length of the proposed pipeline has been disturbed by construction of San Bernardino Avenue. Currently, vegetation within the project area is characterized as primarily citrus groves and sporadic introduced grasses. Ornamental palm trees also line Nevada Street along the well feeder portion of the project area.

2.3 Cultural Setting

PaleoIndian, Archaic Period, Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the general cultural periods represented in San Bernardino County. The following discussion of the cultural history of southwestern San Bernardino County references the San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of San Bernardino County was represented by the Serrano and Gabrielino Native Americans.

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

2.3.1 Prehistory

<u>PaleoIndian Period *(Late Pleistocene: 11,500 to circa 9,000 YBP)*</u>

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

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

<u>Archaic Period *(Early and Middle Holocene: circa 9,000 to 1,300 YBP)*</u>

The Archaic Period of prehistory begins with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene is marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending on the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons is significant in that it had profound effects on the types of resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten*, but habitat was gained for other small mollusks, particularly *Donax* (Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, loss of drinking water, and loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, or horizons including San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period.

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

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into San Bernardino County, marking the transition to the Late Prehistoric Period. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, but effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between 400 and 600 AD, and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

Protohistoric Period *(Late Holocene: 1790 to present)*

Ethnohistorical and ethnographic evidence indicates that two Shoshonean-speaking groups occupied portions of San Bernardino County and the present project area during the Protohistoric period, including the Serrano and Gabrielino. The geographic boundaries between these groups in pre- and proto-historic times are difficult to place. Ethnographically, the traditional territory of the Serrano included the San Bernardino Mountains (just east of Cajon Pass) in addition to the desert regions immediately south of Victorville. Further, their territory was believed to extend as far east as Twenty-nine Palms and as far south as Yucaipa Valley. Recorded accounts of the Serrano suggest organization into exogamous clans with subsistence practices based primarily on hunting and gathering (Bean and Smith 1978). Most Serrano houses were circular domes constructed of willow frames and tule thatch that had a central fire pit. The homes of several families tended were clustered into small settlements that included food-storage structures and frequently a sweathouse and/or a ceremonial structure. Most settlements were placed near springs or other water sources as well as other resources to minimize effort and maximize potential resource yield (Bean and Smith 1978).

Technologically, the Serranos employed throwing sticks for much of their day-to-day hunting activities. Throwing sticks, as well as various types of traps, snares, and projectiles were used to capture deer, mountain sheep, antelope, rabbits, and other small rodents. Most gathering was accomplished with baskets that were also employed for cooking and storing (Bean and Smith 1978). Vegetal staples varied with village locality but often included acorns, piñon nuts, mesquite, yucca roots, and cacti fruits. Traditional diets were also likely supplemented with roots, bulbs, shoots, and seeds (Bean and Smith 1978). In addition, pottery has also been identified in the region suggesting additional technologies for carrying and storage. Milling equipment manufactured and employed by the Serrano included mortars and pestles, manos and metates, arrow-straighteners, and hammerstones. Flaked stone tools were also plentiful and included projectile point, drills, knives, and scraping tools. Traditional ceremonial items included garments made or decorated with feathers, rattles made of turtle and tortoise shells, bone whistles, bull-roarers, and flutes. Textile work included woven bags, storage pouches, cordage, mats, and nets (Drucker 1937; Bean 1962-1972; Bean and Smith 1978).

Prior to the arrival of the Spanish it is believed that the Serrano were fairly numerous. By the 1790s, the westernmost Serrano were incorporated into Mission San Gabriel. As a result of an attempted revolt in 1810, the remaining Serrano were brought into the mission system. However, those in the easternmost deserts over the San Bernardino Mountains stayed beyond the reach of the mission and likely absorbed many who had fled its grasp (Bean and Smith 1978).

The territory of the Gabrielino, at the time of Spanish contact in the sixteenth century, was located in much of current-day Los Angeles and Orange Counties. The southern extent of this group was bounded by Aliso Creek, the eastern extent was located east of current day San Bernardino along the Santa Ana River, the northern extent included the San Fernando Valley, and the western extent of their range included portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1925).

2.3.2 History

The historic background of the project area began with the Spanish colonialization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego) missions began colonizing southern California and gradually expanded their use of the interior valley (in what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside Co. CA 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid to late 1770s, Juan Bautista de Anza passed through San Bernardino County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles and described fertile valleys, lakes and sub-desert areas (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become San Bernardino County many mission outposts, or *asistencias* were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). For example, in 1819 as a part of the Mission San Gabriel's Rancho San Bernardino, an asistencia was constructed in San Bernardino that functioned as an outpost for cattle grazing activities to help support the mission. Mexico gained independence in 1822, and secularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998). By this time, the missions owned some of the best and fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The "grants" were called "ranchos," such as San Bernardino, Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo; many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside Co. CA 1998). In 1842, Jose del Carmen Lugo, Jose Maria Lugo and Vincente Lugo, and Diego Sepulveda, were granted title to the San Bernardino Rancho. Portions of the property grant included the abandoned Estancia, a grist mill, a tile kiln, and a lime kiln. José del Carmen Lugo repaired the rancho structures and resided at the Estancia until 1851.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of the now privately owned ranchos or put to work on the rancho, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent on the mission system is evident when, in 1838, a group of

Native Americans from the San Luis Rey Mission petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

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

Native American culture had been disrupted to the point where they could no longer rely on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on the missionaries, but also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based on utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850 California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies. As a result of the evergrowing influx of setelers to the region, mormons sttelers sought to purchase the Rancho San Bernardino from the Lugos in 1851. In doing so, they would establish the city and eventually the county of San Bernardino. The Estancia would eventually serve as a polling place for the newly organized San Bernardino County. Eventually this area became known as the Mission District/Old San Bernardino.

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

With the completion of the transcontinental railroad in 1869, more land speculators, developers, and colonists began to invest in Southern California. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region and still comprises much of the current project area. (American Local History Network: Riverside Co. CA 1998). It was the citrus boom that would lead to the formation of the City of Redlands in 1887 supported by the development of Bear Valley Land and Water Company that damned up Bear Valley to provide a reliable water source for potential citrus farmers (Lech 2004).

With the expansion of the citrus industry in Redlands, three major packing houses were established and tied into the railroad within the vicinity of the project area. These include the Sunkist (at Texas Street and San Bernardino Avenue), Crown Jewel (at Alabama Street and San Bernardino Avenue), and Marigold (at Mountain View Avenue and San Bernardino Avenue). These packing houses served to load boxes of citrus on trains for transport to ice houses in San Bernardino and Colton (Sanka 2008). The Crown Jewel packing house (currently the Packinghouse Christian Academy) is within the well field portion of the project area, and the Sunkist packing house borders the project area at the north end. Neither of the packing house structures will be affected by the wells or associated pipelines. For San Bernardino County, early business opportunities were linked to the agriculture industry but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy.

2.4 Records Search Results

Archaeological records searches were completed by BFSA at the SBAIC at the SBCM. The records search results showed that 24 previous cultural reports have been filed for projects conducted within one mile of the property, two of which involved portions of the current project area. The searches identified one recorded site within the property boundary (CA-SBR-9991H). An additional 10 sites were reported within a one-mile radius of the APE, as listed in Table 2.4–1. The complete records search results from SBAIC are provided in Appendix II.

Table 2.4–1

Previously Recorded Sites within One Mile

Site Number	Site Type	Site Dimensions	Report Reference/ Recorded By
P-36-012531	Historic Structure	N/A	J. McKenna
P-36-012532	Historic Structure	N/A	J. McKenna
P-36-013514	Historic Structure	N/A	L. Billat
P-36-013776	Historic Structure	N/A	J. Sanka
CA-SBR-6	Historic Object	N/A	G. Settle
CA-SBR-8136	Historic Structure	N/A	L. White
CA-SBR-8137	Historic Structure	N/A	L. White
CA-SBR-9991H	Historic Landscape	N/A	B. Tang
CA-SBR-12,260	Historic Irrigation	N/A	L. Taylor
CA-SBR-12,663	Historic Irrigation	N/A	J. Sanka
CA-SBR-12,669	Historic Irrigation	N/A	J. Sanka

2.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of San Bernardino County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in CEQA and Section 106 of the NHPA provide the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

2.5.1 California Environmental Quality Act (CEQA)

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

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:
    a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    b) Is associated with the lives of persons important in our past;
    c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
    d) Has yielded, or may be likely to yield, information important in prehistory or history.

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

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

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:
    a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
    b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
    c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

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

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

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

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

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

2.5.2 National Historic Preservation Act (NHPA)

The regulations implementing Section 106 (36 CFR 800 or Agency counterpart regulations) of the National Historic Preservation Act of 1966 (NHPA), as amended, require

federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 United States Code [USC] 470w [5]). Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the ACHP and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

As the project will fall under review by the United States Bureau of Reclamation, the NHPA of 1966 (as amended) and its implementing regulations (16 USC 470 et seq., 36 CFR 800, 36 CFR 60, and 36 CFR 63) apply to the project, requiring the Bureau to consider whether the project would affect historic properties listed on or meeting the criteria for listing on the NRHP. Federal law states that paleontological resources are not regulated under Section 106 of the NHPA unless those resources are in the context of a cultural resource, in which case they are considered cultural resources. The United States Bureau of Reclamation will be the lead agency for NHPA Section 106 compliance, and consultation with the SHPO and ACHP will be conducted as required.

3.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in determination of resource significance. For the current project, the study area under investigation is the southwest portion of San Bernardino County. The scope of work for the archaeological program conducted for the Central Feeder Connection Project included the survey of an approximately 1.2-mile linear project area and proposed location for the related well field. Given the small area involved and the narrow focus of a Phase I survey, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration of a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions:

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

Data Needs:

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

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

4.0 RESULTS OF SITE INVESTIGATIONS

4.1 Methods

4.1.1 Survey Methods

The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. BFSA archaeologists surveyed the project properties during the week of September 7, 2009, under the direction of Brian F. Smith, Principal Investigator. The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Project Archaeologist Tracy A. Stropes conducted the intensive pedestrian survey with field technician Charles Callahan. The field methodology employed for the project included walking evenly spaced survey transects approximately two meters apart and oriented north to south across the property while visually inspecting the ground surface. All potentially sensitive areas where cultural resources might be located were closely inspected. Photographs documenting survey discoveries and overall survey conditions were taken frequently and geo-tagged for future reference.

4.1.2 Curation

All photographs, notes, records, maps, research results, and any other relevant materials pertaining to the Central Feeder Connection Project are stored at the office of BFSA in Poway, California.

4.1.3 Native American Participation

A search of the Sacred Lands Files of the NAHC was requested by BFSA, the results of which are provided in Appendix III. The Sacred Lands File search by the NAHC failed to indicate the presence of sacred or ceremonial sites or landforms considered important to local tribes within the project area. A Native American representative was not present during the survey process. No other documented correspondence or analysis resulted from the Native Americans has been received as of the dissemination of this report. Should additional communications be received, they will be forwarded to the reviewing agency.

4.2 Results

The property consists of flat terrain bordered by agricultural and industrial developments. The majority of the project area is paved road (Plates 4.2–1 and 4.2–2). The vegetative landscape was sparse and composed of small patches of introduced grasses and citrus groves. There was no difficulty gaining access to the project area. The project area contained disturbance from occupation, development, and the construction of San Bernardino Avenue. The survey identified the presence of two unrecorded potentially historic sites consisting of a

Plate 4.2–1. Project area overview (view west).

Plate 4.2–2. Project area overview (view east).

historic house foundation (temporary field designation CFC-1) and the old Crown Jewel packinghouse (temporary field designation CFC-2), which has been partially converted into the Packinghouse Christian Academy. A small amount of associated artifacts were identified with CFC-1, and included historic domestic refuse such as glass bottles, metal cans, and ceramic. Record search data also identified a portion of Site CA-SBR-9991H (historical landscape) within the well field location. All three of the sites are within the boundary of the proposed well field; however, until the location(s) of the well(s) and associated infrastructure to support the well(s) and water delivery system is designed, the potential impacts to the sites cannot be assessed. No prehistoric cultural resources (features, soils, or artifacts) were identified within the boundary of the current project. The drainages, animal burrow backdirt, and areas of native vegetation were all closely inspected for evidence of prehistoric activity; none was observed.

4.2.1 CFC-1

CFC-1 is a concrete house foundation with associated agricultural irrigation features (Table 4.2–1; Figure 4.2–1; Plates 4.2–3 and 4.2–4). The foundation is located on the southwest corner of the intersection of Nevada Street and San Bernardino Avenue. The foundation measures approximately 100 feet by 35 feet and is situated in the southwest corner of the proposed boundary of the well field location. A sparse scatter of historical domestic refuse, including glass bottles/fragments, metal cans/fragments, and ceramic fragments, were identified around the foundation and in the associated orange groves, which have been removed. However, the relationship between the artifacts and the structure is unclear, as it appears the land has been used for dumping intermittently over the years. At the present time, no formal evaluations have been conducted for this site. Therefore, the depth and the significance of the deposit are not known. The foundation may be historic (meeting the 50-year threshold for historic sites); however, no research has been conducted to document the history of the structure.

Table 4.2–1
Cultural Resources Identified within the Central Feeder Connection Project Study Area

Site/Isolate #	Resource Description	Report Section #
CFC-1	Historic house foundation with associated agricultural features	Section 4.2.1
CFC-2	Historic structure, the Crown Jewel citrus packing plant	Section 4.2.2
CA-SBR-9991H	Historic landscape, Mexican Fan Palm historic alignments	Section 4.2.3

<u>Figure 4.2–1</u>

Cultural Resource Location Map
(Confidential Map; bound separately)

Plate 4.2–3. CFC-1 foundation (view northwest).

Plate 4.2–4. CFC-1 steps (view north).

4.2.2 CFC-2

CFC-2 is the old Crown Jewel packinghouse that has been partially converted into the Packinghouse Christian Academy (Plates 4.2–5 and 4.2–6). The structure is located on the southwest corner of the intersection of Alabama Street and San Bernardino Avenue. The building measures approximately 180 feet by 80 feet and is situated in the southeast corner of the proposed boundary of the well field location. At present, the exterior appears to maintain much of its original composition. The packinghouse appears to have been constructed sometime in the early 1900s. Although it is clear some modifications have been made on the west end of the structure, they appear to be historic additions. No formal evaluations have been conducted for this site; therefore, the significance of the site has not been determined.

4.2.3 CA-SBR-9991H

CA-SBR-9991H is composed of rows of tall Mexican Fan Palms that line portions of Nevada Street and San Bernardino Avenue within the project area (Plates 4.2–7 and 4.2–8). These trees are considered part of the locally culturally significant rural historical landscape. The palm alignments are discussed in the San Bernardino County General Plan (revised 1991). The plan states that the “trees are of historical and scenic value to the Community and should be preserved” (1991:III-B2-28). If preservation is not possible, then the trees should be moved and planted in a suitable location. For the Central Feeder Connection Project, this would only apply to portions of the alignment that occur within the project area (primarily along Nevada Street and portions of San Bernardino Boulevard).

Plate 4.2–5. CFC-2 west end of structure south side (view north).

Plate 4.2–6. CFC-2 north side of structure (view south).

Plate 4.2–7. CA-SBR-9991H palm alignment, Nevada Street (view south).

Plate 4.2–8. CA-SBR-9991H palm alignment, San Bernardino Avenue (view northeast).

5.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

5.1 Resource Importance

The survey of the 1.2-mile Central Feeder Connection Project identified two unrecorded cultural resources (CFC-1 and CFC-2). In addition, previously recorded Site CA-SBR-9991H (historical landscape) was identified by the records search and subsequently updated by BFSA. As stated in the San Bernardino County General Plan, the "trees are of historical and scenic value to the Community and should be preserved" (1991:III-B2-28). The potentially historic sites (CFC-1 and CFC-2) are located within the boundary of the proposed well field location (see Figure 4.2–1); however, until the location(s) of the well(s) and associated infrastructure to support the well(s) and water delivery system is designed, the potential impacts to the sites cannot be assessed. The sites have not been evaluated to determine site significance. As no significance evaluation of the resources has been undertaken to date, the resources are assumed significant under CEQA criteria and Section 106 of the NHPA.

5.2 Impact Identification

The proposed project would connect new or existing groundwater production wells to be located within the San Bernardino Basin Area (exact locations not determined) into the San Bernardino Valley Municipal Water District's Central Feeder Pipeline; thereby providing an additional means for transporting San Bernardino Groundwater Basin water through regional pipeline facilities that are connected to the Riverside-Corona Feeder Project. The Central Feeder Connection consists of approximately 6,350 linear feet of up to 54-inch diameter pipeline located in the San Bernardino Avenue right-of-way between Alabama Street in unincorporated San Bernardino County and Webster Street in the City of Redlands. It appears that at a minimum, Sites CFC-1 and CFC-2 may be affected by indirect/direct impacts associated with construction of the well field. The nature of construction and use-related impacts have not been defined at this time, and the potential of impacting any of the resources has not been determined until the project is defined in greater detail. If the project plan has the flexibility to place construction activities away from the potential historic sites, any impacts to the sites would be avoided. Significance evaluations for CFC-1 and CFC-2 must be completed as part of the CEQA review process; however, if the project will not intrude into the potentially significant historic sites, evaluations may not be necessary. If these sites will be either directly or indirectly affected, BFSA recommends testing to determine site significance. Under the County of San Bernardino General Plan, CA-SBR-9991H is considered significant, and any impact would require mitigation measures.

<u>Table 5.1–1</u>
Summary of Significance for Cultural Resources

Resource	Tested (Y/N)	Evaluation	Mitigation Required
CFC-1	N	Potentially Significant	Unknown
CFC-2	N	Potentially Significant	Unknown
CA-SBR-9991H	N/A	Significant	Yes

6.0 MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS

6.1 Unavoidable Impacts

In accordance with CEQA and Section 106, BFSA has completed the survey and inventory of cultural resources within the proposed Central Feeder Connection Project. The proposed Central Feeder Connection Project will directly impact the majority of the linear project area in order to excavate the 6,350-foot proposed pipeline and associated well field. The extent of impacts associated with the project, especially the well field, is not available at this time. Before resources CFC-1 and CFC-2 are evaluated for significance, the limits of disturbance must be identified. If impacts to CFC-1 and CFC-2 are likely, then the historic sites will be subjected to a significance evaluation program and an impact assessment. If the project will not affect the potentially historic sites of CFC-1 and CFC-2, no further study of those locations would be necessary. The County of San Bernardino General Plan has identified Site CA-SBR-9991H as a locally significant resource, and mitigation measures will be required if the trees are to be removed or may be damaged. The goal of the mitigation is to reduce the significance of impacts (direct and indirect) to a level below significant.

6.2 Mitigation of Impacts

A mitigation program will be prepared when the limits of impacts are defined. In addition to potential impacts to the noted historic sites, there is a potential for buried cultural material within the APE. BFSA recommends mitigation monitoring during grading/trenching to address the potential for unknown archaeological discoveries, in addition to those outlined for CFC-1, CFC-2, and CA-SBR-9991H.

6.2.1 Mitigation Measures Related to Archaeological Resources

Measure AR-1:

Prior to the start of construction activity, a qualified archaeologist shall be retained by the implementing agency/agencies to perform subsurface test-level investigations and surface collections for all archaeological sites that have not had formal determinations of eligibility for listing on the NRHP (CFC-1 and CFC-2). The test-level report evaluating the site shall include discussion of significance (scientific data potential), integrity (location, physical characteristics, and condition) and mitigation recommendations. Final mitigation shall be carried out based on the report recommendations and by input by from the implementing agency and the SHPO. Possible recommendations made by a qualified archaeologist include, but are not limited to, preservation, data recovery, or no mitigation necessary. Mitigation measures to minimize potential impacts to CFC-1, CFC-2, and CA-SBR-9991H will be added when impact assessments and any evaluation program are completed.

Measure AR-2:

Prior to the start of construction activity, the implementing agency/agencies shall retain a qualified archaeologist to implement the cultural resource mitigation plan. The archaeologist shall establish procedures (monitoring plan) for archaeological resource surveillance, and procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the cultural resources as appropriate. The archaeologist shall also be present at the pregrading conference to explain the established procedures based on a preapproved monitoring plan. If any prehistoric resources or any historic resources over 50 years old are encountered during construction, work in the immediate area of the find must be halted and the discovery assessed. The qualified archaeologist will recommend appropriate mitigation measures pursuant to CEQA and Section 106 guidelines.

Measure AR-3:

If human remains are encountered during construction of the Central Feeder Connection, proposed facilities, or the excavation of the 6,350 foot pipeline, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

6.3 Significant Adverse Effects

The current study resulted in the identification of two potentially historic archaeological resources (CFC-1 and CFC-2) and one significant historic archaeological resource (CA-SBR-9991H) within the proposed development area, as documented within this report and recorded with SBAIC. In the absence of significance evaluations for CFC-1 and CFC-2, the significance of adverse effects cannot be determined.

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8.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

The archaeological survey was conducted by Project Archaeologist Tracy A. Stropes and Field Technician Charles Callahan under the direction of Brian F. Smith, Principal Investigator. The records search review and drafting of this report was conducted by Project Archaeologist Tracy A. Stopes, under the direction of Brian F. Smith. Adrián Sánchez Moreno produced the graphics, and Nora Thornbury and Karen E. Doose conducted the technical editing.

Information was provided by the SBAIC regarding previously recorded cultural resources. The NAHC provided the results of the Sacred Lands File search for the project area, as well as a list of representatives to facilitate the involvement of local tribal groups in the review process for this project.

APPENDIX I

Resumes of Key Personnel

BRIAN FREDERICK SMITH

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Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates (BFSA). The company has been in business since 1977.

EDUCATION

Master of Arts degree from the University of San Diego in History, 1982.

Bachelor of Arts degree from the University of San Diego in History and Anthropology, 1975.

Completed the U. S. General Services Administration Training Center Course entitled "Introduction to Federal Project and Historic Preservation Law."

SUMMARY OF EXPERIENCE

As an archaeological consultant and principal investigator registered with various governmental agencies within the State of California since 1977, Brian F. Smith has successfully completed over five hundred archaeological and historical studies at properties within this region, accumulating over 35,000 hours of experience in dealing with sensitive cultural resources and governmental policies. Past projects conducted by Mr. Smith have included survey, test, and salvage programs conducted at sites of historic and/or prehistoric significance. Experience in southern California has included the investigation of prehistoric sites of all major cultural complexes which have existed in the region over the past 12,000 years, and historic sites of the Spanish, Mexican and early American periods. Mr. Smith has completed historic and historical architectural evaluations of structures for Federal and State review. Smith's expertise includes the composition of cultural resource documents for California (CEQA) and federal (NEPA and NHPA) projects, and the design and implementation of mitigation programs.

MAJOR PROFESSIONAL ACCOMPLISHMENTS

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area. The following are samples of the research efforts which are considered to have made an impact in the study of historic and prehistoric resources in the area.

Charles H. Brown Site — Site Director

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 — Site Foreman

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).
- Cultural Resources Site Survey at the Old San Diego Inn (1988).

City of San Diego Reclaimed Water Distribution System — Principal Investigator

A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Navy Broadway Complex — Consulting Historian and Archaeologist

The Navy Broadway Complex is a massive redevelopment project at the Naval Supply Depot located at the foot of Broadway in Downtown San Diego. This project involved the architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

Master Environmental Assessment Project, City of Poway — Principal Investigator/Historian

This project was 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.

City of Carlsbad Archaeological and Historical Guidelines — Consulting Archaeologist and Historian

BFSA was 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.

<u>4S Ranch Cultural Resource Study</u> — Consulting Archaeologist

The 4S Ranch property is a 3,600-acre parcel in northern San Diego County which is being developed as a master plan community. Brian Smith has served as the consulting archaeologist for nine studies of cultural resources on the project, including intensive surveys, recording of 170 archaeological sites, testing of resources for significance evaluations, preparation of mitigation plans, and conducting data recovery programs. The report of findings for the 4S Ranch mitigation program will include significant advances in the understanding of prehistoric subsistence patterns and periods of occupation in the region.

TRACY A. STROPES M.A., RPA (16283)

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EDUCATION

Master of Anthropology, San Diego State University, CA, 2007
Bachelor of Science, Anthropology, University of California at Riverside, 2000

SUMMARY OF EXPERIENCE

Project Archaeologist for Brian F. Smith & Associates, Archaeological, Paleontological, and Historical Consulting — duties include project management of all phases of archaeological investigations for local, state and federal agencies; field supervisor of all phases of archaeological projects; lithic analysis; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California — March 2009 - Present.

Principal Investigator for TRC Solutions, Irvine, CA. Archaeological Principal Investigator for cultural resource segment of Natural Sciences and Permitting Division. Duties included management of all phases of archaeological investigations for private companies and local, state and federal agencies; personnel management, field supervision of all phases of archaeological projects; laboratory supervision; lithic analysis, Native American consultation, and reporting; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California. —June 2008 – February 2009.

Principal Investigator for Archaeological Resource Analysts, Oceanside, CA. As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc. Primary tasks included filed direction, project management, personnel management, lab analysis, and authorship of company reports throughout southern California. —June 2006 – May 2008

Project Archaeologist for Gallegos & Associates, Carlsbad, CA. Duties for Gallegos and Associates included project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship, and editing for several technical reports for various projects throughout southern California. In addition, composed several data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance. —September 1996 – June 2006.

Project Archaeologist for Macko Inc, Santa Ana Heights, CA. Duties for Macko Inc. included project management, laboratory management, lithic analysis, field supervision, report authorship, and editing for technical reports for various projects throughout southern California. —September 1993 – September 1996.

Archaeological Field Technician for Chambers Group Inc, Irvine, CA. Duties for Chambers Group Inc. included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —January 1993 – September 1993.

Archaeological Field Technician for John Minch and Associates, San Jaun Capistrano, CA. Duties for John Minch and Associates included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —May 1992 – September 1992.

Report/Papers

Principal Author

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 I-80 Gold Run Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

1994 Final Report: Data Recovery Excavations at Five Late Prehistoric Archaeological Sites Along the Los Trancos Access Road, Newport Coast Planned Community, Orange County, California. Prepared for the Coastal Community Builders, a division of The Irvine Company.

Contributing Author

2008 Lithic Analysis for Thirteen Sites Along the Transwestern Phoenix Expansion Project, Loops A and B. Prepared for Transwestern Pipeline Company, LLC.

2005 Cultural Resource Survey and Testing for the Star Ranch Property, San Diego, California.

2004 Cultural Resource Test Report for the Palomar Point Project: Site CA-SDI-1 6205, Carlsbad, California. Prepared for Lanikai Management Corp.

2004 Cultural Resource Survey and Test Report for the Canyon View Project, Carlsbad, California. Prepared for Shapouri & Associates.

2004 Cultural Resource Test Report for the Yamamoto Property: Site SDM-W-2046, Carlsbad, California. Prepared for Cunningham Consultants, Inc.

2004 Historical Resources Report for the Kuta and Mascari Properties, Otay Mesa, California. Prepared for Centex Homes.

2004 Cultural Resource Monitor and Test Report for the Encina Power Plant Project, Carlsbad, California. Prepared for Haley & Aldrich, Inc.

2004 Cultural Resource Test Report for Site CA-SDI-16788, Otay Mesa, California. Prepared for Otay Mesa Property, L.P.

2004 Cultural Resource Survey and Test Report for the Lonestar Project, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2003 Cultural Resource Mitigation Program for the Torrey Ranch Site CA-SDI-5325, San Diego, California. Prepared for Garden Communities.

2003 Cultural Resource Survey and Test Report for the Johnson Canyon Parcel, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2002 Cultural Resource Data Recovery Plan for the Shaw Project: Sites CA-SDI-13025 and CA-SDI-13067, San Diego County, California. Prepared for Shapouri & Associates.

2001 Archaeological Test Program for CA-SDI-14112 Mesa Norte Project, San Diego, California. Prepared for Hunsaker & Associates.

2001 The Vista-Oceanside Cultural Resource Survey and Test Program, Vista, California. Prepared for Shapouri & Associates.

2001 Cultural Resource Test Program for the Wilson Property, Carlsbad, California. Prepared for the City of Carlsbad.

2001 Cultural Resource Test Plan for the Oceanside-Escondido Project, County of San Diego, California. Prepared for Dudek & Associates.

2001 Cultural Resource Test Program for the Kramer Junction Expansion Project Adelanto, California. Prepared for AMEC.

2001 Cultural Resource Test Program for CA-SDI-12508 San Diego, California (LDR. No. 99-1331). Prepared for Garden Communities.

2000 Archaeological Testing of Prehistoric Sites CASDI-14115 and CA-SDI-14116 for The Mesa Grande Project, San Diego, California. Prepared for Solana Mesa Partners, LLC.

2000 Cultural Resource Survey and Test Report for the Wetmore Property, Otay Mesa, San Diego County, California. Prepared for Mr. Andy Campbell.

2000 The Torrey Ranch Cultural Resource Test Program, San Diego County, California. Prepared for Garden Communities.

2000 Cultural Resource Test Results for the Otay Mesa Generating Project. Prepared for the California Energy Commission and Otay Mesa Generating Company, LCC.

2000 The Eternal Hills Cultural Resource Survey and Test Program, City of Oceanside, California. Prepared for Eternal Hills Memorial Park.

2000 The Quail Ridge Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning Inc.

2000 Cultural Resource Testing Program for CA-SDI-5652/H and CA-SDI-9474H SR 78/Rancho Del Oro Interchange Project, Oceanside, California. Prepared for Tetratech Inc.

2000 Cultural Resource Test Results for a Portion of CA-SDI-8654 (Kuebler Ranch) Otay Mesa, San Diego County, California. Prepared for Shapouri & Associates.

2000 Historical/Archaeological Monitoring and Data Recovery Program for Prehistoric Site CA-SDI-48, Locus C Naval Base Point Loma, San Diego, California. Prepared for Department of the Navy, Southwest Division.

2000 Cultural Resource Evaluation Report for the Palomar College Science Building Project San Marcos, California. Prepared for Parsons Engineering Science Inc.

1999 Cultural Resource Monitoring Report for the Village of Ystagua Water Main Break City of San Diego, California. Prepared for the City of San Diego Water Department.

1999 The Effect of Projectile Point Size on Atlatl Dart Efficiency in Lithic Technology Vol 24, No 1 p (27-37).

1999 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project, San Marcos, California. Prepared for City of San Marcos.

1999 5000 Years of Occupation: Cultural Resource Inventory and Assessment Program for the Carlsbad Municipal Golf Course Project City of Carlsbad, California. Prepared or Cotton/Beland/Associates, Inc.

1999 Silver Oaks Estates Cultural Resource Enhanced Survey and Test Report for a Portion of CA-SDI-7202 San Diego, California. Prepared for Helix Environmental Planning Inc.

1999 Historical Archaeological Test of a portion of CA-SDI-8303 for the Faraday Road Extension Carlsbad, California. Prepared for the City of Carlsbad.

1999 Cultural Resource Literature Review for the North Coast Transportation Study Arterial Streets Alternative San Diego County, California. Prepared for MLF/San Diego Association of Govt.

1998 Archaeological Test Report for a Portion of CA-SDI-9115/SDM-W-122 Carlsbad, California. Prepared for Industrial Developments International.

1998 Rainforest Ranch Cultural Resource Survey and Significance Test for Prehistoric Sites CA-SDI-14932, CA-SDI-14937, CA-SDI-14938, and CA-SDI-14946 County of San Diego, California. Prepared for Boys and Girls Club of Inland North County.

1998 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California.

1998 Final Report: Cultural Resource Survey Report for the Sterling Property, Carlsbad, California. Prepared for SPT Holdings LCC.

1996 Final Report: Archaeological Survey and Test for the Huber Property Carlsbad, California. Prepared for Gene Huber.

1996 Final Report: Results of Phase II Test Excavations and Phase III Data Recovery Excavations at Nine Archaeological Sites Within the Newport Coast Planned Community Phase III Entitlement Area, San Joaquin Hills, Orange County, California. Prepared for Coastal Community Builders, a division of The Irvine Company.

1995 Preliminary Report: Phase II Test Results From Nine Prehistoric Archaeological Sites Within The Proposed Upper Newport Bay Regional County Park. Prepared for EDAW, Inc.

1995	Final Report: A Phase II Test Excavation at CA-ORA-136, Block 800 City of Newport Beach, Orange County California. Prepared for the Irvine Apartment Communities, a division of The Irvine Company.

Relevant Presentations

2003	Steep Edge Unifacial Tools of Otay Mesa: An Analysis of Edge Types from CA SDI-7215 SCA Southern California Data Sharing Meetings
2001	Identification of Late Period Behavior Patterns in Elfin Forest: Three Sites in Northern San Diego County. 2001 Society for California Archaeology Data Sharing Meetings, San Luis Obispo, California.
01/04	Guest Lecturer and Flintknapping Demonstration Mission San Luis Rey Band of Mission Indians Annual Inter-tribal Pow-Wow. Mark Mojado, Tribal Contact.
1996	Trans-Tehachapian Lithic Trade at the Canebreak/Sawtooth Transition. Thirteenth Annual Meeting, Society of California Archaeology, Bakersfield, California.
1994	Point Size and Atlatl Dart Efficiency. Twenty Fourth Annual Meeting, Great Basin Anthropological Conference, Elko, Nevada.
94/96	Guest Lecturer and Flint Knapping Instruction - Archaeological Field Class Fall Semester ,Cypress College, Cypress, California. Paul Langenwalter/Henry C. Koerper, Directors.
94/95	Annual Guest Lecturer - "Living History Days" at the Mission, Mission San Juan Capistrano, San Juan Capistrano, California.
1994	Guest Lecturer - El Monte High School, El Monte, California.

APPENDIX II

Archaeological Records Search Results (SBAIC)

Confidential; Bound Separately

APPENDIX III

**Native American Heritage Commission
Sacred Lands File Search Results;
Native American Correspondence**

Confidential; Bound Separately

A CULTURAL RESOURCE REPORT FOR THE CLAY STREET CONNECTION ELEMENT OF THE WESTERN MUNICIPAL WATER DISTRICT'S RIVERSIDE-CORONA FEEDER PROJECT

RIVERSIDE, CALIFORNIA

Prepared for:

Albert A. Webb and Associates
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Prepared by:

Tracy A. Stropes, Project Archaeologist
and Brian F. Smith, Principal Investigator

Signature: ____________________
Brian F. Smith and Associates, Inc.
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September 24, 2009; Revised April 5, 2010

National Archaeological Data Base Information

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Client/Project Proponent:	Albert A. Webb and Associates 3788 McCray Street Riverside, California 92506
Report Date:	September 24, 2009; Revised April 5, 2010
Report Title:	A Cultural Resource Report for the Clay Street Connection Element of the Western Municipal Water District's Riverside-Corona Feeder Project; Riverside, California.
Type of Study:	Phase I Archaeological Survey
New Sites:	None
Updated Sites:	None
USGS Quadrangle:	*Riverside West* (7.5 minute), California
Length:	7,800 feet
Key Words:	Intensive pedestrian survey; negative survey; USGS *Riverside West* quadrangle (7.5 minute); Riverside County, pipeline

Table of Contents

Page

Appendices

Appendix I — Resumes of Key Personnel
Appendix II – Archaeological Records Search Results (EIC)*
Appendix III – Native American Heritage Commission Sacred Lands File Search Results; Native American Correspondence*

**Bound separately in confidential appendix.*

List of Figures

List of Plates

List of Tables

List of Abbreviations

ACHP	Advisory Council on Historic Preservation
AMSL	Above Mean Sea Level
APE	Area of Potential Effects
BFSA	Brian F. Smith and Associates
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
EIC	Eastern Information Center
JCSD	Jurupa Community Services District
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
UCR	University of California, Riverside
USGS	United States Geological Survey
RCF	Riverside-Corona Feeder
SHPO	State Historic Preservation Officer
WMWD	Western Municipal Water District
YBP	Years Before Present

1.0 MANAGEMENT SUMMARY/ABSTRACT

In response to a request by Albert A. Webb and Associates, Brian F. Smith and Associates (BFSA) conducted an archaeological survey and records search for the Clay Street Connection Element of the Riverside-Corona Feeder Project. The project consists of an approximately 1.5-mile linear project area extending west within Limonite Avenue from its intersection with Clay Street and then north in Pedley Road to 56th Street in Riverside, California. Specifically, this project is located within Sections 23 and 24 of the USGS 7.5-minute *Riverside West*, California topographic map, Township 2 South, Range 6 West. The project consists of 7,800 linear feet of pipeline, up to 48-inch diameter, within unincorporated Riverside County; extending west within Limonite Avenue from its intersection with Clay Street and then north in Pedley Road to 56th Street. This connection will allow the Riverside-Corona Feeder (RCF) to connect to an existing Jurupa Community Services District (JCSD) waterline in 56th Street. Through this connection, the RCF will be able to connect to JCSD's system, to tie into the Chino Desalter Phase 3 expansion and to facilitate the connection of Western Municipal Water District (WMWD) facilities to those that are a part of the Chino Basin Dry-Year Yield Program. The Clay Street Connection includes the construction of a booster station with pumps, meters, flow control, and disinfection facilities at one of four possible locations along the pipeline to allow water to flow in either direction.

The purpose of this investigation was to locate and record any cultural resources present within the project area as part of the environmental review process. The investigation was conducted in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800, as well as the guidelines of the California Environmental Quality Act (CEQA), and the California Register of Historical Resources (CRHR). The archaeological investigation of the subject property included an archaeological records search performed at the Eastern Information Center (EIC) at the University of California, Riverside (UCR) in order to assess previous archaeological studies and identify any previously recorded sites within the project boundary or in the immediate vicinity. No previously recorded sites were identified within the project area as a result of the records search.

The archaeological survey of the approximately 1.5-mile linear project area was conducted during the week of August 31, 2009. No sites were identifed during the archaeological survey. As no cultural resources were identified on the property and the records search did not indicate any sites present within or in the vicinity of the property, only limited mitigation measures will be required and monitoring of grading will not be recommended.

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

2.0 INTRODUCTION

2.1 Project Description

The archaeological survey program for the Clay Street Connection Project was conducted in order to comply with the guidelines of the CEQA, and the California Register of Historic Resources (CRHR) as well as Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800. The project is an approximately 1.5-mile linear pipeline in Riverside County, California (Figure 2.1–1). The project boundary is depicted on the appropriate portions of the USGS *Riverside West* 7.5-minute topographic quadrangle in Figure 2.1–2.

The project will consist of the installation of approximately 7,800 linear feet of pipeline, up to 48-inch diameter, within unincorporated Riverside County, extending west within Limonite Avenue from its intersection with Clay Street and then north in Pedley Road to 56th Street. This connection will allow the RCF to connect to an existing JCSD waterline in 56th Street. The Clay Street Connection includes the construction of a booster station with pumps, meters, flow control, and disinfection facilities at one of four possible locations along the pipeline to allow water to flow in either direction.

An archaeological records search for the project was conducted by BFSA at the EIC (Appendix II). No previously recorded sites are located within the project boundary. Twelve archaeological/historic resources have been recorded within one mile of the project. There have been a total of four previous cultural resource studies that border various portions of the proposed project area. The results of the record search are discussed in Section 2.4 of this report.

The archaeological survey conducted by BFSA took place during the week of August 31, 2009. The area surveyed consisted of existing roadway bordered by a series of graded gentle slopes, housing developments, industrial developments, intermittent open spaces with invasive grasses, and general urban developments. The archaeological survey did not identify any new archaeological/historic resources. Results of the survey are discussed in Section 4.0.

2.1.1 Area of Potential Effects (APE)

The project will consist of approximately 7,800 linear feet of pipeline located within public road right-of-way and within pipeline easements, and an associated booster station, in unincorporated Riverside County. The APE "means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16[d]). The APE is depicted in Figure 2.1–2. In total, the APE includes the area within the right-of-way of public roads (Limonite Avenue from its intersection with Clay Street and then north in Pedley Road to 56th Street). The majority of the disturbance within the APE will include primarily subsurface trenching and tunneling for the placement of all pipeline

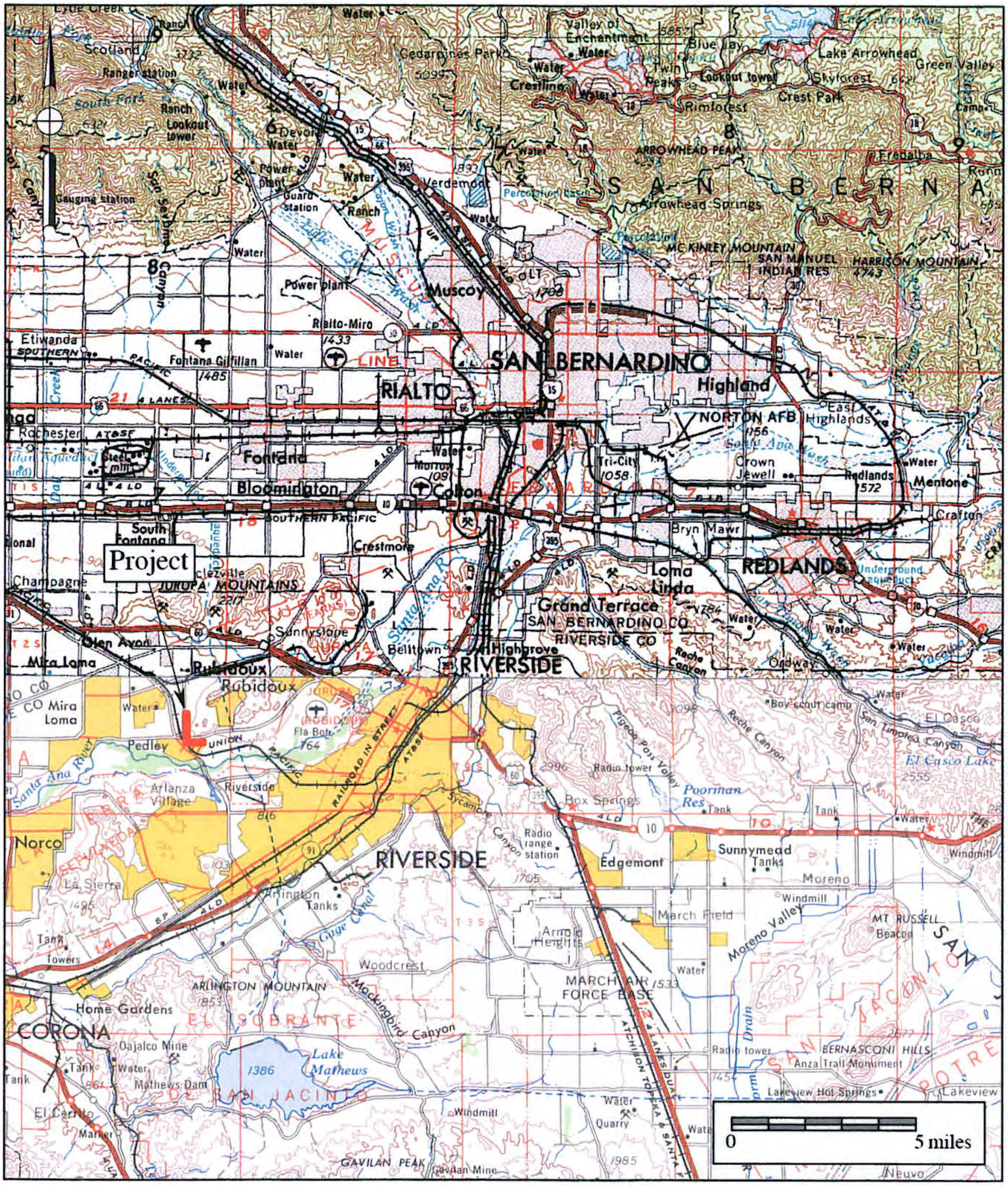

Figure 2.1–1

General Location Map

The Clay Street Connection Element of the Riverside-Corona Feeder Project

USGS *Santa Ana and San Bernardino* (1:250,000 series)

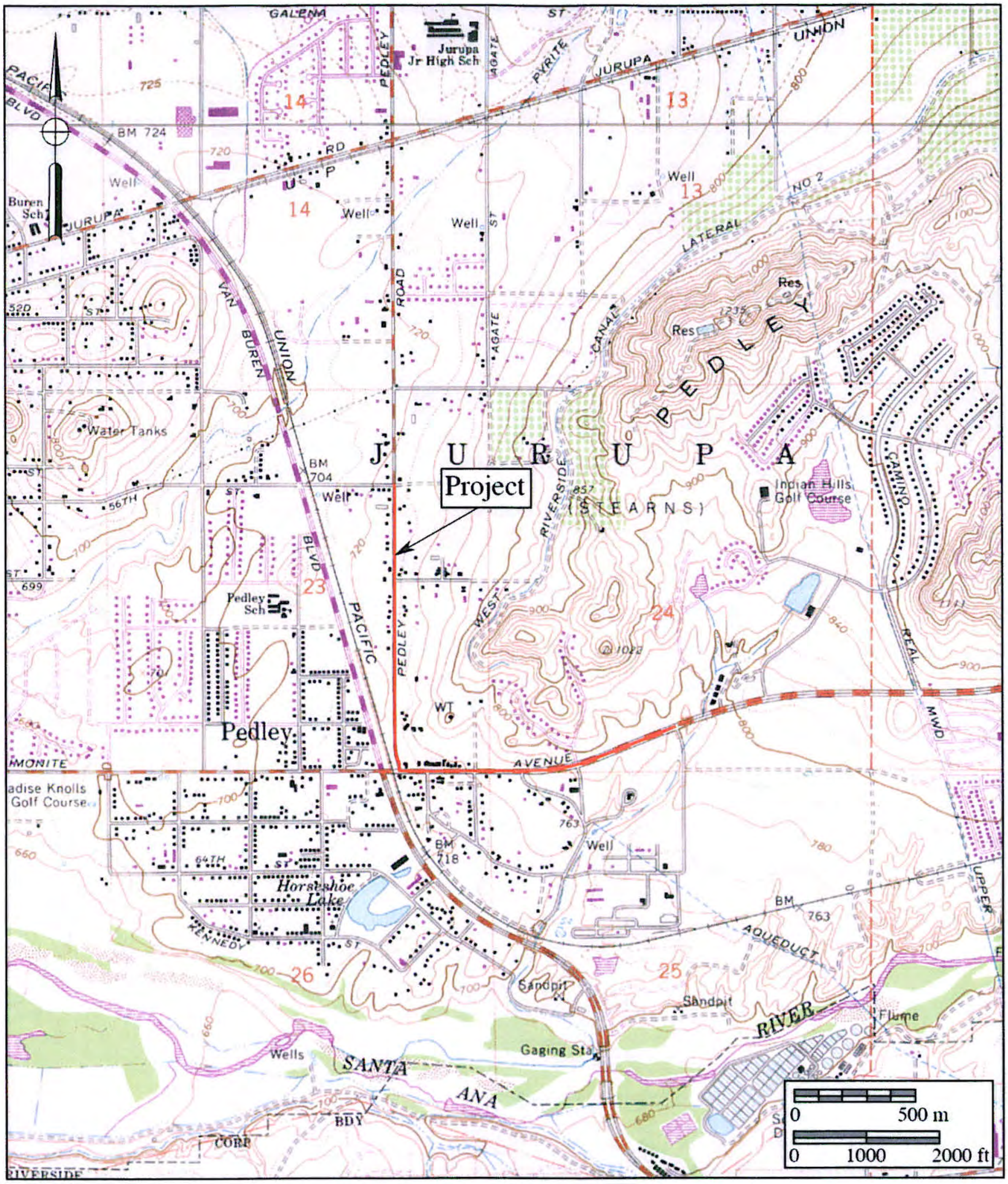

Figure 2.1–2

Project Location Map

The Clay Street Connection Element of the Riverside-Corona Feeder Project

USGS *Riverside West* and *Fontana* Quadrangles (7.5 minute series) elements. For the current project, the APE does not include surface areas where the pipeline would tunnel beneath other linear resources that cross the alignment, such as railroads, canals, and freeways. In addition, the APE does not include architectural or other historical resources adjacent to the pipeline corridor as the placement of the pipeline is underground and the associated tank will be buried, eliminating any indirect impacts to the view shed/setting.

2.2 Existing Conditions

The project setting includes the natural physical, geological, and biological context of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the region. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

2.2.1 Environmental Setting

Riverside County lies in the Peninsular Range Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California. The Clay Street Connection Project is located upon gentle slopes that lie east of Van Buren Boulevard and north of Limonite Avenue. The project area is relativly flat, with the lowest point located at the northern end and highest point located at the southern end. Elevations within the project area range from approximately 727 to 786 feet above mean sea level (AMSL). The entire project area has been disturbed by construction and development. Currently, vegetation within the project area is characterized as primarily sporadic introduced grasses. Prehistoric vegetation most likely consisted of inland sage scrub.

2.3 Cultural Setting

PaleoIndian, Archaic Period, Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of Riverside County was represented by the Cahuilla, Gabrielino, and Luiseño Native Americans.

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

2.3.1 Prehistory

<u>PaleoIndian Period *(Late Pleistocene: 11,500 to circa 9,000 YBP)*</u>

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

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

<u>Archaic Period *(Early and Middle Holocene: circa 9,000 to 1,300 YBP)*</u>

The Archaic Period of prehistory begins with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene is marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending on the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons is significant in that it had profound effects on the types of resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten*, but habitat was gained for other small mollusks, particularly *Donax*

(Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, loss of drinking water, and loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, or horizons including San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period.

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

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, but effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between 400 and 600 AD, and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

Protohistoric Period *(Late Holocene: 1790 to present)*

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

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains, the Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla were a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differed from the Luiseño and Gabrielino in that their religion was more similar to the Mohave tribes of the eastern deserts than the *Chingichngish* cult of the Luiseño and Gabrielino.

The territory of the Gabrielino, at the time of Spanish contact in the sixteenth century, was located in much of current-day Los Angeles and Orange Counties. The southern extent of this group was bounded by Aliso Creek, the eastern extent was located east of current day San Bernardino along the Santa Ana River, the northern extent included the San Fernando Valley, and the western extent of their range included portions of the Santa Monica Mountains. The

Gabrielino also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1925).

The Luiseño were a seasonal hunting and gathering people, with cultural elements that were very distinct from the Archaic Period peoples, including cremation, the use of the bow and arrow, and use of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of the marine resources available by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. The elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts and steatite from the Channel Islands. The Clay Street Connection Project area is clearly within known Luiseño ancestral land (Appendix III).

2.3.2 History

The historic background of the project area began with the Spanish colonialization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego) missions began colonizing southern California and gradually expanded their use of the interior valley (in what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside Co. CA 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles and described fertile valleys, lakes and sub-desert areas (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become Riverside County (American Local History Network: Riverside Co. CA 1998), many mission outposts, or *asistencias* were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts that were located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822, and secularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998; Riverside County n.d.). By this time, the missions owned some of the best and fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The "grants" were called "ranchos," of which Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo were located in present day Riverside County; many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside Co. CA 1998). The first grant in what is now Riverside County, Rancho Jurupa, was given to Juan Bandini in 1838. These ranchos were all located in the valley environments typical of western Riverside County.

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

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

Native American culture had been disrupted to the point where they could no longer rely on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on the missionaries, but also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based on utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850 California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies.

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

With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in Southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from Tennessee, brought a group of associates and co-investors out to Southern California, and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region. (American Local History Network: Riverside Co. CA 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor ten miles to the north, due to differences in opinion concerning religion, morality, the Civil War, politics, and fierce competition to attract settlers. After a series of instances in which charges were claimed about unfair use of tax monies to the benefit of the City of San Bernardino only, several people from Riverside decided to investigate the possibility of a new county. In May 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.).

2.4 Records Search Results

Archaeological records searches were completed by BFSA at the EIC. The records search results showed that 22 previous cultural reports have been filed for projects conducted within one mile of the property, four of which bordered portions of the current project area. The searches showed no recorded sites within the property boundary and 12 reported within a one-mile radius of the APE, as listed in Table 2.4–1. The complete records search results from the EIC are provided in Appendix II.

Table 2.4–1
Previously Recorded Sites within One Mile

Site Number	Site Type	Site Dimensions	Report Reference/ Recorded By
P-33-7733	Historic Structure	N/A	Saunders
P-33-13887	Historic Structure	N/A	R. Goodwin
P-33-16681	Historic Structure	N/A	M. Dice
CA-RIV-494	Habitation Site	250 x 133m	M. Hall
CA-RIV-619	Artifact Scatter	100m x 75m	M. Hall
CA-RIV-620	Milling Station	15m x 30m	G. Romani et al.
CA-RIV-700	Milling Station	10m x 10m	Shepard
CA-RIV-3360	Historic/Prehistoric Scatter	40m x 20m	J. Sorenson et al.
CA-RIV-3833	Historic Foundation	N/A	J. Alexandrowicz
CA-RIV-4161	Historic Irrigation	600 ft	P. Shattuck
CA-RIV-5053	Historic Foundation	N/A	R. Olson
CA-RIV-5968	Milling Station	9m x 6m	B. Smith

2.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in CEQA and Section 106 of the NHPA provide the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

2.5.1 California Environmental Quality Act (CEQA)

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

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an

historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:
    a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    b) Is associated with the lives of persons important in our past;
    c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
    d) Has yielded, or may be likely to yield, information important in prehistory or history.

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

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

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

a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,

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

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

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to

address impacts on other resources, but they need not be considered further in the CEQA process.

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

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

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

2.5.2 National Historic Preservation Act (NHPA)

The regulations implementing Section 106 (36 CFR 800 or Agency counterpart regulations) of the National Historic Preservation Act of 1966 (NHPA), as amended, require federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 United States Code [USC] 470w [5]). Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the ACHP and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

As the project will fall under review by the United States Bureau of Reclamation, the NHPA of 1966 (as amended) and its implementing regulations (16 USC 470 et seq., 36 CFR 800, 36 CFR 60, and 36 CFR 63) apply to the project, requiring the Bureau to consider whether the project would affect historic properties listed on or meeting the criteria for listing on the

NRHP. Federal law states that paleontological resources are not regulated under Section 106 of the NHPA unless those resources are in the context of a cultural resource, in which case they are considered cultural resources. The United States Bureau of Reclamation will be the lead agency for NHPA Section 106 compliance, and consultation with the SHPO and ACHP will be conducted as required.

3.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in determination of resource significance. For the current project, the study area under investigation is the northwest portion of Riverside County. The scope of work for the archaeological program conducted for the Clay Street Connection Project included the survey of an approximately 1.5-mile linear project area. Given the small area involved and the narrow focus of a Phase I survey, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration of a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions:

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

Data Needs:

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

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

4.0 RESULTS OF SITE INVESTIGATIONS

4.1 Methods

4.1.1 Survey Methods

The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Archaeologists with BFSA surveyed the project properties during the week of August 31, 2009, under the direction of Brian F. Smith, Principal Investigator. The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Project Archaeologist Tracy A. Stropes conducted the intensive pedestrian survey with Field Technician Charles Callahan. The field methodology employed for the project included walking evenly spaced survey transects approximately two meters apart and oriented north to south across the property while visually inspecting the ground surface. All potentially sensitive areas where cultural resources might be located were closely inspected. Photographs documenting survey discoveries and overall survey conditions were taken frequently and geo-tagged for future reference.

4.1.2 Curation

All photographs, notes, records, maps, research results, and any other relevant materials pertaining to the Clay Street Connection Project are stored on-site at the office of BFSA.

4.1.3 Native American Participation

A search of the Sacred Lands Files of the NAHC was requested by BFSA, the results of which are provided in Appendix III. The Sacred Lands File search by the NAHC failed to indicate the presence of sacred or ceremonial sites or landforms considered important to local tribes within the project area. A Native American representative was not present during the survey process. No other documented correspondence or analysis from the Native Americans has been received as of the dissemination of this report. Should additional communications be received, they will be forwarded to the reviewing agency.

4.2 Results

The property consists of relatively flat to gently sloped terrain primarily composed of existing roadways. The majority of the project area is paved and lies within Pedley Road and Limonite Avenue (Plates 4.2–1 through 4.2–4). The vegetative landscape was sparse and composed of small patches of introduced grasses. There was no difficulty gaining access to the project area. The project area contained disturbance from occupation, development, and the construction of Pedley Road and Limonite Avenue. The survey identified no cultural resources within the project area. No additional cultural resources (features, soils, or artifacts) were identified within the boundary of the current project. The drainages, animal burrow backdirt, and areas of native vegetation were all closely inspected for evidence of cultural materials; none was observed.

Plate 4.2–1. Project area overview (view west).

Plate 4.2–2. Project area overview (view east).

Plate 4.2–3. Project area overview (view north).

Plate 4.2–4. Project area overview (view south)

5.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

5.1 Resource Importance

Survey of the 1.5-mile Clay Street Connection Project did not identify any new cultural resources. Records search data for the project also failed to identify the presence of archaeological sites in the project area. No impacts to cultural resources are anticipated.

5.2 Impact Identification

The project as proposed by the applicant will consist of the construction of 7,800 linear feet of pipeline, up to 48-inch diameter, within unincorporated Riverside County; extending west within Limonite Avenue from its intersection with Clay Street and then north in Pedley Road to 56th Street. The Clay Street Connection includes the construction of a booster station with pumps, meters, flow control, and disinfection facilities at one of four possible locations along the pipeline to allow water to flow in either direction. Based on the negative results of the archaeological records searches and survey, no impacts to cultural resources are anticipated.

6.0 MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS

6.1 Unavoidable Impacts

In accordance with CEQA and Section 106, BFSA has assessed the potential effects for the proposed Clay Street Connection Project on prehistoric or historic archaeological resources properties. The proposed project will directly impact the majority of the linear project area in order to install the 7,800-foot proposed pipeline and associated booster station. As no cultural resources were identified in the APE during the archaeological records search or pedestrian survey, no impacts are anticipated.

6.2 Mitigation of Impacts

According to the proposed design plan, no direct impacts will occur to any known archaeological sites. Therefore, as no cultural resources were identified on the property and the record searches do not indicate any sites are present in the vicinity of the property, it is recommended that the project be allowed to proceed without additional archaeological studies. However, although there is little potential for buried cultural material in the 7,800 feet of pipeline right-of-way, BFSA recommends the following mitigation measures to address the potential for unknown archaeological discoveries.

6.2.1 Mitigation Measures Related to Archaeological Resources

<u>Measure AR-1:</u>

If any prehistoric resources or any historic resources over 50 years old are encountered during construction, work in the immediate area of the find must be halted and the discovery assessed. The qualified archaeologist will recommend appropriate mitigation measures pursuant to CEQA and Section 106 Guidelines.

<u>Measure AR-2:</u>

If human remains are encountered during construction of the Clay Street Connection Project, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

6.3 No Significant Adverse Effects

No significant adverse affects to cultural resources are anticipated for the Clay Street Connection Project.

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8.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

The archaeological survey was conducted by Project Archaeologist Tracy A. Stropes and Field Technician Charles Callahan under the direction of Brian F. Smith, Principal Investigator. The records search review and drafting of this report was conducted by Project Archaeologist Tracy A. Stopes, under the direction of Brian F. Smith, Principal Investigator. Adrián Sánchez Moreno produced the graphics, and Nora Thornbury and Karen E. Doose conducted the technical editing.

Information was provided by the EIC regarding previously recorded resources. The NAHC provided the results of the Sacred Lands File search for the project area, as well as a list of representatives to facilitate the involvement of local tribal groups in the review process for this project.

APPENDIX I

Resumes of Key Personnel

BRIAN FREDERICK SMITH

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Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates (BFSA). The company has been in business since 1977.

EDUCATION

Master of Arts degree from the University of San Diego in History, 1982.

Bachelor of Arts degree from the University of San Diego in History and Anthropology, 1975.

Completed the U. S. General Services Administration Training Center Course entitled "Introduction to Federal Project and Historic Preservation Law."

SUMMARY OF EXPERIENCE

As an archaeological consultant and principal investigator registered with various governmental agencies within the State of California since 1977, Brian F. Smith has successfully completed over five hundred archaeological and historical studies at properties within this region, accumulating over 35,000 hours of experience in dealing with sensitive cultural resources and governmental policies. Past projects conducted by Mr. Smith have included survey, test, and salvage programs conducted at sites of historic and/or prehistoric significance. Experience in southern California has included the investigation of prehistoric sites of all major cultural complexes which have existed in the region over the past 12,000 years, and historic sites of the Spanish, Mexican and early American periods. Mr. Smith has completed historic and historical architectural evaluations of structures for Federal and State review. Smith's expertise includes the composition of cultural resource documents for California (CEQA) and federal (NEPA and NHPA) projects, and the design and implementation of mitigation programs.

MAJOR PROFESSIONAL ACCOMPLISHMENTS

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area. The following are samples of the research efforts which are considered to have made an impact in the study of historic and prehistoric resources in the area.

Charles H. Brown Site — Site Director

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 — Site Foreman

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).
- Cultural Resources Site Survey at the Old San Diego Inn (1988).

City of San Diego Reclaimed Water Distribution System — Principal Investigator

A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Navy Broadway Complex — Consulting Historian and Archaeologist

The Navy Broadway Complex is a massive redevelopment project at the Naval Supply Depot located at the foot of Broadway in Downtown San Diego. This project involved the architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

Master Environmental Assessment Project, City of Poway — Principal Investigator/Historian

This project was 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.

City of Carlsbad Archaeological and Historical Guidelines — Consulting Archaeologist and Historian

BFSA was 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.

4S Ranch Cultural Resource Study — Consulting Archaeologist

The 4S Ranch property is a 3,600-acre parcel in northern San Diego County which is being developed as a master plan community. Brian Smith has served as the consulting archaeologist for nine studies of cultural resources on the project, including intensive surveys, recording of 170 archaeological sites, testing of resources for significance evaluations, preparation of mitigation plans, and conducting data recovery programs. The report of findings for the 4S Ranch mitigation program will include significant advances in the understanding of prehistoric subsistence patterns and periods of occupation in the region.

TRACY A. STROPES M.A., RPA (16283)

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Poway, California 92064
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EDUCATION

Master of Anthropology, San Diego State University, CA, 2007
Bachelor of Science, Anthropology, University of California at Riverside, 2000

SUMMARY OF EXPERIENCE

Project Archaeologist for Brian F. Smith & Associates, Archaeological, Paleontological, and Historical Consulting — duties include project management of all phases of archaeological investigations for local, state and federal agencies; field supervisor of all phases of archaeological projects; lithic analysis; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California — March 2009 - Present.

Principal Investigator for TRC Solutions, Irvine, CA. Archaeological Principal Investigator for cultural resource segment of Natural Sciences and Permitting Division. Duties included management of all phases of archaeological investigations for private companies and local, state and federal agencies; personnel management, field supervision of all phases of archaeological projects; laboratory supervision; lithic analysis, Native American consultation, and reporting; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California. —June 2008 – February 2009.

Principal Investigator for Archaeological Resource Analysts, Oceanside, CA. As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc. Primary tasks included filed direction, project management, personnel management, lab analysis, and authorship of company reports throughout southern California. —June 2006 – May 2008

Project Archaeologist for Gallegos & Associates, Carlsbad, CA. Duties for Gallegos and Associates included project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship, and editing for several technical reports for various projects throughout southern California. In addition, composed several data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance. —September 1996 – June 2006.

Project Archaeologist for Macko Inc, Santa Ana Heights, CA. Duties for Macko Inc. included project management, laboratory management, lithic analysis, field supervision, report authorship, and editing for technical reports for various projects throughout southern California. —September 1993 – September 1996.

Archaeological Field Technician for Chambers Group Inc, Irvine, CA. Duties for Chambers Group Inc. included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —January 1993 – September 1993.

Archaeological Field Technician for John Minch and Associates, San Jaun Capistrano, CA. Duties for John Minch and Associates included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —May 1992 – September 1992.

Report/Papers

Principal Author

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 I-80 Gold Run Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

1994 Final Report: Data Recovery Excavations at Five Late Prehistoric Archaeological Sites Along the Los Trancos Access Road, Newport Coast Planned Community, Orange County, California. Prepared for the Coastal Community Builders, a division of The Irvine Company.

Contributing Author

2008 Lithic Analysis for Thirteen Sites Along the Transwestern Phoenix Expansion Project, Loops A and B. Prepared for Transwestern Pipeline Company, LLC.

2005 Cultural Resource Survey and Testing for the Star Ranch Property, San Diego, California.

2004 Cultural Resource Test Report for the Palomar Point Project: Site CA-SDI-1 6205, Carlsbad, California. Prepared for Lanikai Management Corp.

2004 Cultural Resource Survey and Test Report for the Canyon View Project, Carlsbad, California. Prepared for Shapouri & Associates.

2004 Cultural Resource Test Report for the Yamamoto Property: Site SDM-W-2046, Carlsbad, California. Prepared for Cunningham Consultants, Inc.

2004 Historical Resources Report for the Kuta and Mascari Properties, Otay Mesa, California. Prepared for Centex Homes.

2004 Cultural Resource Monitor and Test Report for the Encina Power Plant Project, Carlsbad, California. Prepared for Haley & Aldrich, Inc.

2004 Cultural Resource Test Report for Site CA-SDI-16788, Otay Mesa, California. Prepared for Otay Mesa Property, L.P.

2004 Cultural Resource Survey and Test Report for the Lonestar Project, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2003 Cultural Resource Mitigation Program for the Torrey Ranch Site CA-SDI-5325, San Diego, California. Prepared for Garden Communities.

2003 Cultural Resource Survey and Test Report for the Johnson Canyon Parcel, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2002 Cultural Resource Data Recovery Plan for the Shaw Project: Sites CA-SDI-13025 and CA-SDI-13067, San Diego County, California. Prepared for Shapouri & Associates.

2001 Archaeological Test Program for CA-SDI-14112 Mesa Norte Project, San Diego, California. Prepared for Hunsaker & Associates.

2001 The Vista-Oceanside Cultural Resource Survey and Test Program, Vista, California. Prepared for Shapouri & Associates.

2001 Cultural Resource Test Program for the Wilson Property, Carlsbad, California. Prepared for the City of Carlsbad.

2001 Cultural Resource Test Plan for the Oceanside-Escondido Project, County of San Diego, California. Prepared for Dudek & Associates.

2001 Cultural Resource Test Program for the Kramer Junction Expansion Project Adelanto, California. Prepared for AMEC.

2001 Cultural Resource Test Program for CA-SDI-12508 San Diego, California (LDR. No. 99-1331). Prepared for Garden Communities.

2000 Archaeological Testing of Prehistoric Sites CASDI-14115 and CA-SDI-14116 for The Mesa Grande Project, San Diego, California. Prepared for Solana Mesa Partners, LLC.

2000 Cultural Resource Survey and Test Report for the Wetmore Property, Otay Mesa, San Diego County, California. Prepared for Mr. Andy Campbell.

2000 The Torrey Ranch Cultural Resource Test Program, San Diego County, California. Prepared for Garden Communities.

2000 Cultural Resource Test Results for the Otay Mesa Generating Project. Prepared for the California Energy Commission and Otay Mesa Generating Company, LCC.

2000 The Eternal Hills Cultural Resource Survey and Test Program, City of Oceanside, California. Prepared for Eternal Hills Memorial Park.

2000 The Quail Ridge Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning Inc.

2000 Cultural Resource Testing Program for CA-SDI-5652/H and CA-SDI-9474H SR 78/Rancho Del Oro Interchange Project, Oceanside, California. Prepared for Tetratech Inc.

2000 Cultural Resource Test Results for a Portion of CA-SDI-8654 (Kuebler Ranch) Otay Mesa, San Diego County, California. Prepared for Shapouri & Associates.

2000 Historical/Archaeological Monitoring and Data Recovery Program for Prehistoric Site CA-SDI-48, Locus C Naval Base Point Loma, San Diego, California. Prepared for Department of the Navy, Southwest Division.

2000 Cultural Resource Evaluation Report for the Palomar College Science Building Project San Marcos, California. Prepared for Parsons Engineering Science Inc.

1999 Cultural Resource Monitoring Report for the Village of Ystagua Water Main Break City of San Diego, California. Prepared for the City of San Diego Water Department.

1999 The Effect of Projectile Point Size on Atlatl Dart Efficiency in Lithic Technology Vol 24, No 1 p (27-37).

1999 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project, San Marcos, California. Prepared for City of San Marcos.

1999 5000 Years of Occupation: Cultural Resource Inventory and Assessment Program for the Carlsbad Municipal Golf Course Project City of Carlsbad, California. Prepared or Cotton/Beland/Associates, Inc.

1999 Silver Oaks Estates Cultural Resource Enhanced Survey and Test Report for a Portion of CA-SDI-7202 San Diego, California. Prepared for Helix Environmental Planning Inc.

1999 Historical Archaeological Test of a portion of CA-SDI-8303 for the Faraday Road Extension Carlsbad, California. Prepared for the City of Carlsbad.

1999 Cultural Resource Literature Review for the North Coast Transportation Study Arterial Streets Alternative San Diego County, California. Prepared for MLF/San Diego Association of Govt.

1998 Archaeological Test Report for a Portion of CA-SDI-9115/SDM-W-122 Carlsbad, California. Prepared for Industrial Developments International.

1998 Rainforest Ranch Cultural Resource Survey and Significance Test for Prehistoric Sites CA-SDI-14932, CA-SDI-14937, CA-SDI-14938, and CA-SDI-14946 County of San Diego, California. Prepared for Boys and Girls Club of Inland North County.

1998 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California.

1998 Final Report: Cultural Resource Survey Report for the Sterling Property, Carlsbad, California. Prepared for SPT Holdings LCC.

1996 Final Report: Archaeological Survey and Test for the Huber Property Carlsbad, California. Prepared for Gene Huber.

1996 Final Report: Results of Phase II Test Excavations and Phase III Data Recovery Excavations at Nine Archaeological Sites Within the Newport Coast Planned Community Phase III Entitlement Area, San Joaquin Hills, Orange County, California. Prepared for Coastal Community Builders, a division of The Irvine Company.

1995 Preliminary Report: Phase II Test Results From Nine Prehistoric Archaeological Sites Within The Proposed Upper Newport Bay Regional County Park. Prepared for EDAW, Inc.

1995 Final Report: A Phase II Test Excavation at CA-ORA-136, Block 800 City of Newport Beach, Orange County California. Prepared for the Irvine Apartment Communities, a division of The Irvine Company.

Relevant Presentations

2003 Steep Edge Unifacial Tools of Otay Mesa: An Analysis of Edge Types from CA SDI-7215 SCA Southern California Data Sharing Meetings

2001 Identification of Late Period Behavior Patterns in Elfin Forest: Three Sites in Northern San Diego County. 2001 Society for California Archaeology Data Sharing Meetings, San Luis Obispo, California.

01/04 Guest Lecturer and Flintknapping Demonstration Mission San Luis Rey Band of Mission Indians Annual Inter-tribal Pow-Wow. Mark Mojado, Tribal Contact.

1996 Trans-Tehachapian Lithic Trade at the Canebreak/Sawtooth Transition. Thirteenth Annual Meeting, Society of California Archaeology, Bakersfield, California.

1994 Point Size and Atlatl Dart Efficiency. Twenty Fourth Annual Meeting, Great Basin Anthropological Conference, Elko, Nevada.

94/96 Guest Lecturer and Flint Knapping Instruction - Archaeological Field Class Fall Semester ,Cypress College, Cypress, California. Paul Langenwalter/Henry C. Koerper, Directors.

94/95 Annual Guest Lecturer - "Living History Days" at the Mission, Mission San Juan Capistrano, San Juan Capistrano, California.

1994 Guest Lecturer - El Monte High School, El Monte, California.

APPENDIX II

Archaeological Records Search Results (EIC)

Confidential; Bound Separately

APPENDIX III

Native American Heritage Commission
Sacred Lands File Search Results;
Native American Correspondence

Confidential; Bound Separately

A CULTURAL RESOURCE REPORT FOR THE LA SIERRA PIPELINE ELEMENT OF THE WESTERN MUNICIPAL WATER DISTRICT'S RIVERSIDE-CORONA FEEDER PROJECT

RIVERSIDE, CALIFORNIA

Prepared for:

Albert A. Webb and Associates
3788 McCray Street
Riverside, California 92506

Prepared by:

Tracy A. Stropes, Project Archaeologist
and Brian F. Smith, Principal Investigator

Signature: ____________________

Brian F. Smith and Associates, Inc.
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September 24, 2009; Revised April 5, 2010

National Archaeological Data Base Information

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Client/Project Proponent:	Albert A. Webb and Associates 3788 McCray Street Riverside, California 92506
Report Date:	September 24, 2009; Revised April 5, 2010
Report Title:	A Cultural Resource Report for the La Sierra Pipeline Element of the Western Municipal Water District's Riverside-Corona Feeder Project; Riverside, California.
Type of Study:	Phase I Archaeological Survey
New Sites:	None
Updated Sites:	None
USGS Quadrangle:	*Riverside West* and *Lake Mathews* (7.5 minute), California
Length:	10,800 feet
Key Words:	Intensive pedestrian survey; negative survey; USGS *Riverside West* and *Lake Mathews* quadrangles (7.5 minute); Riverside County

Table of Contents

Page

Appendices

**Bound separately in confidential appendix.*

List of Figures

List of Plates

List of Tables

List of Abbreviations

ACHP	Advisory Council on Historic Preservation
AMSL	Above Mean sea Level
APE	Area of Potential Effects
BFSA	Brian F. Smith and Associates
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
UCR	University of California, Riverside
EIC	Eastern Information Center
USGS	United States Geological Survey
SHPO	State Historic Preservation Officer
WMWD	Western Municipal Water District
YBP	Years Before Present

1.0 MANAGEMENT SUMMARY/ABSTRACT

In response to a request by Albert A. Webb and Associates, Brian F. Smith and Associates (BFSA) conducted an archaeological survey and records search for the La Sierra Pipeline Element of the Riverside-Corona Feeder Project. The project consists of an approximately two-mile linear project area located between Cleveland Avenue and El Sobrante Road on La Sierra Avenue. Specifically, this project is located within an unsectioned portion of the USGS 7.5-minute *Riverside West* and *Lake Mathews*, California topographic maps, Township 3 South, Range 5/6 West. The project consists of approximately 10,800 linear feet (approximately two miles) of up to 42-inch diameter pipeline located within the La Sierra Avenue right-of-way in unincorporated Riverside County. The La Sierra Pipeline would extend south from the intersection of La Sierra Avenue and Cleveland Avenue to connect to the existing Mills Gravity Pipeline, located at the intersection of La Sierra Avenue and El Sobrante Road. This pipeline would provide an additional connection between Reach F of the Riverside-Corona Feeder (RCF) project and the Mills Gravity Pipeline.

The purpose of this investigation was to locate and record any cultural resources present within the project area as part of the environmental review process. The investigation was conducted in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800, as well as the guidelines of the California Environmental Quality Act (CEQA), and the California Register of Historical Resources (CRHR). The archaeological investigation of the subject property also included an archaeological records search performed at the Eastern Information Center (EIC) at the University of California, Riverside (UCR) in order to assess previous archaeological studies and identify any previously recorded sites within the project boundaries or in the immediate vicinity.

One previously recorded cultural resource was identified within the project area as a result of the records search. The archaeological survey of the approximately two-mile linear project area was conducted during the week of August 31, 2009. No sites were identifed during the archaeological survey. As previously recorded resource P-33-14747 is composed of two isolates that were previously collected, no impacts are anticipated. Because no cultural resources were identified on the property and the record searches do not indicate any sites are present in the vicinity of the property, mitigation measures will not be required and monitoring of grading will not be recommended.

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

2.0 INTRODUCTION

2.1 Project Description

The archaeological survey program for the La Sierra Pipeline Project was conducted in order to comply with the guidelines of the CEQA, and the California Register of Historical Resources (CRHR), as well as Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800. The project is an approximately two-mile linear pipeline in Riverside County, California (Figure 2.1–1). The project boundary is depicted on the appropriate portions of the USGS *Riverside West and Lake Mathews* 7.5-minute topographic quadrangles in Figure 2.1–2.

The project will consist of the installation of approximately 10,800 linear feet of up to 42-inch diameter pipeline located within the La Sierra Avenue right-of-way in unincorporated Riverside County. The La Sierra Pipeline would extend south from the intersection of La Sierra Avenue and Cleveland Avenue to connect to the existing Mills Gravity Pipeline, located at the intersection of La Sierra Avenue and El Sobrante Road. This pipeline would provide an additional connection between Reach F of the RCF project and the Mills Gravity Pipeline.

An archaeological records search for the project was conducted by the BFSA at the EIC (Appendix II). One previously recorded cultural resource lies within the project boundary. An additional 21 archaeological/historic resources have been recorded within one mile of the project. There have been a total of seven previous cultural resource studies conducted that overlap various portions of the proposed project area. The results of the records search are discussed in Section 2.4 of this report.

The archaeological survey conducted by BFSA took place during the week of August 31, 2009. The area surveyed consisted of existing roadway bordered by a series of graded slopes, housing developments, intermittent open spaces with invasive grasses, and general urban developments. The archaeological survey did not identify any new archaeological/historic resources. Results of the survey are discussed in Section 4.0.

2.1.1 Area of Potential Effects (APE)

The project will consist of approximately 10,800 linear feet of pipeline located within public road right-of-way and within pipeline easements in unincorporated Riverside County. The APE "means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16[d]). The APE is depicted in Figure 2.1–2. In total, the APE includes the area within the right-of-way of public roads (in La Sierra Avenue from Cleveland Avenue to El Sobrante Road). The majority of the disturbance within the APE will include primarily subsurface trenching and tunneling for the placement of all pipeline elements. For the current project, the APE does not include surface areas where the

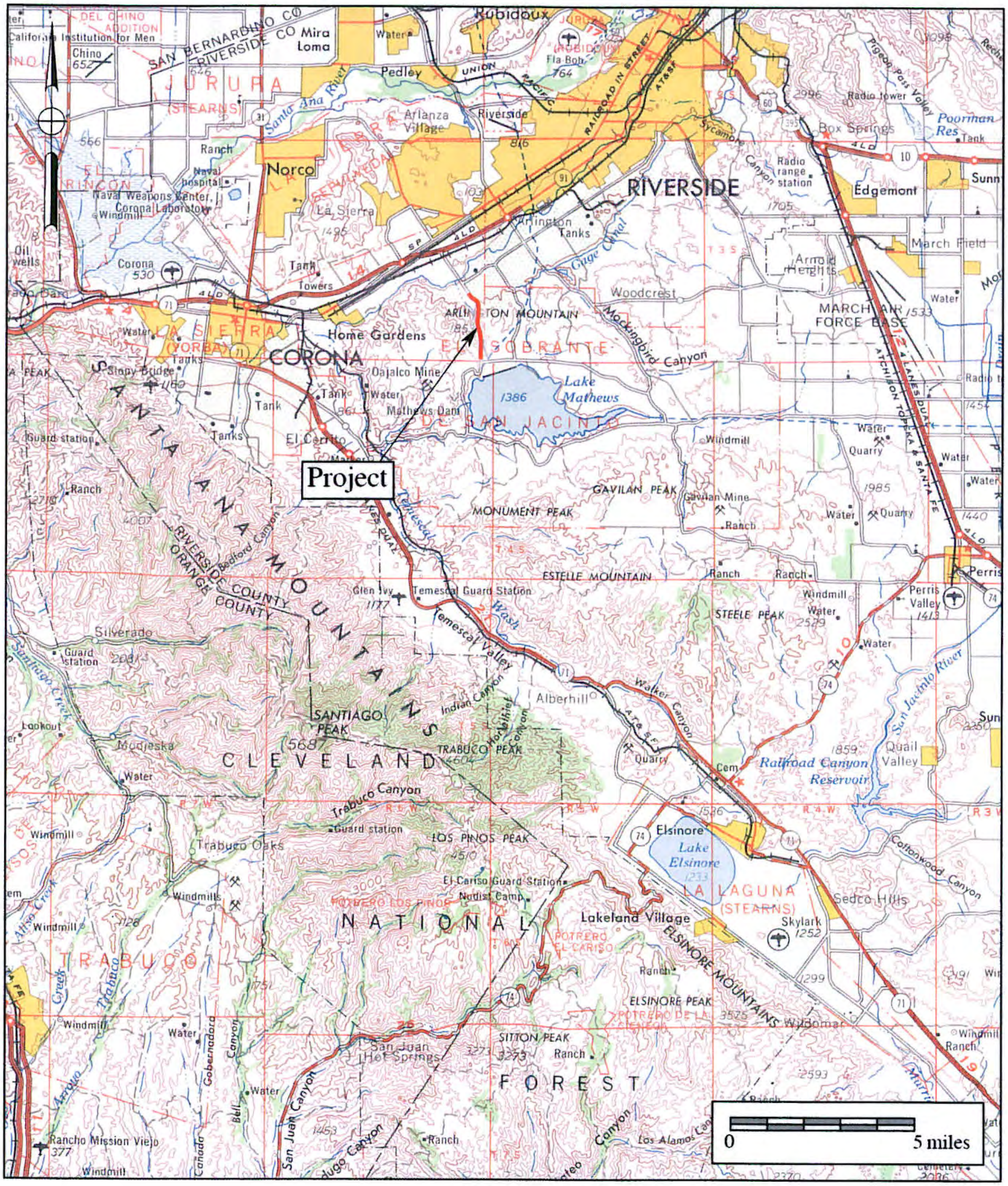

Figure 2.1–1

General Location Map

The La Sierra Pipeline Element of the Riverside-Corona Feeder Project

USGS *Santa Ana* (1:250,000 series)

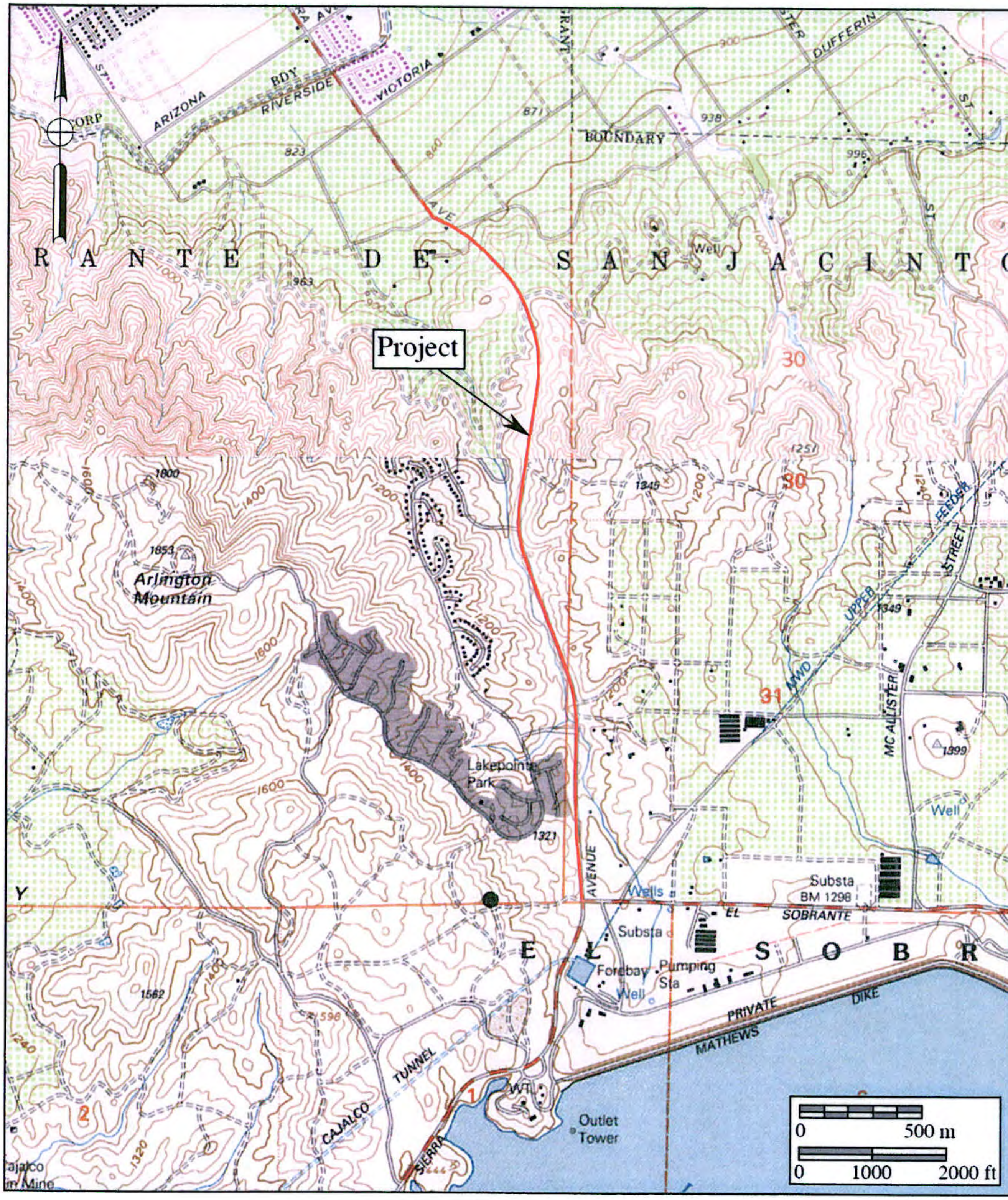

Figure 2.1–2

Project Location Map

The La Sierra Pipeline Element of the Riverside-Corona Feeder Project

USGS *Riverside West* and *Lake Mathews* Quadrangles (7.5 minute series)

pipeline would tunnel beneath other linear resources that cross the alignment, such as railroads, canals, and freeways. In addition, the APE does not include architectural or other historical resources adjacent to the pipeline corridor as the placement of the pipeline is underground and the associated tank will be buried, eliminating any indirect impacts to the view shed/setting.

2.2 Existing Conditions

The project setting includes the natural physical, geological, and biological context of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the region. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

2.2.1 Environmental Setting

Riverside County lies in the Peninsular Range Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California. The La Sierra Pipeline Project is located upon gentle slopes that lie north of Lake Mathews along La Sierra Ave. The project area is sloped, with the lowest point located at the north end and highest point located at its south end. Elevations within the project area range from approximately 1,247 to 859 feet above mean sea level (AMSL). The entire project area has been disturbed by construction and development. Currently, vegetation within the project area is characterized as primarily sporadic introduced grasses. Prehistoric vegetation most likely consisted of inland sage scrub.

2.3 Cultural Setting

PaleoIndian, Archaic Period, Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of Riverside County was represented by the Cahuilla, Gabrielino, and Luiseño Native Americans.

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

2.3.1 Prehistory

PaleoIndian Period *(Late Pleistocene: 11,500 to circa 9,000 YBP)*

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

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

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

The Archaic Period of prehistory begins with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene is marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending on the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons is significant in that it had profound effects on the types of resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten*, but habitat was gained for other small mollusks, particularly *Donax*

(Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, loss of drinking water, and loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, or horizons including San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period.

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

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, but effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between 400 and 600 A.D., and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

Protohistoric Period *(Late Holocene: 1790 to present)*

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

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains, the Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla were a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differed from the Luiseño and Gabrielino in that their religion was more similar to the Mohave tribes of the eastern deserts than the *Chingichngish* cult of the Luiseño and Gabrielino.

The territory of the Gabrielino, at the time of Spanish contact in the sixteenth century, was located in much of current-day Los Angeles and Orange Counties. The southern extent of this group was bounded by Aliso Creek, the eastern extent was located east of current day San Bernardino along the Santa Ana River, the northern extent included the San Fernando Valley, and the western extent of their range included portions of the Santa Monica Mountains. The

Gabrielino also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1925).

The Luiseño were a seasonal hunting and gathering people, with cultural elements that were very distinct from the Archaic Period peoples, including cremation, the use of the bow and arrow, and use of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of the marine resources available by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. The elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts and steatite from the Channel Islands. The La Sierra Pipeline Project area is clearly within known Luiseño ancestral land (Appendix III).

2.3.2 History

The historic background of the project area began with the Spanish colonialization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego) missions began colonizing southern California and gradually expanded their use of the interior valley (in what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside Co. CA 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles and described fertile valleys, lakes and sub-desert areas (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become Riverside County (American Local History Network: Riverside Co. CA 1998), many mission outposts, or *asistencias* were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts that were located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822, and secularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998; Riverside County n.d.). By this time, the missions owned some of the best and fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The “grants” were called “ranchos,” of which Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo were located in present day Riverside County; many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside Co. CA 1998). The first grant in what is now Riverside County, Rancho Jurupa, was given to Juan Bandini in 1838. These ranchos were all located in the valley environments typical of western Riverside County.

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

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

Native American culture had been disrupted to the point where they could no longer rely on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on the missionaries, but also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based on utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850 California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies.

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

With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in Southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from Tennessee, brought a group of associates and co-investors out to Southern California, and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region. (American Local History Network: Riverside Co. CA 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor ten miles to the north, due to differences in opinion concerning religion, morality, the Civil War, politics, and fierce competition to attract settlers. After a series of instances in which charges were claimed about unfair use of tax monies to the benefit of the City of San Bernardino only, several people from Riverside decided to investigate the possibility of a new county. In May 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.).

2.4 Records Search Results

Archaeological records searches were completed by BFSA at the EIC. The records search results showed that 23 previous cultural reports have been filed for projects conducted within one mile of the property, seven of which involved portions of the current project area. The searches showed one recorded cultural resource within the property boundary and an additional 21 recorded within a one-mile radius of the APE, as listed in Table 2.4–1. The closest recorded resource to the project area is P-33-14747, which consists of two isolated manos located at the north end of the project area in the pipeline alignment. The complete records search results from the EIC are provided in Appendix II.

Table 2.4–1

Previously Recorded Sites within One Mile

Site Number	Site Type	Site Dimensions	Report Reference/ Recorded By
P-33-7244	Lake Mathews Dam	224.21 Acre	J. Warner
P-33-11221	Historic Irrigation	N/A	L. White
P-33-11361	Historic Victoria Avenue		L. Bricker et al.
P-33-14787	Unknown	N/A	C. Fritz
P-33-15962	Historic Irrigation	450 ft	B. Tang
P-33-16818	Unknown	Unknown	Unknown
RIV-2097	Milling Station	30m x 20m	E. C. Johnstone
RIV-2226	Milling Station	Not Reported	N. Desautels
RIV-2227	Milling Station	1m x 1m	N. Desautels
RIV-2242	Milling Stations	30m x 10m	D. McCarthy
RIV-2243	Milling Stations	35m x 15m	D. McCarthy
RIV-3857	Milling Station/Lithic Scatter	13m x 8m (A) 25m x 14m (B)	Lawson et al.
RIV-4768	Historic Irrigation	N/A	D. McCarthy
RIV-4791	Historic Aqueduct	N/A	J. McKenna
RIV-5672	Historic Irrigation	475ft x 150ft	CRM Tech
RIV-7082	Prehistoric Quarry	32m x 18m	N. Harris et al.
RIV-7083	Historic Well/Cistern	33ft x 18ft	N. Harris et al.
RIV-7100	Artifact Scatter	10m x 15m	D. McDougall et al.
RIV-7107	Historic Structure Foundation	157ft x 22ft	N. Harris et al.
RIV-7331	Milling Station	10m x 5m	L. White
RIV-7363	Historic Refuse Deposit/Milling Complex	330m x 180m	P. Carr
RIV-7820	Historic Refuse Deposit	72m x 50m	PCR Services

2.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in CEQA and Section 106 of the NHPA provide the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

2.5.1 California Environmental Quality Act (CEQA)

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

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:
    a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    b) Is associated with the lives of persons important in our past;
    c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
    d) Has yielded, or may be likely to yield, information important in prehistory or history.

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

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

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:
    a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
    b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
    c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

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

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

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

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

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

2.5.2 National Historic Preservation Act (NHPA)

The regulations implementing Section 106 (36 CFR 800 or Agency counterpart regulations) of the National Historic Preservation Act of 1966 (NHPA), as amended, require

federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 United States Code [USC] 470w [5]). Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the ACHP and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

As the project will fall under review by the United States Bureau of Reclamation, the NHPA of 1966 (as amended) and its implementing regulations (16 USC 470 et seq., 36 CFR 800, 36 CFR 60, and 36 CFR 63) apply to the project, requiring the Bureau to consider whether the project would affect historic properties listed on or meeting the criteria for listing on the NRHP. Federal law states that paleontological resources are not regulated under Section 106 of the NHPA unless those resources are in the context of a cultural resource, in which case they are considered cultural resources. The United States Bureau of Reclamation will be the lead agency for NHPA Section 106 compliance, and consultation with the SHPO and ACHP will be conducted as required.

3.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in determination of resource significance. For the current project, the study area under investigation is the northwest portion of Riverside County. The scope of work for the archaeological program conducted for the La Sierra Pipeline Project included the survey of an approximately two-mile linear project area. Given the small area involved and the narrow focus of a Phase I survey, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration of a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions:

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

Data Needs:

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

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

4.0 RESULTS OF SITE INVESTIGATIONS

4.1 Methods

4.1.1 Survey Methods

The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Archaeologists with BFSA surveyed the project area during the week of August 31, 2009, under the direction of Brian F. Smith, Principal Investigator. The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Project Archaeologist Tracy A. Stropes conducted the intensive pedestrian survey with Field Technician Charles Callahan. The field methodology employed for the project included walking evenly spaced survey transects approximately two meters apart and oriented north to south across the property while visually inspecting the ground surface. All potentially sensitive areas where cultural resources might be located were closely inspected. Photographs documenting survey discoveries and overall survey conditions were taken frequently and geo-tagged for future reference.

4.1.2 Curation

All photographs, notes, records, maps, research results, and any other relevant materials pertaining to the La Sierra Pipeline Project are housed at the office of BFSA in Poway, California.

4.1.3 Native American Participation

A search of the Sacred Lands Files of the NAHC was requested by BFSA, the results of which are provided in Appendix III. The Sacred Lands File search by the NAHC failed to indicate the presence of sacred or ceremonial sites or landforms considered important to local tribes within the project area. A Native American representative was not present during the survey process. No other documented correspondence or analysis from the Native Americans has been received as of the dissemination of this report. Should additional communications be received, they will be forwarded to the reviewing agency.

4.2 Results

The property consists of relatively flat to gently sloped terrain bordered by small, irrigation canals. The majority of the project area is paved and lies within La Sierra Avenue (Plates 4.2–1 through 4.2–4). The vegetative landscape was sparse and comprised of small patches of introduced grasses. There was no difficulty gaining access to the project area. The project area contained disturbance from occupation, development, and the construction of La Sierra Avenue. The survey identified no cultural resources within the project area. Record search data identified P-33-14747 directly within the project area (Figure 4.2–1). All attempts were made to relocate P-33-14747; however, records search, survey, and aerial map data suggests the site has been destroyed by previous development. No additional cultural resources (features, soils, or artifacts) were identified within the boundary of the current project. The drainages, animal burrow backdirt, and areas of native vegetation were all closely inspected for evidence of cultural materials; none was observed.

Plate 4.2–1. Development near mapped location of P-33-14747 (view north).

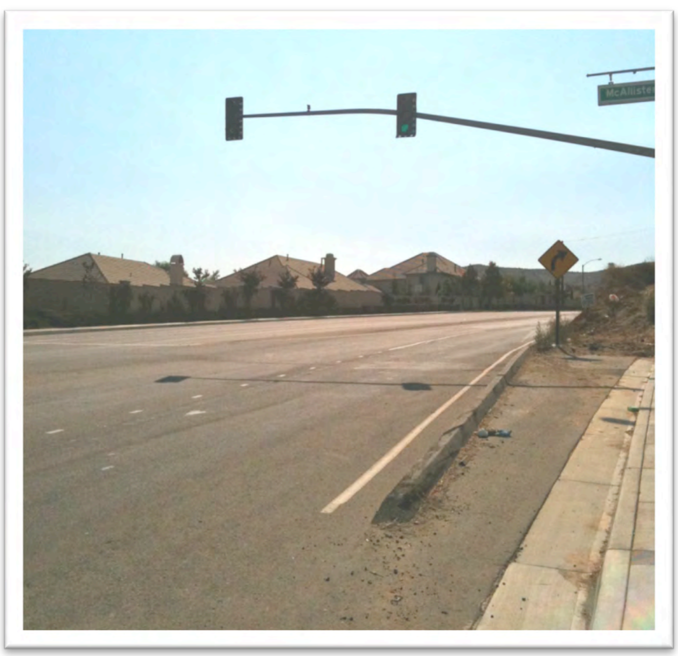

Plate 4.2–2. Project area overview (north end, view south).

Plate 4.2–3. Project area overview (central, view north).

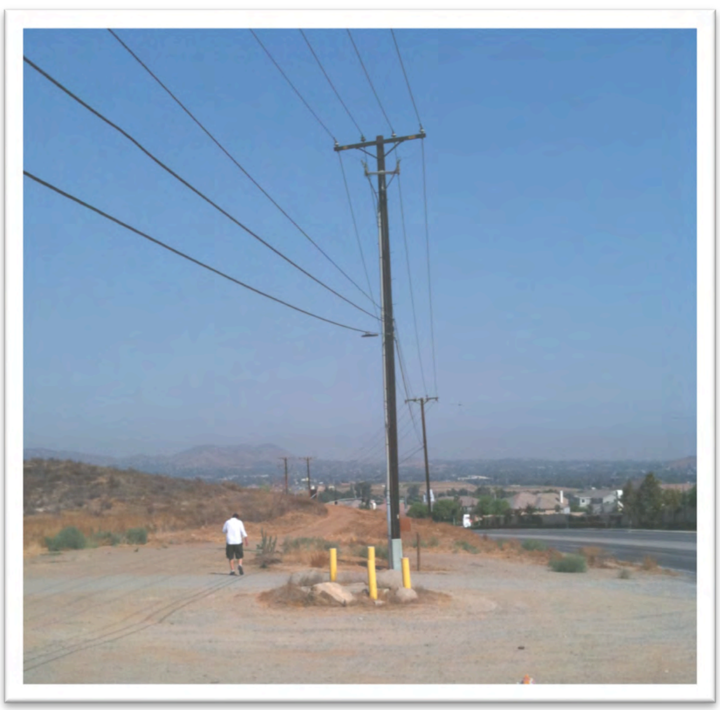

Plate 4.2–4. Project area overview (south end, view north)

<u>Figure 4.2–1</u>

Cultural Resource Location Map
(Confidential Map; bound separately)

5.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

5.1 Resource Importance

Survey of the two-mile La Sierra Pipeline Project did not identify any new cultural resources. The records search for the project identified one previously recorded cultural resource within the project area (P-33-14747). Previous impacts to P-33-14747 and the collection of the two isolated artifacts identified on site record forms (Appendix II) have mitigated any future impacts to the resource. No further impacts are anticipated.

5.2 Impact Identification

The project as proposed by the applicant consists of the construction 10,800 linear feet of up to 42-inch diameter pipeline located within the La Sierra Avenue right-of-way in unincorporated Riverside County. The La Sierra Pipeline would extend south from the intersection of La Sierra Avenue and Cleveland Avenue to connect to the existing Mills Gravity Pipeline, located at the intersection of La Sierra Avenue and El Sobrante Road. This pipeline would provide an additional connection between Reach F of the RCF and the Mills Gravity Pipeline. The archaeological survey failed to identify any cultural resources within the project boundary. Based on the negative results of the archaeological survey, no impacts to cultural resources are anticipated.

6.0 MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS

6.1 Unavoidable Impacts

In accordance with CEQA and Section 106, BFSA has assessed the potential effects for the proposed La Sierra Pipeline Project on prehistoric or historic archaeological resources properties. The proposed La Sierra Pipeline Project will directly impact the majority of the linear project area in order to install the 10,800-foot proposed pipeline. One cultural resource was identified in the right-of-way during the archaeological records search. The resource was not relocated during the survey and has likely been impacted by development of the area, specifically housing developments. Site record forms indicate that the two isolated artifacts that comprise the cultural resource were previously collected. Previous impacts to P-33-14747 and the collection of the two isolated artifacts identified on site record forms have mitigated any future impacts to the site. No further impacts are anticipated.

6.2 Mitigation of Impacts

According to the proposed design plan, no direct impacts will occur to any known archaeological sites. Therefore, as no cultural resources were identified on the property, it is recommended that the project be allowed to proceed without additional archaeological studies. However, although there is little potential for buried cultural material in the 10,800 feet of pipeline right-of-way, BFSA recommends the following mitigation measures to address the potential for unknown archaeological discoveries.

6.2.1 Mitigation Measures Related to Archaeological Resources

<u>Measure AR-1:</u>

If any prehistoric resources or any historic resources over 50 years old are encountered during construction, work in the immediate area of the find must be halted and the discovery assessed. The qualified archaeologist will recommend appropriate mitigation measures pursuant to CEQA and Section 106 Guidelines.

<u>Measure AR-2:</u>

If human remains are encountered during construction of the La Sierra Pipeline Project, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

6.3 No Significant Adverse Effects

No significant adverse effects to cultural resources are anticipated for the La Sierra Pipeline Project.

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1994 *Archaeological Investigations at Five Sites on the Lower San Luis Rey River, San Diego County, California*, edited by Michael Moratto, pp. A1-A19. Infotec Research, Fresno, California and Gallegos and Associates, Pacific Palisades California.

Miller, J.
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Moratto, Michael J.
1984 *California Archaeology*. Academic Press, New York.

Moss, M. L. and J. Erlandson
1995 Reflections on North American Coast Prehistory. *Journal of World Prehistory* 9(1):1-46.

Pourade, Richard F.
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Rogers, Thomas H.
1965 *Geologic Map of California: Santa Ana Sheet*. California Division of Mines and Geology, Sacramento, California.

Van Devender, T. R. and W. G. Spaulding
1979 Development of Vegetation and Climate in the Southwestern United States. *Science* 204:701-710.

Van Horn, Kurt
1974 Tempting Temecula: The Making and Unmaking of a Southern California Community. *The Journal of San Diego History* 20(1).

Warren, Claude N., and M. G. Pavesic
1963 Shell Midden Analysis of Site SDI-603 and Ecological Implications for Cultural Development of Batiquitos Lagoon, San Diego County, Los Angeles. University of California, Los Angeles, Archaeological Survey Annual Report, 1960-1961:246-338.

8.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

The archaeological survey was conducted by Project Archaeologist Tracy A. Stropes and Field Technician Charles Callahan under the direction of Brian F. Smith, Principal Investigator. The records search review and drafting of this report was conducted by Project Archaeologist Tracy A. Stopes, under the direction of Brian F. Smith. Adrián Sánchez Moreno produced the graphics, and Nora Thornbury and Karen E. Doose conducted the technical editing.

Information was provided by the EIC regarding previously recorded resources. The NAHC provided the results of the Sacred Lands File search for the project area, as well as a list of representatives to facilitate the involvement of local tribal groups in the review process for this project.

APPENDIX I

Resumes of Key Personnel

BRIAN FREDERICK SMITH

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Poway, California 92064
(858) 679-8218
bsmith@bfsa-ca.com

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates (BFSA). The company has been in business since 1977.

EDUCATION

Master of Arts degree from the University of San Diego in History, 1982.

Bachelor of Arts degree from the University of San Diego in History and Anthropology, 1975.

Completed the U. S. General Services Administration Training Center Course entitled "Introduction to Federal Project and Historic Preservation Law."

SUMMARY OF EXPERIENCE

As an archaeological consultant and principal investigator registered with various governmental agencies within the State of California since 1977, Brian F. Smith has successfully completed over five hundred archaeological and historical studies at properties within this region, accumulating over 35,000 hours of experience in dealing with sensitive cultural resources and governmental policies. Past projects conducted by Mr. Smith have included survey, test, and salvage programs conducted at sites of historic and/or prehistoric significance. Experience in southern California has included the investigation of prehistoric sites of all major cultural complexes which have existed in the region over the past 12,000 years, and historic sites of the Spanish, Mexican and early American periods. Mr. Smith has completed historic and historical architectural evaluations of structures for Federal and State review. Smith's expertise includes the composition of cultural resource documents for California (CEQA) and federal (NEPA and NHPA) projects, and the design and implementation of mitigation programs.

MAJOR PROFESSIONAL ACCOMPLISHMENTS

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area. The following are samples of the research efforts which are considered to have made an impact in the study of historic and prehistoric resources in the area.

Charles H. Brown Site — Site Director

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 — Site Foreman

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).
- Cultural Resources Site Survey at the Old San Diego Inn (1988).

City of San Diego Reclaimed Water Distribution System — Principal Investigator

A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Navy Broadway Complex — Consulting Historian and Archaeologist

The Navy Broadway Complex is a massive redevelopment project at the Naval Supply Depot located at the foot of Broadway in Downtown San Diego. This project involved the architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

Master Environmental Assessment Project, City of Poway — Principal Investigator/Historian

This project was 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.

City of Carlsbad Archaeological and Historical Guidelines — Consulting Archaeologist and Historian

BFSA was 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.

4S Ranch Cultural Resource Study — Consulting Archaeologist

The 4S Ranch property is a 3,600-acre parcel in northern San Diego County which is being developed as a master plan community. Brian Smith has served as the consulting archaeologist for nine studies of cultural resources on the project, including intensive surveys, recording of 170 archaeological sites, testing of resources for significance evaluations, preparation of mitigation plans, and conducting data recovery programs. The report of findings for the 4S Ranch mitigation program will include significant advances in the understanding of prehistoric subsistence patterns and periods of occupation in the region.

TRACY A. STROPES M.A., RPA (16283)

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

EDUCATION

Master of Anthropology, San Diego State University, CA, 2007
Bachelor of Science, Anthropology, University of California at Riverside, 2000

SUMMARY OF EXPERIENCE

Project Archaeologist for Brian F. Smith & Associates, Archaeological, Paleontological, and Historical Consulting — duties include project management of all phases of archaeological investigations for local, state and federal agencies; field supervisor of all phases of archaeological projects; lithic analysis; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California — March 2009 - Present.

Principal Investigator for TRC Solutions, Irvine, CA. Archaeological Principal Investigator for cultural resource segment of Natural Sciences and Permitting Division. Duties included management of all phases of archaeological investigations for private companies and local, state and federal agencies; personnel management, field supervision of all phases of archaeological projects; laboratory supervision; lithic analysis, Native American consultation, and reporting; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California. —June 2008 – February 2009.

Principal Investigator for Archaeological Resource Analysts, Oceanside, CA. As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc. Primary tasks included filed direction, project management, personnel management, lab analysis, and authorship of company reports throughout southern California. —June 2006 – May 2008

Project Archaeologist for Gallegos & Associates, Carlsbad, CA. Duties for Gallegos and Associates included project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship, and editing for several technical reports for various projects throughout southern California. In addition, composed several data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance. —September 1996 – June 2006.

Project Archaeologist for Macko Inc, Santa Ana Heights, CA. Duties for Macko Inc. included project management, laboratory management, lithic analysis, field supervision, report authorship, and editing for technical reports for various projects throughout southern California. —September 1993 – September 1996.

Archaeological Field Technician for Chambers Group Inc, Irvine, CA. Duties for Chambers Group Inc. included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —January 1993 – September 1993.

Archaeological Field Technician for John Minch and Associates, San Jaun Capistrano, CA. Duties for John Minch and Associates included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —May 1992 – September 1992.

Report/Papers

Principal Author

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 I-80 Gold Run Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

1994 Final Report: Data Recovery Excavations at Five Late Prehistoric Archaeological Sites Along the Los Trancos Access Road, Newport Coast Planned Community, Orange County, California. Prepared for the Coastal Community Builders, a division of The Irvine Company.

Contributing Author

2008 Lithic Analysis for Thirteen Sites Along the Transwestern Phoenix Expansion Project, Loops A and B. Prepared for Transwestern Pipeline Company, LLC.

2005 Cultural Resource Survey and Testing for the Star Ranch Property, San Diego, California.

2004 Cultural Resource Test Report for the Palomar Point Project: Site CA-SDI-1 6205, Carlsbad, California. Prepared for Lanikai Management Corp.

2004 Cultural Resource Survey and Test Report for the Canyon View Project, Carlsbad, California. Prepared for Shapouri & Associates.

2004 Cultural Resource Test Report for the Yamamoto Property: Site SDM-W-2046, Carlsbad, California. Prepared for Cunningham Consultants, Inc.

2004 Historical Resources Report for the Kuta and Mascari Properties, Otay Mesa, California. Prepared for Centex Homes.

2004 Cultural Resource Monitor and Test Report for the Encina Power Plant Project, Carlsbad, California. Prepared for Haley & Aldrich, Inc.

2004 Cultural Resource Test Report for Site CA-SDI-16788, Otay Mesa, California. Prepared for Otay Mesa Property, L.P.

2004 Cultural Resource Survey and Test Report for the Lonestar Project, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2003 Cultural Resource Mitigation Program for the Torrey Ranch Site CA-SDI-5325, San Diego, California. Prepared for Garden Communities.

2003 Cultural Resource Survey and Test Report for the Johnson Canyon Parcel, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2002 Cultural Resource Data Recovery Plan for the Shaw Project: Sites CA-SDI-13025 and CA-SDI-13067, San Diego County, California. Prepared for Shapouri & Associates.

2001 Archaeological Test Program for CA-SDI-14112 Mesa Norte Project, San Diego, California. Prepared for Hunsaker & Associates.

2001 The Vista-Oceanside Cultural Resource Survey and Test Program, Vista, California. Prepared for Shapouri & Associates.

2001 Cultural Resource Test Program for the Wilson Property, Carlsbad, California. Prepared for the City of Carlsbad.

2001 Cultural Resource Test Plan for the Oceanside-Escondido Project, County of San Diego, California. Prepared for Dudek & Associates.

2001 Cultural Resource Test Program for the Kramer Junction Expansion Project Adelanto, California. Prepared for AMEC.

2001 Cultural Resource Test Program for CA-SDI-12508 San Diego, California (LDR. No. 99-1331). Prepared for Garden Communities.

2000 Archaeological Testing of Prehistoric Sites CASDI-14115 and CA-SDI-14116 for The Mesa Grande Project, San Diego, California. Prepared for Solana Mesa Partners, LLC.

2000 Cultural Resource Survey and Test Report for the Wetmore Property, Otay Mesa, San Diego County, California. Prepared for Mr. Andy Campbell.

2000 The Torrey Ranch Cultural Resource Test Program, San Diego County, California. Prepared for Garden Communities.

2000 Cultural Resource Test Results for the Otay Mesa Generating Project. Prepared for the California Energy Commission and Otay Mesa Generating Company, LCC.

2000 The Eternal Hills Cultural Resource Survey and Test Program, City of Oceanside, California. Prepared for Eternal Hills Memorial Park.

2000 The Quail Ridge Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning Inc.

2000 Cultural Resource Testing Program for CA-SDI-5652/H and CA-SDI-9474H SR 78/Rancho Del Oro Interchange Project, Oceanside, California. Prepared for Tetratech Inc.

2000 Cultural Resource Test Results for a Portion of CA-SDI-8654 (Kuebler Ranch) Otay Mesa, San Diego County, California. Prepared for Shapouri & Associates.

2000 Historical/Archaeological Monitoring and Data Recovery Program for Prehistoric Site CA-SDI-48, Locus C Naval Base Point Loma, San Diego, California. Prepared for Department of the Navy, Southwest Division.

2000 Cultural Resource Evaluation Report for the Palomar College Science Building Project San Marcos, California. Prepared for Parsons Engineering Science Inc.

1999 Cultural Resource Monitoring Report for the Village of Ystagua Water Main Break City of San Diego, California. Prepared for the City of San Diego Water Department.

1999 The Effect of Projectile Point Size on Atlatl Dart Efficiency in Lithic Technology Vol 24, No 1 p (27-37).

1999 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project, San Marcos, California. Prepared for City of San Marcos.

1999 5000 Years of Occupation: Cultural Resource Inventory and Assessment Program for the Carlsbad Municipal Golf Course Project City of Carlsbad, California. Prepared or Cotton/Beland/Associates, Inc.

1999 Silver Oaks Estates Cultural Resource Enhanced Survey and Test Report for a Portion of CA-SDI-7202 San Diego, California. Prepared for Helix Environmental Planning Inc.

1999 Historical Archaeological Test of a portion of CA-SDI-8303 for the Faraday Road Extension Carlsbad, California. Prepared for the City of Carlsbad.

1999 Cultural Resource Literature Review for the North Coast Transportation Study Arterial Streets Alternative San Diego County, California. Prepared for MLF/San Diego Association of Govt.

1998 Archaeological Test Report for a Portion of CA-SDI-9115/SDM-W-122 Carlsbad, California. Prepared for Industrial Developments International.

1998 Rainforest Ranch Cultural Resource Survey and Significance Test for Prehistoric Sites CA-SDI-14932, CA-SDI-14937, CA-SDI-14938, and CA-SDI-14946 County of San Diego, California. Prepared for Boys and Girls Club of Inland North County.

1998 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California.

1998 Final Report: Cultural Resource Survey Report for the Sterling Property, Carlsbad, California. Prepared for SPT Holdings LCC.

1996 Final Report: Archaeological Survey and Test for the Huber Property Carlsbad, California. Prepared for Gene Huber.

1996 Final Report: Results of Phase II Test Excavations and Phase III Data Recovery Excavations at Nine Archaeological Sites Within the Newport Coast Planned Community Phase III Entitlement Area, San Joaquin Hills, Orange County, California. Prepared for Coastal Community Builders, a division of The Irvine Company.

1995 Preliminary Report: Phase II Test Results From Nine Prehistoric Archaeological Sites Within The Proposed Upper Newport Bay Regional County Park. Prepared for EDAW, Inc.

1995 Final Report: A Phase II Test Excavation at CA-ORA-136, Block 800 City of Newport Beach, Orange County California. Prepared for the Irvine Apartment Communities, a division of The Irvine Company.

Relevant Presentations

2003 Steep Edge Unifacial Tools of Otay Mesa: An Analysis of Edge Types from CA SDI-7215 SCA Southern California Data Sharing Meetings

2001 Identification of Late Period Behavior Patterns in Elfin Forest: Three Sites in Northern San Diego County. 2001 Society for California Archaeology Data Sharing Meetings, San Luis Obispo, California.

01/04 Guest Lecturer and Flintknapping Demonstration Mission San Luis Rey Band of Mission Indians Annual Inter-tribal Pow-Wow. Mark Mojado, Tribal Contact.

1996 Trans-Tehachapian Lithic Trade at the Canebreak/Sawtooth Transition. Thirteenth Annual Meeting, Society of California Archaeology, Bakersfield, California.

1994 Point Size and Atlatl Dart Efficiency. Twenty Fourth Annual Meeting, Great Basin Anthropological Conference, Elko, Nevada.

94/96 Guest Lecturer and Flint Knapping Instruction - Archaeological Field Class Fall Semester ,Cypress College, Cypress, California. Paul Langenwalter/Henry C. Koerper, Directors.

94/95 Annual Guest Lecturer - "Living History Days" at the Mission, Mission San Juan Capistrano, San Juan Capistrano, California.

1994 Guest Lecturer - El Monte High School, El Monte, California.

APPENDIX II

Archaeological Records Search Results (EIC)

Confidential; Bound Separately

APPENDIX III

Native American Heritage Commission
Sacred Lands File Search Results;
Native American Correspondence

Confidential; Bound Separately

A CULTURAL RESOURCE REPORT FOR THE MOCKINGBIRD CONNECTION ELEMENT OF THE WESTERN MUNICIPAL WATER DISTRICT'S RIVERSIDE-CORONA FEEDER PROJECT

RIVERSIDE, CALIFORNIA

Prepared for:

Albert A. Webb and Associates
3788 McCray Street
Riverside, California 92506

Prepared by:

Tracy A. Stropes, Project Archaeologist
and Brian F. Smith, Principal Investigator

Signature: ____________________

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
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December 3, 2009; Revised March 30, 2010

National Archaeological Data Base Information

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Client/Project Proponent:	Albert A. Webb and Associates 3788 McCray Street Riverside, California 92506
Report Date:	December 3, 2009; Revised March 30, 2010
Report Title:	A Cultural Resource Report for the Mockingbird Connection Element of the Western Municipal Water District's Riverside-Corona Feeder Project, Riverside, California.
Type of Study:	Phase I Archaeological Survey
New Sites:	None
Updated Sites:	None
USGS Quadrangle:	*Riverside West* and *Lake Mathews* (7.5 minute), California
Length:	5,900 feet
Key Words:	Intensive pedestrian survey; negative survey; USGS *Riverside West* and *Lake Mathews* quadrangles (7.5 minute); Riverside County

Table of Contents

Page

Appendices

Appendix I — Resumes of Key Personnel
Appendix II – Archaeological Records Search Results (EIC)*
Appendix III – Native American Heritage Commission Sacred Lands File Search Results; Native American Correspondence*

**Bound separately in Confidential Appendix.*

List of Figures

Page

List of Plates

List of Tables

List of Abbreviations

ACHP	Advisory Council on Historic Preservation
AMSL	Above Mean sea Level
APE	Area of Potential Effects
BFSA	Brian F. Smith and Associates
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
UCR	University of California, Riverside
EIC	Eastern Information Center
USGS	United States Geological Survey
SHPO	State Historic Preservation Officer
WMWD	Western Municipal Water District
YBP	Years Before Present

1.0 MANAGEMENT SUMMARY/ABSTRACT

In response to a request by Albert A. Webb and Associates, Brian F. Smith and Associates (BFSA) conducted an archaeological survey and records search for the Mockingbird Connection Element of the Riverside-Corona Feeder Project. The project consists of approximately 5,900 linear feet of pipeline, up to 42-inch diameter, located within street right-of-way and within pipeline easements in the City of Riverside and adjacent unincorporated Riverside County, a five million-gallon reservoir, and a related pump station. Specifically, this project is located within Sections 21, 22, 27, and 28 of the USGS 7.5-minute *Riverside West*, California topographic map, Township 3 South, Range 5 West. The pipeline will extend easterly within Irving Street, south of the road's intersection with Firethorn Avenue, and then east through pipeline easements to connect to the proposed pump station and reservoir. The pipeline will then extend east within a pipeline easement and then south within Constable Road to the existing Mills Gravity Pipeline easement. At this point, the pipeline will continue west within the pipeline easement and cross under Van Buren Boulevard to connect to the Western Municipal Water District's (WMWD) existing Mockingbird Booster Station. The pump station will include pumps and flow control facilities to convey water in either direction.

The purpose of this investigation was to locate and record any cultural resources present within the project area as part of the environmental review process. The investigation was conducted in compliance with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800, as well as the guidelines of the California Environmental Quality Act (CEQA), and the California Register of Historical Resources (CRHR). The archaeological investigation of the subject property included an archaeological records search performed at the Eastern Information Center (EIC) at the University of California, Riverside (UCR) in order to assess previous archaeological studies and identify any previously recorded sites within the project boundary or in the immediate vicinity.

The archaeological survey of the approximately 1.1-mile linear project area was conducted during the week of August 31, 2009. No cultural resources were identified during the survey of the project area. A copy of this report will be permanently filed with the EIC. All notes, photographs, and other materials related to this project will be housed at the office of BFSA in Poway, California.

2.0 INTRODUCTION

2.1 Project Description

The archaeological survey program for the Mockingbird Connection Project was conducted in order to comply with the guidelines of the CEQA, and the California Register of Historical Resources (CRHR), as well as Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth in 36 CFR 800. The project is an approximately 1.1-mile linear pipeline in Riverside County, California (Figure 2.1–1). The project boundary are depicted on the appropriate portions of the USGS *Riverside West and Lake Mathews* 7.5-minute topographic quadrangles in Figure 2.1–2.

The proposed project consists of the installation of approximately 5,900 linear feet of pipeline, up to 42-inch diameter, located within street right-of-way and within pipeline easements within the City of Riverside and adjacent unincorporated Riverside County, and the construction of a five million-gallon reservoir and a related pump station. The pipeline will extend easterly within Irving Street, south of its intersection with Firethorn Avenue, and then east through public easements to connect to the proposed pump station and reservoir. The pipeline will then extend east within an easement and then south within Constable Road to the existing Mills Gravity Pipeline corridor. At this point, the pipeline will continue west within the pipeline easement and cross under Van Buren Boulevard to connect to WMWD's existing Mockingbird Booster Station. The pump station will include pumps and flow control facilities to convey water in either direction.

An archaeological records search for the project was conducted by BFSA at the EIC (Appendix II). No previously recorded sites are located within the project boundary. However, 51 archaeological/historic resources have been recorded within one mile of the project. There have been a total of six previous cultural resource studies that overlap various portions of the proposed project area. The results of the record search are discussed in Section 2.4 of this report.

The archaeological survey conducted by BFSA took place during the week of August 31, 2009. The area surveyed consisted of existing roadway bordered by a series of graded slopes, housing developments, intermittent open spaces with invasive grasses, and general urban developments. The archaeological survey identified one new archaeological/historic resource within the area of the proposed pump station and reservoir location. Results of the survey are discussed in Section 4.0.

2.1.1 Area of Potential Effects (APE)

The proposed project consists of approximately 5,900 linear feet of pipeline located within street right-of-way and within pipeline easements within the city of Riverside and adjacent unincorporated Riverside County, and the construction of a five million-gallon reservoir and a related pump station. The APE "means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic

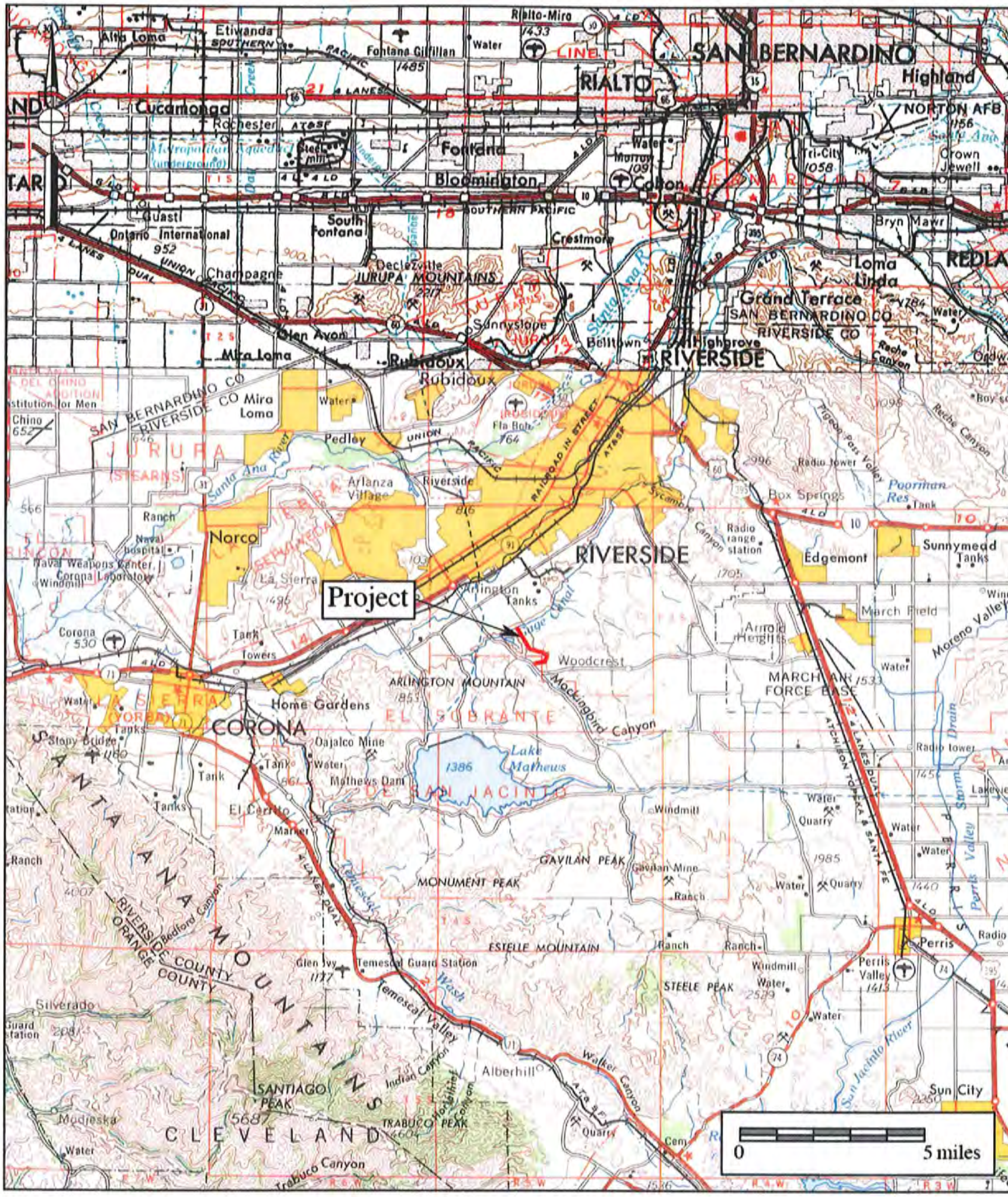

Figure 2.1–1

General Location Map

The Mockingbird Connection Element of the Riverside-Corona Feeder Project

USGS *San Bernardino* and *Santa Ana* (1:250,000 series)

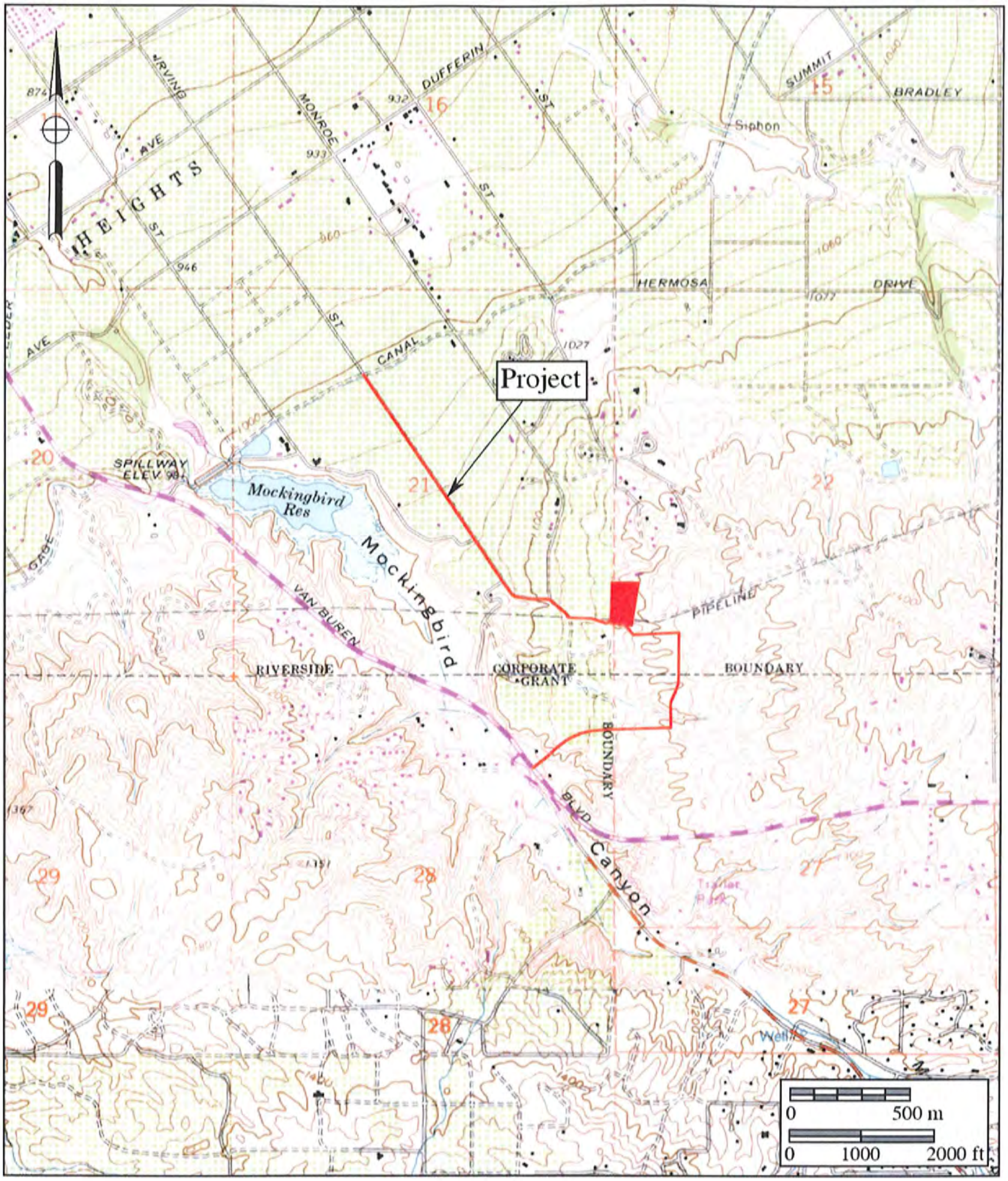

Figure 2.1–2

Project Location Map

The Mockingbird Connection Element of the Riverside-Corona Feeder Project

USGS *Riverside West* and *Lake Mathews* Quadrangles (7.5 minute series)

properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16[d]). The APE is depicted in Figure 2.1–2. In total, the APE includes the area within the right-of-way of public and/or private streets (Irving Street, Constable Road, Van Buren Blvd.), the area within the Mills Gravity Pipeline corridor, and all of Lot 20 of City of Riverside Tract 34059. The remaining portions of the pipeline APE that connect from Irving Street to Lot 20, from Lot 20 to Constable Road, and to the existing WMWD Mockingbird Booster Station were surveyed within a 100-foot-wide corridor as appropriate. The majority of the disturbance within the APE will include primarily subsurface trenching and tunneling for the placement of all pipeline elements. For the current project, the APE does not include surface areas where the pipeline would tunnel beneath other linear resources that cross the alignment, such as railroads, canals, and freeways. In addition, the APE does not include architectural or other historical resources adjacent to the pipeline corridor as the placement of the pipeline is underground and the associated tank will be buried, eliminating any indirect impacts to the view shed/setting.

2.2 Existing Conditions

The project setting includes the natural physical, geological, and biological context of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the region. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

2.2.1 Environmental Setting

Riverside County lies in the Peninsular Range Geologic Province of southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California. The Mockingbird Connection Project is located upon gentle slopes that lie east of Mockingbird Reservoir and along Van Buren Boulevard. The project area is sloped, with the lowest point located to the north and highest point located to the south. Elevations within the project area range from approximately 1,051 to 998 feet above mean sea level (AMSL). The entire project area has been disturbed by construction and development. Currently, vegetation within the project area is characterized as primarily citrus groves and sporadic introduced grasses. Prehistoric vegetation most likely consisted of inland sage scrub.

2.3 Cultural Setting

PaleoIndian, Archaic Period, Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of Riverside County was represented by the Cahuilla, Gabrielino, and Luiseño Native Americans.

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

2.3.1 Prehistory

<u>PaleoIndian Period *(Late Pleistocene: 11,500 to circa 9,000 YBP)*</u>

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

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

<u>Archaic Period *(Early and Middle Holocene: circa 9,000 to 1,300 YBP)*</u>

The Archaic Period of prehistory begins with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene is marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending on the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons is significant in that it had profound effects on the types of resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten*, but habitat was gained for other small mollusks, particularly *Donax* (Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, loss of drinking water, and loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, or horizons including San Dieguito Complex, Millingstone Horizon, Pauma Complex, and Intermediate Period.

<u>Late Prehistoric Period *(Late Holocene: 1,300 YBP to 1790 AD)*</u>

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, but effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between 400 and 600 A.D., and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far-reaching as the Colorado River Basin and cremation of the dead.

<u>Protohistoric Period *(Late Holocene: 1790 to present)*</u>

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

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains, the Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla were a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differed from the Luiseño and Gabrielino in that their religion was more similar to the Mohave tribes of the eastern deserts than the *Chingichngish* cult of the Luiseño and Gabrielino.

The territory of the Gabrielino, at the time of Spanish contact in the sixteenth century, was located in much of current-day Los Angeles and Orange Counties. The southern extent of this group was bounded by Aliso Creek, the eastern extent was located east of current day San Bernardino along the Santa Ana River, the northern extent included the San Fernando Valley, and the western extent of their range included portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978; Kroeber 1925).

The Luiseño were a seasonal hunting and gathering people, with cultural elements that were very distinct from the Archaic Period peoples, including cremation, the use of the bow and arrow, and use of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of the marine resources available by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. The elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included trade of Obsidian Butte obsidian and other resources from the eastern deserts and steatite from the Channel Islands. The Mockingbird Connection Project area is clearly within known Luiseño ancestral land (Appendix III).

2.3.2 History

The historic background of the project area began with the Spanish colonialization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego) missions began colonizing southern California and gradually expanded their use of the interior valley (in what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and

Murrieta (American Local History Network: Riverside Co. CA 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel and Los Angeles and described fertile valleys, lakes and sub-desert areas (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become Riverside County (American Local History Network: Riverside Co. CA 1998), many mission outposts, or *asistencias* were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts that were located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822, and secularize the missions in 1832, signifying the end of the Mission Period (Brigandi 1998; Riverside County n.d.). By this time, the missions owned some of the best and fertile land in southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The “grants” were called “ranchos,” of which Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo were located in present day Riverside County; many of these ranchos have lent their names to modern-day locales (American Local History Network: Riverside Co. CA 1998). The first grant in what is now Riverside County, Rancho Jurupa, was given to Juan Bandini in 1838. These ranchos were all located in the valley environments typical of western Riverside County.

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

> ...We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission...We plead and beseech you...to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we

> were obedient to the Fathers according to the regulations, because we considered it as good for us (Brigandi 1998:21).

Native American culture had been disrupted to the point where they could no longer rely on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on the missionaries, but also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based on utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850 California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies.

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

With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in Southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from Tennessee, brought a group of associates and co-investors out to Southern California, and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region. (American Local History Network: Riverside Co. CA 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor ten miles to the north, due to differences in opinion concerning religion, morality, the Civil War, politics, and fierce competition to attract settlers. After a series of instances in which charges were claimed about unfair use of tax monies to the benefit of the City of San Bernardino only, several people from Riverside decided to investigate the possibility of a new county. In May 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.).

2.4 Records Search Results

Archaeological records searches were completed by BFSA at the EIC at UCR. The records search results showed that 26 previous cultural reports have been filed for projects conducted within one mile of the property, seven of which involved portions of the current project area. The searches did not identify any recorded sites within the property boundary. However, 51 sites were reported within a one-mile radius of the APE, as listed in Table 2.4–1. The complete records search results from EIC are provided in Appendix II.

Table 2.4–1

Previously Recorded Sites within One Mile

Site Number	Site Type	Site Dimensions	Report Reference/ Recorded By
33-7820	Historic Structure	N/A	J. Warner
33-7822	Historic Structure	N/A	J. Warner
33-11128	Historic Structure	N/A	CRM Tech
33-11361	Historic District	N/A	N/A
33-12357	Historic Structure	N/A	B. Tang
RIV-328	Milling Stations	100m x 100m	A Taenszel
RIV-392	Prehistoric Camp	100m x 100m	D. Cowper
RIV-2075	Milling Station	2m x 3m	C. Drover
RIV-2076	Milling Station	2m x 5m	C. Drover
RIV-2077	Milling Station	3m x 5m	R. Parr
RIV-2560	Milling Station	7m x 6m	M. Lerch
RIV-2561	Milling Station	1m x 1m	M. Lerch
RIV-2562	Milling Station	2.5m x 2m	M. Lerch
RIV-2563	Milling Station	6m x 18m	M. Lerch
RIV-2564	Milling Station	15m x 50m	M. Lerch
RIV-2565	Milling Station	12m x 36m	M. Lerch
RIV-2566	Milling Station	5m x 15m	M. Lerch
RIV-2567	Milling Station	1m x 1m	R. Parr
RIV-3083	Artifact Scatter	20m x 30m	M. Lerch

Site Number	Site Type	Site Dimensions	Report Reference/ Recorded By
RIV-3084	Milling Station	30m x 80m	R. Parr
RIV-3085	Milling Station	30m x 10m	R. Parr
RIV-3086	Milling Station	6m x 4m	R. Parr
RIV-3087	Milling Station	50m x 6m	R. Parr
RIV-3404	Milling Station	30m x 80m	D. McCarthy
RIV-3509	Milling Station	3m x 2.9m	R. Parr et al.
RIV-3510	Milling Station	35m x 42m	R. Parr et al.
RIV-3511	Milling Station	20m x 30m	R. Parr et al.
RIV-3512	Milling Station	3m x 5m	R. Parr et al.
RIV-3513	Milling Station	30m x 30m	R. Parr et al.
RIV-3514	Milling Station	3.5m x 2.5m	R. Parr et al.
RIV-3515	Milling Station	30m x 30m	R. Parr et al.
RIV-3516	Milling Station	7m x 2m	R. Parr
RIV-3517	Milling Station	5m x 7m	R. Parr
RIV-3518	Milling Station	6m x 10m	R. Parr
RIV-3519	Milling Station	5.5m x 6m	R. Parr
RIV-3520	Milling Station	5m x 5m	R. Parr
RIV-3521	Milling Station	3m x 13m	R. Parr
RIV-3522	Milling Station	2m x 3m	R. Parr
RIV-3523	Milling Station	2m x 2m	R. Parr
RIV-3524	Milling Station	2m x 2m	R. Parr
RIV-3525	Milling Station	6m x 3m	R. Parr
RIV-3526	Milling Station	3m x 2m	R. Parr
RIV-3527	Milling Station	2m x 2m	R. Parr
RIV-3528	Milling Station	1m x 1.5m	R. Parr
RIV-3529	Milling Station	50m x 10m	R. Parr
RIV-3530	Milling Station	3.5m x 2m	R. Parr
RIV-6908	Milling Station	3m x 3m	CRM Tech
RIV-7377	Milling Station	100m x 20m	S. Briggs
RIV-7378	Temporary Camp	100m x 30m	S. Briggs
RIV-7379	Milling Station	1m x 1m	S. Briggs
RIV-7380	Milling Station	2m x 2m	S. Briggs

2.5 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in CEQA and Section 106 of the NHPA provide the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

2.5.1 California Environmental Quality Act (CEQA)

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

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency’s determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:
    a) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
    b) Is associated with the lives of persons important in our past;
    c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
    d) Has yielded, or may be likely to yield, information important in prehistory or history.

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

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

1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
2) The significance of an historical resource is materially impaired when a project:
    a) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
    b) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,
    c) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

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

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

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

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

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

2.5.2 National Historic Preservation Act (NHPA).

The regulations implementing Section 106 (36 CFR 800 or Agency counterpart regulations) of the National Historic Preservation Act of 1966 (NHPA), as amended, require

federal agencies to identify all cultural properties on land under its control or jurisdiction that meet the criteria for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on those actions that may affect them.

The NHPA established the federal government's policy on historic preservation and the programs, including the NRHP, through which that policy is implemented. Under the NHPA, historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 United States Code [USC] 470w [5]). Section 106 (16 USC 470f) of the NHPA requires federal agencies, prior to implementing an "undertaking" (e.g., issuing a federal permit), to consider the effects of the undertaking on historic properties and to afford the ACHP and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing on the NRHP.

As the project will fall under review by the United States Bureau of Reclamation, the NHPA of 1966 (as amended) and its implementing regulations (16 USC 470 et seq., 36 CFR 800, 36 CFR 60, and 36 CFR 63) apply to the project, requiring the Bureau to consider whether the project would affect historic properties listed on or meeting the criteria for listing on the NRHP. Federal law states that paleontological resources are not regulated under Section 106 of the NHPA unless those resources are in the context of a cultural resource, in which case they are considered cultural resources. The United States Bureau of Reclamation will be the lead agency for NHPA Section 106 compliance, and consultation with the SHPO and ACHP will be conducted as required.

3.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in determination of resource significance. For the current project, the study area under investigation is the northwest portion of Riverside County. The scope of work for the archaeological program conducted for the Mockingbird Connection Project included the survey of an approximately 1.1 mile linear project area and proposed location for the five million-gallon reservoir and a related pump station. Given the small area involved and the narrow focus of a Phase I survey, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions:

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

Data Needs:

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

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

4.0 RESULTS OF SITE INVESTIGATIONS

4.1 Methods

4.1.1 Survey Methods

The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. BFSA Archaeologists surveyed the project properties during the week of August 31, 2009, under the direction of Brian F. Smith, Principal Investigator. The methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. Project Archaeologist Tracy A. Stropes conducted the intensive pedestrian survey with field technician Charles Callahan. The field methodology employed for the project included walking evenly spaced survey transects between approximately two and ten meters apart (depending upon ground conditions) and oriented parallel to the proposed corridor. All potentially sensitive areas where cultural resources might be located were closely inspected. Photographs documenting survey discoveries and overall survey conditions were taken frequently and geo-tagged for future reference.

4.1.2 Curation

All photographs, notes, records, maps, research results, and any other relevant materials pertaining to the Mockingbird Connection Project are stored at the office of BFSA in Poway, California.

4.1.3 Native American Participation

A search of the Sacred Lands Files of the NAHC was requested by BFSA, the results of which are provided in Appendix III. The Sacred Lands File search by the NAHC failed to indicate the presence of sacred or ceremonial sites or landforms considered important to local tribes within the project area. A Native American representative was not present during the survey process. No other documented correspondence or analysis from the Native Americans has been received as of the dissemination of this report. Should additional communications be received, they will be forwarded to the reviewing agency.

4.2 Results

The property consists of gently sloped terrain bordered by residential developments. The majority of the project area is an unpaved dirt corridor maintained by the WMWD (Plates 4.2–1, 4.2–2, and 4.2–3). The vegetative landscape was sparse and composed of small patches of introduced grasses. There was no difficulty gaining access to the project area. The project area is characterized as generally disturbed from grading, development, and the construction

Plate 4.2–1. Project area overview (view northeast).

Plate 4.2–2. Project area overview (view southwest).

Plate 4.2–3. Project area overview (view east).

of Irving Street and Constable Road. The survey failed to identify the presence of any cultural resources within the project area. In addition, records search data did not identify any sites within the project area. However, multiple sites (primarily milling stations) were identified less than 100 meters east of the proposed reservoir/pump station location. Despite this, no additional cultural resources (features, soils, or artifacts) were identified within the boundary of the current project. The drainages, animal burrow backdirt, and areas of native vegetation were all closely inspected for evidence of prehistoric activity; none was observed.

5.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

5.1 Resource Importance

The survey of the 1.1-mile Mockingbird Connection Project failed to identify any cultural resources within project boundary.

5.2 Impact Identification

The proposed project consists of the construction of approximately 5,900 linear feet of pipeline, up to 42-inch diameter, located within street right-of-way and within pipeline easements in the City of Riverside and adjacent unincorporated Riverside County, and a five million-gallon reservoir and a related pump station. Based on the negative results of the archaeological records searches and survey, no impacts to cultural resources are anticipated.

6.0 MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS

6.1 Unavoidable Impacts

In accordance with CEQA and Section 106, the potential affect of the proposed Mockingbird Connection Project on prehistoric or historic archaeological resources must be assessed. The proposed Mockingbird Connection Project will directly impact the majority of the linear project area in order to install the 5,900-foot proposed pipeline, tank, and pump station. As no cultural resources were identified within the project alignment, no further impacts are anticipated.

6.2 Mitigation of Impacts

Based on a lack of archaeological deposit within the project area, no mitigation of impacts related to cultural resources will be required.

6.3 Significant Adverse Effects

The current study failed to identify the presence of archaeological resources within the proposed development area. Therefore, no significant adverse effects are anticipated.

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8.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

The archaeological survey was conducted by Project Archaeologist Tracy A. Stropes and Field Technician Charles Callahan under the direction of Brian F. Smith, Principal Investigator. The records search review and drafting of this report was conducted by Project Archaeologist Tracy A. Stopes, under the direction of Brian F. Smith. Adrián Sánchez Moreno produced the graphics, and Nora Thornbury and Karen E. Doose conducted the technical editing.

Information was provided by the EIC regarding previously recorded resources. The NAHC provided the results of the Sacred Lands File search for the project area, as well as a list of representatives to facilitate the involvement of local tribal groups in the review process for this project.

<u>APPENDIX I</u>

Resumes of Key Personnel

TRACY A. STROPES M.A., RPA (16283)

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EDUCATION

Master of Anthropology, San Diego State University, CA, 2007
Bachelor of Science, Anthropology, University of California at Riverside, 2000

SUMMARY OF EXPERIENCE

Project Archaeologist for Brian F. Smith & Associates, Archaeological, Paleontological, and Historical Consulting — duties include project management of all phases of archaeological investigations for local, state and federal agencies; field supervisor of all phases of archaeological projects; lithic analysis; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California — March 2009 - Present.

Principal Investigator for TRC Solutions, Irvine, CA. Archaeological Principal Investigator for cultural resource segment of Natural Sciences and Permitting Division. Duties included management of all phases of archaeological investigations for private companies and local, state and federal agencies; personnel management, field supervision of all phases of archaeological projects; laboratory supervision; lithic analysis, Native American consultation, and reporting; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California. —June 2008 – February 2009.

Principal Investigator for Archaeological Resource Analysts, Oceanside, CA. As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc. Primary tasks included filed direction, project management, personnel management, lab analysis, and authorship of company reports throughout southern California. —June 2006 – May 2008

Project Archaeologist for Gallegos & Associates, Carlsbad, CA. Duties for Gallegos and Associates included project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship, and editing for several technical reports for various projects throughout southern California. In addition, composed several data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance. —September 1996 – June 2006.

Project Archaeologist for Macko Inc, Santa Ana Heights, CA. Duties for Macko Inc. included project management, laboratory management, lithic analysis, field supervision, report authorship, and editing for technical reports for various projects throughout southern California. —September 1993 – September 1996.

Archaeological Field Technician for Chambers Group Inc, Irvine, CA. Duties for Chambers Group Inc. included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —January 1993 – September 1993.

Archaeological Field Technician for John Minch and Associates, San Jaun Capistrano, CA. Duties for John Minch and Associates included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —May 1992 – September 1992.

Report/Papers

Principal Author

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 I-80 Gold Run Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

1994 Final Report: Data Recovery Excavations at Five Late Prehistoric Archaeological Sites Along the Los Trancos Access Road, Newport Coast Planned Community, Orange County, California. Prepared for the Coastal Community Builders, a division of The Irvine Company.

Contributing Author

2008 Lithic Analysis for Thirteen Sites Along the Transwestern Phoenix Expansion Project, Loops A and B. Prepared for Transwestern Pipeline Company, LLC.

2005 Cultural Resource Survey and Testing for the Star Ranch Property, San Diego, California.

2004 Cultural Resource Test Report for the Palomar Point Project: Site CA-SDI-1 6205, Carlsbad, California. Prepared for Lanikai Management Corp.

2004 Cultural Resource Survey and Test Report for the Canyon View Project, Carlsbad, California. Prepared for Shapouri & Associates.

2004 Cultural Resource Test Report for the Yamamoto Property: Site SDM-W-2046, Carlsbad, California. Prepared for Cunningham Consultants, Inc.

2004 Historical Resources Report for the Kuta and Mascari Properties, Otay Mesa, California. Prepared for Centex Homes.

2004 Cultural Resource Monitor and Test Report for the Encina Power Plant Project, Carlsbad, California. Prepared for Haley & Aldrich, Inc.

2004 Cultural Resource Test Report for Site CA-SDI-16788, Otay Mesa, California. Prepared for Otay Mesa Property, L.P.

2004 Cultural Resource Survey and Test Report for the Lonestar Project, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2003 Cultural Resource Mitigation Program for the Torrey Ranch Site CA-SDI-5325, San Diego, California. Prepared for Garden Communities.

2003 Cultural Resource Survey and Test Report for the Johnson Canyon Parcel, Otay Mesa, San Diego County, California. Prepared for Otay Mesa Property, L.P.

2002 Cultural Resource Data Recovery Plan for the Shaw Project: Sites CA-SDI-13025 and CA-SDI-13067, San Diego County, California. Prepared for Shapouri & Associates.

2001 Archaeological Test Program for CA-SDI-14112 Mesa Norte Project, San Diego, California. Prepared for Hunsaker & Associates.

2001 The Vista-Oceanside Cultural Resource Survey and Test Program, Vista, California. Prepared for Shapouri & Associates.

2001 Cultural Resource Test Program for the Wilson Property, Carlsbad, California. Prepared for the City of Carlsbad.

2001 Cultural Resource Test Plan for the Oceanside-Escondido Project, County of San Diego, California. Prepared for Dudek & Associates.

2001 Cultural Resource Test Program for the Kramer Junction Expansion Project Adelanto, California. Prepared for AMEC.

2001 Cultural Resource Test Program for CA-SDI-12508 San Diego, California (LDR. No. 99-1331). Prepared for Garden Communities.

2000 Archaeological Testing of Prehistoric Sites CASDI-14115 and CA-SDI-14116 for The Mesa Grande Project, San Diego, California. Prepared for Solana Mesa Partners, LLC.

2000 Cultural Resource Survey and Test Report for the Wetmore Property, Otay Mesa, San Diego County, California. Prepared for Mr. Andy Campbell.

2000 The Torrey Ranch Cultural Resource Test Program, San Diego County, California. Prepared for Garden Communities.

2000 Cultural Resource Test Results for the Otay Mesa Generating Project. Prepared for the California Energy Commission and Otay Mesa Generating Company, LCC.

2000 The Eternal Hills Cultural Resource Survey and Test Program, City of Oceanside, California. Prepared for Eternal Hills Memorial Park.

2000 The Quail Ridge Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning Inc.

2000 Cultural Resource Testing Program for CA-SDI-5652/H and CA-SDI-9474H SR 78/Rancho Del Oro Interchange Project, Oceanside, California. Prepared for Tetratech Inc.

2000 Cultural Resource Test Results for a Portion of CA-SDI-8654 (Kuebler Ranch) Otay Mesa, San Diego County, California. Prepared for Shapouri & Associates.

2000 Historical/Archaeological Monitoring and Data Recovery Program for Prehistoric Site CA-SDI-48, Locus C Naval Base Point Loma, San Diego, California. Prepared for Department of the Navy, Southwest Division.

2000 Cultural Resource Evaluation Report for the Palomar College Science Building Project San Marcos, California. Prepared for Parsons Engineering Science Inc.

1999 Cultural Resource Monitoring Report for the Village of Ystagua Water Main Break City of San Diego, California. Prepared for the City of San Diego Water Department.

1999 The Effect of Projectile Point Size on Atlatl Dart Efficiency in Lithic Technology Vol 24, No 1 p (27-37).

1999 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project, San Marcos, California. Prepared for City of San Marcos.

1999 5000 Years of Occupation: Cultural Resource Inventory and Assessment Program for the Carlsbad Municipal Golf Course Project City of Carlsbad, California. Prepared or Cotton/Beland/Associates, Inc.

1999 Silver Oaks Estates Cultural Resource Enhanced Survey and Test Report for a Portion of CA-SDI-7202 San Diego, California. Prepared for Helix Environmental Planning Inc.

1999 Historical Archaeological Test of a portion of CA-SDI-8303 for the Faraday Road Extension Carlsbad, California. Prepared for the City of Carlsbad.

1999 Cultural Resource Literature Review for the North Coast Transportation Study Arterial Streets Alternative San Diego County, California. Prepared for MLF/San Diego Association of Govt.

1998 Archaeological Test Report for a Portion of CA-SDI-9115/SDM-W-122 Carlsbad, California. Prepared for Industrial Developments International.

1998 Rainforest Ranch Cultural Resource Survey and Significance Test for Prehistoric Sites CA-SDI-14932, CA-SDI-14937, CA-SDI-14938, and CA-SDI-14946 County of San Diego, California. Prepared for Boys and Girls Club of Inland North County.

1998 Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California.

1998 Final Report: Cultural Resource Survey Report for the Sterling Property, Carlsbad, California. Prepared for SPT Holdings LCC.

1996 Final Report: Archaeological Survey and Test for the Huber Property Carlsbad, California. Prepared for Gene Huber.

1996 Final Report: Results of Phase II Test Excavations and Phase III Data Recovery Excavations at Nine Archaeological Sites Within the Newport Coast Planned Community Phase III Entitlement Area, San Joaquin Hills, Orange County, California. Prepared for Coastal Community Builders, a division of The Irvine Company.

1995 Preliminary Report: Phase II Test Results From Nine Prehistoric Archaeological Sites Within The Proposed Upper Newport Bay Regional County Park. Prepared for EDAW, Inc.

1995 Final Report: A Phase II Test Excavation at CA-ORA-136, Block 800 City of Newport Beach, Orange County California. Prepared for the Irvine Apartment Communities, a division of The Irvine Company.

Relevant Presentations

2003 Steep Edge Unifacial Tools of Otay Mesa: An Analysis of Edge Types from CA SDI-7215 SCA Southern California Data Sharing Meetings

2001 Identification of Late Period Behavior Patterns in Elfin Forest: Three Sites in Northern San Diego County. 2001 Society for California Archaeology Data Sharing Meetings, San Luis Obispo, California.

01/04 Guest Lecturer and Flintknapping Demonstration Mission San Luis Rey Band of Mission Indians Annual Inter-tribal Pow-Wow. Mark Mojado, Tribal Contact.

1996 Trans-Tehachapian Lithic Trade at the Canebreak/Sawtooth Transition. Thirteenth Annual Meeting, Society of California Archaeology, Bakersfield, California.

1994 Point Size and Atlatl Dart Efficiency. Twenty Fourth Annual Meeting, Great Basin Anthropological Conference, Elko, Nevada.

94/96 Guest Lecturer and Flint Knapping Instruction - Archaeological Field Class Fall Semester ,Cypress College, Cypress, California. Paul Langenwalter/Henry C. Koerper, Directors.

94/95 Annual Guest Lecturer - "Living History Days" at the Mission, Mission San Juan Capistrano, San Juan Capistrano, California.

1994 Guest Lecturer - El Monte High School, El Monte, California.

BRIAN FREDERICK SMITH

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Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates (BFSA). The company has been in business since 1977.

EDUCATION

Master of Arts degree from the University of San Diego in History, 1982.

Bachelor of Arts degree from the University of San Diego in History and Anthropology, 1975.

Completed the U. S. General Services Administration Training Center Course entitled "Introduction to Federal Project and Historic Preservation Law."

SUMMARY OF EXPERIENCE

As an archaeological consultant and principal investigator registered with various governmental agencies within the State of California since 1977, Brian F. Smith has successfully completed over five hundred archaeological and historical studies at properties within this region, accumulating over 35,000 hours of experience in dealing with sensitive cultural resources and governmental policies. Past projects conducted by Mr. Smith have included survey, test, and salvage programs conducted at sites of historic and/or prehistoric significance. Experience in southern California has included the investigation of prehistoric sites of all major cultural complexes which have existed in the region over the past 12,000 years, and historic sites of the Spanish, Mexican and early American periods. Mr. Smith has completed historic and historical architectural evaluations of structures for Federal and State review. Smith's expertise includes the composition of cultural resource documents for California (CEQA) and federal (NEPA and NHPA) projects, and the design and implementation of mitigation programs.

MAJOR PROFESSIONAL ACCOMPLISHMENTS

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area. The following are samples of the research efforts which are considered to have made an impact in the study of historic and prehistoric resources in the area.

Charles H. Brown Site — Site Director

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 — Site Foreman

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).
- Cultural Resources Site Survey at the Old San Diego Inn (1988).

City of San Diego Reclaimed Water Distribution System — Principal Investigator

A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Navy Broadway Complex — Consulting Historian and Archaeologist

The Navy Broadway Complex is a massive redevelopment project at the Naval Supply Depot located at the foot of Broadway in Downtown San Diego. This project involved the architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

Master Environmental Assessment Project, City of Poway — Principal Investigator/Historian

This project was 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.

City of Carlsbad Archaeological and Historical Guidelines — Consulting Archaeologist and Historian

BFSA was 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.

4S Ranch Cultural Resource Study — Consulting Archaeologist

The 4S Ranch property is a 3,600-acre parcel in northern San Diego County which is being developed as a master plan community. Brian Smith has served as the consulting archaeologist for nine studies of cultural resources on the project, including intensive surveys, recording of 170 archaeological sites, testing of resources for significance evaluations, preparation of mitigation plans, and conducting data recovery programs. The report of findings for the 4S Ranch mitigation program will include significant advances in the understanding of prehistoric subsistence patterns and periods of occupation in the region.

APPENDIX II

Archaeological Records Search Results (EIC)

Confidential; Bound Separately

APPENDIX III

Native American Heritage Commission Sacred Lands File Search Results; Native American Correspondence

Confidential; Bound Separately

15 September 2009

Mr. Richard J. MacHott
Albert A. Webb Associates
3788 McCray Street
Riverside, California 92506

Subject: Paleontological resource assessment, Clay Street Connection (Pedley) and Central Feeder Connection (Redlands), Riverside–Corona Feeder Project, Riverside and San Bernardino Counties, California

Dear Mr. MacHott:

A paleontological resource assessment has been completed for two components of the Western Municipal Water District's Riverside-Corona Feeder Project, being the Clay Street Connection and the Central Feeder Connection alignments in the Pedley and Redlands areas of Riverside and San Bernardino Counties, California (Attachments 1 through 3). The Clay Street Connection component in the community of Pedley in Riverside County (Attachment 2) consists of an approximately 0.75 mile alignment along Pedley Road between 56th Street and Limonite Avenue and continuing for another 0.75 miles eastward along Limonite Avenue to its intersection with Clay Street. Construction of the Clay Street Connection would involve open trench excavations of six to eight feet in depth for placement of up to 48-inch diameter water pipe. The second component of the project, the Central Feeder Connection alignment, is located within the city limits of Redlands and in an enclosed unincorporated enclave within Redlands in San Bernardino County (Attachment 3). The Central Feeder Connection component consists of an approximately 1.15 mile long pipeline alignment along San Bernardino Avenue between Alabama Street and eastward to a point west of the intersection with Webster Street, and a potential well field area on either side of San Bernardino Avenue west of Alabama Street. Construction of the Central Feeder Connection would involve open trench excavations of ten feet in depth for placement of up to 48- to 54-inch diameter water pipe.

Locations

The Clay Street Connection alignment is shown on Attachment 2, on the U. S. Geological Survey 7.5-minute, 1:24,000 scale, Riverside West, California, topographic quadrangle, and is located in the eastern half of Section 23 and along the southern edge of adjacent Section 24, Township 2 South, Range 6 West, San Bernardino Base and Meridian.

The Central Feeder Connection alignment is shown on Attachment 3, on the U. S. Geological Survey 7.5-minute, 1:24,000 scale, Redlands, California topographic quadrangle, and is located along the east-west section line between Sections 16 and 21, and for a short distance between Sections 15 and 22, Township 1 South, Range 3 West, San Bernardino Base and Meridian. The potential well field is located in adjacent unsectioned grant lands of Rancho San Bernardino in the southern part of projected Section 17 and adjacent northern part of projected Section 20, Township 1 South, Range 3 West, San Bernardino Base and Meridian.

Basis of assessments

The paleontological assessments herein are based on published geologic maps of the two component areas, and on the results of six collections and records searches conducted in 2005, 2006 and 2009. Two records searches, one for each component alignment, were conducted in September 2009 by the Division of Geological Sciences at the San Bernardino County Museum (SBCM) in Redlands, California, and are combined into a single report (Scott, 2009, attached). In addition, the SBCM previously conducted a record search in December 2006 for the 56th Street Booster Station project on the west side of the Pedley Hills, the coverages for which partially overlap (copy attached). A collections and records search of the Vertebrate Paleontology collections of the Natural History Museum of Los Angeles County (LACMNH) in Los Angeles was also conducted in 2005 for the northern Pedley Hills area (copy attached), and two searches of the Invertebrate Paleontology collection records on the Museum's internet web site at LACMNH were conducted in April and August of 2009. The results of these collections and records searches are discussed below.

Geologic settings

The most recent geologic map of the Pedley area (Attachment 4, after Morton and Cox, 2001, Riverside West 7.5' quadrangle) shows the project alignment to be located on surface exposures of Quaternary older alluvial fan deposits (Qof_a) of middle to late Pleistocene age that lap onto the southwest part of the Pedley Hills. The Pedley Hills are composed of Mesozoic (Cretaceous) granitic rocks (diorite and quartz diorite, Kdqd) of the Peninsular Ranges batholith and Paleozoic? metamorphic rocks (inpure quartzite, Pzq) that were intruded by the granitic rocks (Attachment 4, after Morton and Cox, 2001). The older alluvial fan deposits (Qof_a), which cover extensive areas north and south of the the Santa Ana River plain, mainly consist of indurated to slightly indurated, reddish-brown sandy alluvial fan sediments and, locally, may include a thin, discontinuous surface layer of Holocene alluvial fan material.

The most recent geologic map of the Redlands area (Attachment 5, after Matti *et al*., 2003, Redlands 7.5' quadrangle) shows the potential well field and Central Feeder Connection alignment to be located on surface exposures of young Quaternary axial-valley alluvial deposits (Qya_3) of middle Holocene age that were once present across the ancestral Santa Ana

River floodplain. These deposits, which are at least 10 to 15 m (30 to 50 feet) thick and consisting of poorly sorted fine to coarse sand and sandy-pebble/small-cobble gravel comprise a gently west-sloping alluvial plain formed by sediment aggradation from the ancestral Santa Ana River and its tributaries (Matti *et al*., 2003).

Paleontological resource sensitivity

The Riverside County Transportation and Land Management Agency's Geographic Information System provides a means by which any area in the county can be evaluated for its paleontological resource sensitivity. Areas are ranked as having a High Sensitivity, or a Low or Undetermined Potential to yield significant nonrenewable paleontological resources. Areas ranked as having a high paleontological resource sensitivity or resource potential are "based on [the presence of] geologic formations or mappable rock units that … contain fossilized body elements, and trace fossils … [that] occur on or below the surface." These areas are shown in green on the Riverside County paleontological sensitivity maps (*e.g*., Attachment 4) and are thus subject to implementation of monitoring and mitigation measures necessary to reduce any adverse impacts to nonrenewable paleontological resources to a level below significant. Areas ranked as having a low or undetermined paleontological resource potential are required to undergo a paleontological evaluation (literature search, records check, field survey, and determination by a qualified paleontologist) before they are accepted as having a "low potential for containing significant paleontological resources subject to adverse impacts" and therefore normally exempt from further mitigation.

Paleontological sensitivity report and map, Clay Street Connection, Pedley

The Paleontological Sensitivity Report and Map generated by the Riverside County Land Information System in August 2009 (Attachment 6) for the Clay Street Connection component of the project appears not to be aligned with the local geology as shown on the geologic map of the area (Attachment 4), probably due to differences in scale when the resource sensitivity database was compiled. Although the intent of the original paleontological resource sensitivity database was undoubtedly to assign a Low sensitity to the granitic and metamorphic rocks of the Pedley Hills, and to assign a High (High A) sensitivity to the surrounding Quaternary alluvial fan sediments (Qof_a), the sensitivity boundaries do not coincide with the mapped geologic contacts (Attachments 4 and 6). We therefore are making our resource assessment and monitoring and mitigation recommendations based on the locations of the mapped geologic contacts between the granitic and sedimentary rock types (Attachment 4) rather than as shown on the Riverside County paleontological sensitivity map (Attachment 6).

As expected, the granitic and metamorphic rocks in the Pedley Hills are assigned a low paleontological sensitivity and shown (or meant to be shown) in light brown on Attachment 6. Areas that are assigned a "Low potential" for yielding paleontological resources are subject to confirmation by a literature search and records check by a qualified vertebrate paleontologist as only having a low potential for containing significant paleontological resources (*i.e.*, fossils) that might be subjected to adverse impacts by construction related activities. We regard the attached SBCM and other record search reports for the Pedley area as satisfying those requirements.

Although most of the project alignment is shown in green on the sensitivity map, indicating a high paleontological resource potential, we believe the detailed geologic map of the area (Attachment 4) to be a more reliable measure of the potential for discovering fossil resources, and therefore make our recommendations based on the geology along the alignment rather than on the paleontological sensitivity map of the same area (*i.e.*, Attachment 6). For example, the paleontological sensitivity map shows an area of low sensitivity, presumably of nonfossiliferous granitic and metamorphic rocks, extending southward from the southern end of the Pedley Hills and crossing Limonite Avenue, which would not be indicated based on the geology as shown on Attachment 4. We regard this southward extension as being incorrect, and treat this area of Quaternary alluvial fan sedimentation as having a high paleontological resource sensitivity (although shown in brown rather than in green on Attachment 6), as is indicated for the adjacent areas mapped as Quaternary alluvial fan sediments on the geologic map. Areas assigned a High (High A) paleontological resource potential/sensitivity should all be shown in green on Attachment 6.

Paleontological sensitivity, Central Feeder Connection, Redlands

The County of San Bernardino has yet to develop a county-wide paleontological sensitivity map for evaluating the resource potential of areas within the county. However, the San Bernardino County Museum in Redlands has a long history of providing paleontological evaluations and recommendations for potential mitigation. No fossil localites are known from the Holocene sediments in the alluvial plain surrounding the Central Feeder Connection alignment or site of the potential well field. The geologically young age (Holocene, less than 10,000 years old) of the axial-valley alluvial sediments across this area precludes them, almost by definition, from implementation of any paleontological mitigation procedures. The Holocene sediments certainly overlie older (Pleistocene) alluvial and/or alluvial fan sediments, which do have a higher resource sensitivity, but at depths too great (Matti *et al*., 2003) to be encountered during shallow excavation work expected to occur during pipeline placement.

Records search results – fossil localities: Clay Street Connection, Pedley

For the paleontological assessment of the Clay Street Connection component of the project, five collections and records searches have been utilized in order to document the presence of any previously recorded fossil localities nearby. The paleontological literature and collections and records review conducted in September 2009 by the San Bernardino County Museum (SBCM) did not reveal any recorded fossil localities along the pipeline alignment, nor within at least one mile of the projected route in any direction. An earlier paleontological review by the SBCM (December 2006, attached) for the Western Municipal Water District's proposed 56th Street Booster Station project, on the west side of the Pedley Hills, did not record any fossil localities nearby in any direction either. To the west, the closest terrestrial vertebrate fossils (extinct camel, *Camelops hesternus*, and extant bighorn sheep, *Ovis canadensis*) appear to have been recovered from ancient flood plain deposits of the ancestral Santa Ana River approximately five to seven miles due west, from the Riverside County Line Channel project of the Riverside County Flood Control and Water Conservation District Project No. 2-0-0300 (Kennedy *et al*., 2005, unpublished paleontological monitoring report).

The search of the Natural History Museum of Los Angeles County's (LACMNH) Invertebrate Paleontology records on their internet web site yielded 95 localities in Riverside County, but none in Quaternary alluvial or alluvial fan deposits nor any from within many miles of Pedley and the proposed Clay Street Connection alignment. Fossil invertebrates (and fossil plant materials) are rarely found in terrestrial and fluvial sediments that are deposited in alluvial and alluvial fan depositional environments. A record search conducted of the LACMNH Vertebrate Paleontology records (McLeod, 2005, attached) did not reveal any nearby localities either. The closest vertebrate fossil locality cited in that report was north of the city of Corona and located about seven to nine miles west-southwest of the project alignment. The single Quaternary locality yielded a specimen of deer (*Odocoileus* sp.).

Record search results – fossil localities: Central Feeder Connection, Redlands
Two museum collections and records searches were conducted for the paleontological assessment to document the presence of any previously recorded fossil localities near the Central Feeder Connection alignment component of the project. The paleontological literature and collections and records review conducted by the San Bernardino County Museum (SBCM) in September 2009 did not reveal any recorded fossil localities along the pipeline alignment, nor within at least one mile in any direction.

A search of the Natural History Museum of Los Angeles County's (LACMNH) Invertebrate Paleontology records on their internet web site yielded more than 300 localities in San Bernardino County, of which 152 were Cenozoic localities, mainly from the Miocene Barstow Formation. Only nine localities represented Quaternary deposits, most associated with dry lake bed deposits in the eastern part of the county. None of the localities was in Quaternary alluvial or alluvial fan deposits nor any from anyway near this part of the county and the proposed Central Feeder Connection alignment and potential well field site in Redlands. Fossil invertebrates (and plants) are rarely found in terrestrial and fluvial sediments that are deposited in alluvial and alluvial fan depositional environments.

Record search results – conclusions and recommendations
The two literature and collections and records search reports from the SBCM (Scott, 2006, 2009) conclude that Pleistocene alluvial and alluvial fan deposits in the Inland Empire of Riverside and San Bernardino Counties have a high potential to contain significant nonrenewable paleontological resources (*i.e*., fossils), particularly of terrestrial Ice Age mammals, most of which are now extinct. These and similar sediments therefore have a high paleontological resource sensitivity. Fossils from similar alluvial and alluvial fan deposits in the Inland Empire include many species of large mammals, such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, sabre-toothed cats, and extinct horses, camels and bison (SBCM collections; see also references in Scott, 2006, 2009).

Because of the high paleontological resource sensitivity of the Pleistocene alluvial and alluvial fan deposits (Qof_a on Attachment 4) along the Clay Street Connection component of the project alignment, around the western and southern sides of the Pedley Hills, full time paleontological monitoring of excavation and trenching activities will be required in order to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (*i.e*., terrestrial Ice Age fossils) in the Pleistocene old alluvial fan deposits (Qof_a).

For the Central Feeder Connection component of the project, the surface exposures along the alignment are geologically young (mid Holocene) axial-valley alluvial sediments (Qya_3), which have a low potential to contain significant nonrenewable paleontologic resources, and so are assigned a low paleontologic sensitivity. No program to mitigate impacts to nonrenewable paleontologic resources is recommended, nor considered necessary at this time. However, if older (Pleistocene) alluvial sediments, which do have a high potential to contain fossil resources, are encountered or identified in the subsurface, then a qualified paleontologist must be retained to develop a mitigation program (MMRP) consistent with CEQA guidelines, regulations implemented by the City of Redlands and the County of San Bernardino (as outlined in Scott, 2009), and with the proposed guidelines of the Society of Vertebrate Paleontology.

Summaries

For the Clay Street Connection component of the Riverside–Corona Feeder Project in the Pedley area of Riverside County, a mitigation, monitoring and reporting program (MMRP) consistent with the provisions of the California Environmental Quality Act (CEQA), regulations currently implemented by the County of Riverside, and the proposed guidelines of the Society of Vertebrate Paleontology should be implemented for this project, which is located across Quaternary older alluvial fan sediments that are known to yield remains of Pleistocene ("Ice Age") terrestrial mammals (*e.g.*, mammoths and mastodons, sabre-toothed cats, camel, bison, giant ground sloth and others) within the Inland Empire of Riverside County. At a minimum, the MMRP should consist of those procedures outlined on page 9, following.

The Central Feeder Connection component of the Riverside–Corona Feeder Project in the Redlands area of San Bernardino County is located entirely on surface exposures of geologically young deposits consisting of a minimum of 10 to 15 m (30 to 50 feet) of Holocene axial-valley alluvial sediments. These young alluvial sedimentary units have low potential to contain significant nonrenewable paleontologic resources, and so are assigned a low paleontologic sensitivity. Because any open trenching activity for the Central Feeder Connection is expected to be on the order of only ten feet or less, no program to mitigate adverse impacts (loss or destruction) to potential nonrenewable paleontologic resources is regarded as necessary at this time and such a program is not recommended for this component of the WMWD Riverside-Corona Feeder Project. Holocene (or "Recent") sediments are considered to be too young geologically (less than about 10,000 years old) to yield significant paleontological resources and thus are typically exempt, almost by definition, from paleontological mitigation requirements. However, if older (Pleistocene) alluvial sediments, which do have a high potential to contain fossil resources, are encountered or identified in the subsurface, then a qualified paleontologist must be retained to develop a mitigation program (MMRP) consistent with CEQA guidelines, regulations implemented by the City of Redlands and the County of San Bernardino (as outlined in Scott, 2009), and with the proposed guidelines of the Society of Vertebrate Paleontology.

Thank you for the opportunity to have provided paleontological services on this project. If you have any questions, please feel free to contact us at our Poway address.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Gerald I. Shiller
California Professional Geologist No. 4558

PROFESSIONAL GEOLOGIST
GERALD I. SHILLER
PG-4558
Expires 2/28/11
STATE OF CALIFORNIA

Attachments: Index maps, geologic map, record search reports, paleo sensitivity report

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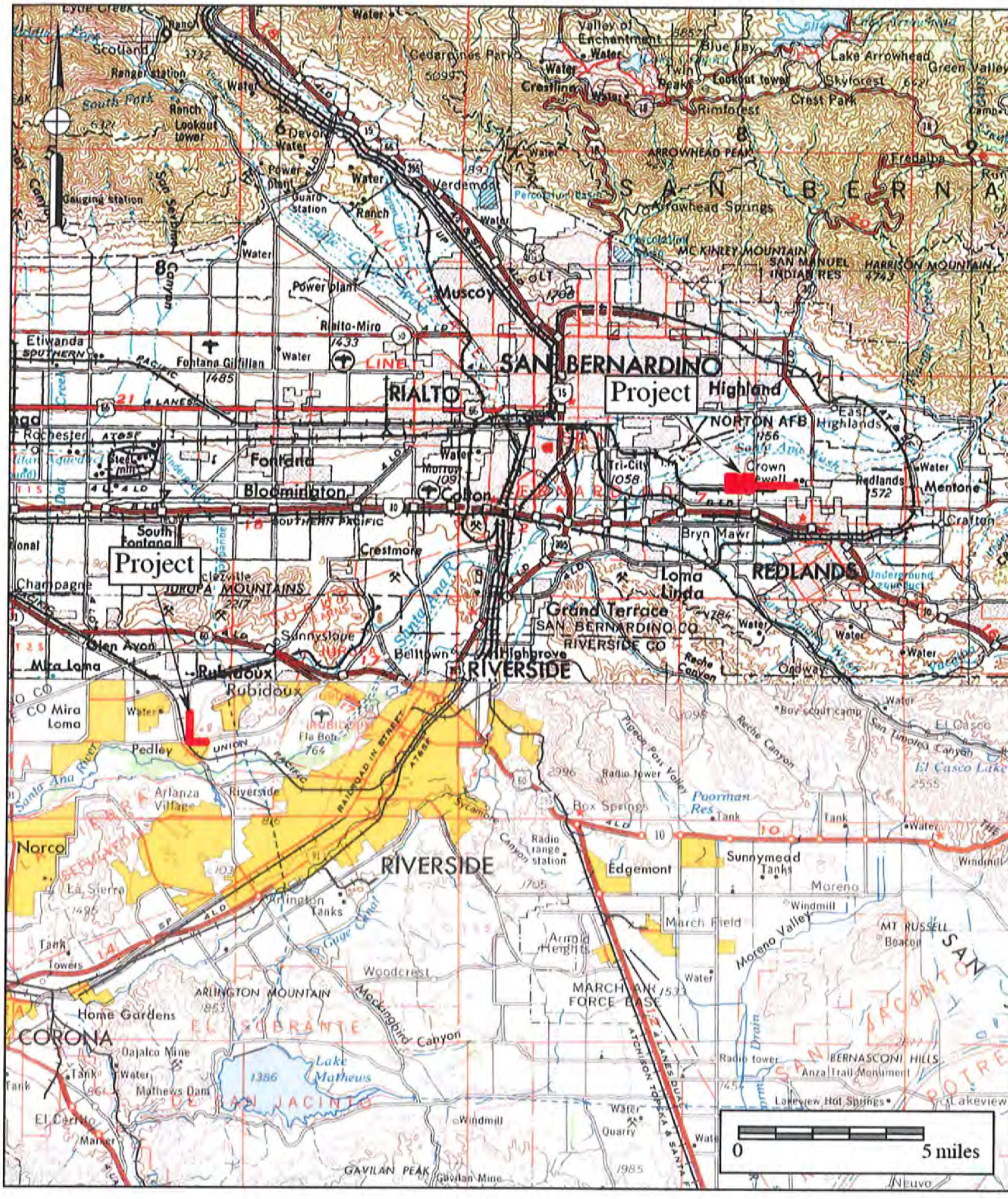
Paleontological Mitigation Program, Clay Street Connection, Pedley

1. Monitoring of trenching and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Monitoring will be conducted in areas of trenching or excavation in undisturbed older alluvial fan sediments, as well as where over-excavation of any thin veneer of younger alluvial sediments will encounter the older alluvial fan deposits in the subsurface. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain or yield fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates if appropriate. Preparation of individual vertebrate fossils is often more time consuming than for accumulations of invertebrate fossils.

3. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retreivable storage (*e.g.*, the San Bernardino County Museum). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.

4. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to the appropriate Lead Agency, will signify satisfactory completion of the project program to mitigate impacts to any paleontological resources.



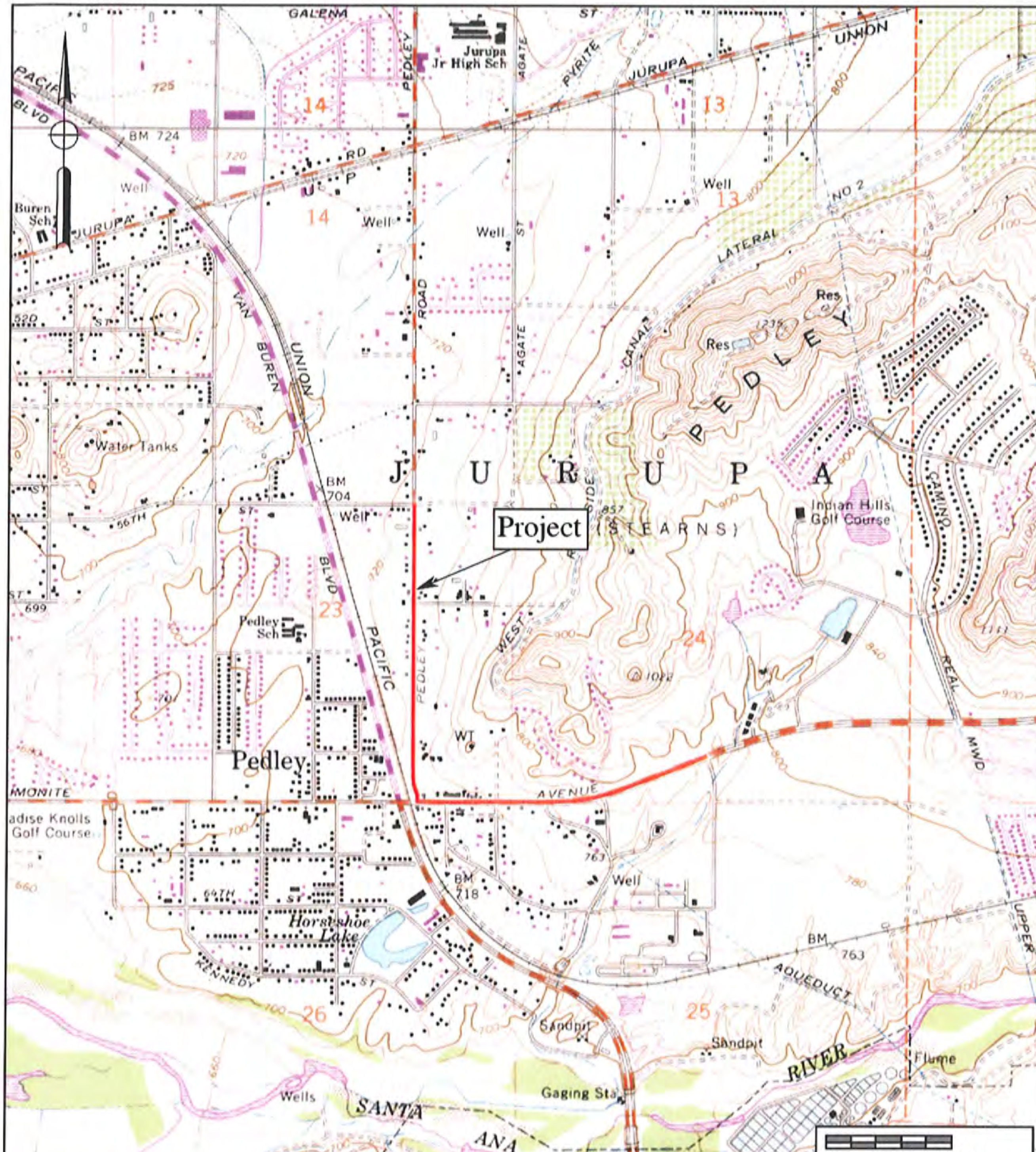
Attachment 1

General Location Map

Riverside-Corona Feeder Project, Pedley and Redlands

USGS *Santa Ana and San Bernardino* (1:250,000 series)

Brian F. Smith and Associates, Inc. Environmental Consultants

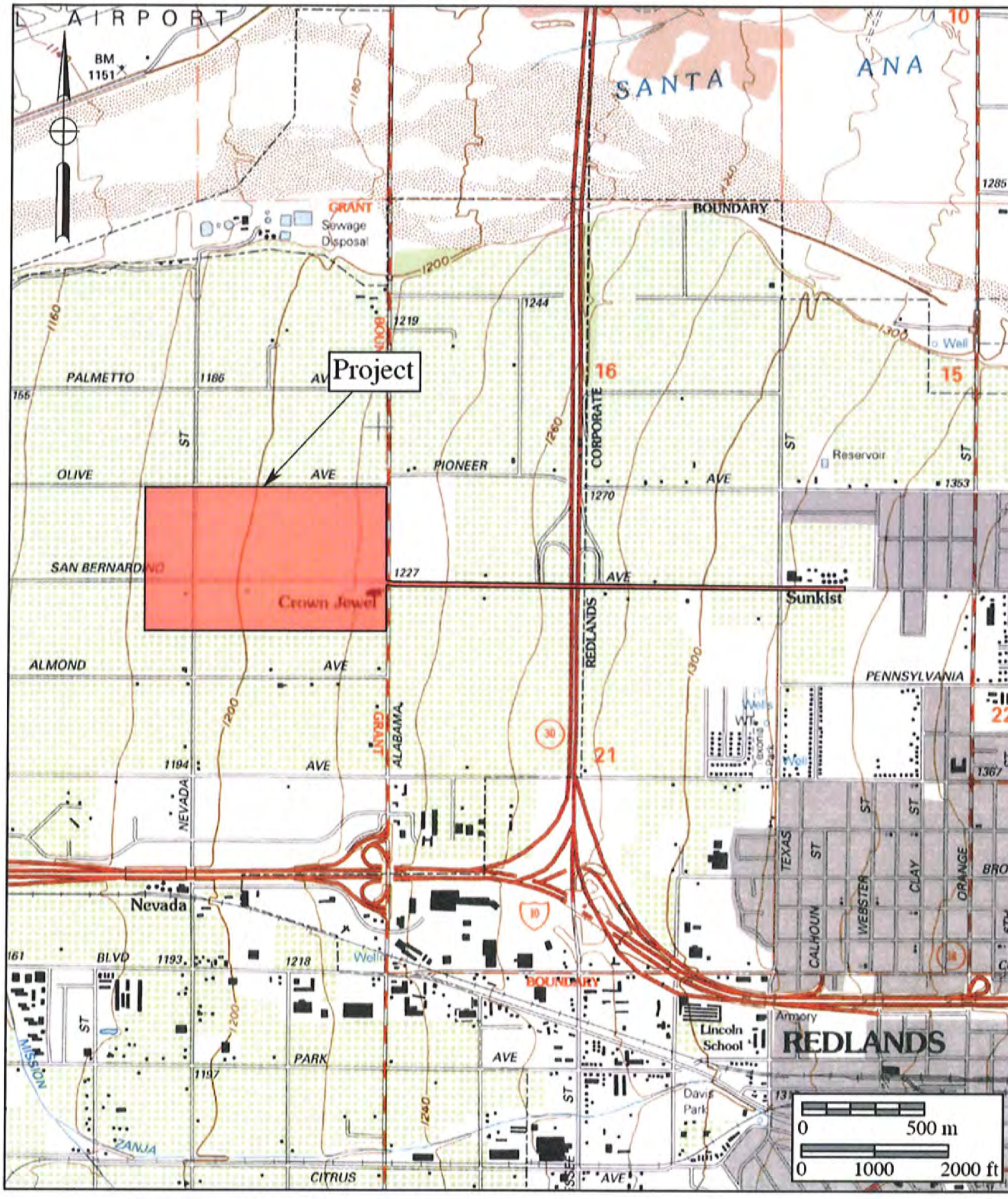


Attachment 2

Project Location Map

Riverside-Corona Feeder, Clay Street Connection, Pedley

USGS *Riverside West* and *Fontana* Quadrangles (7.5 minute series)

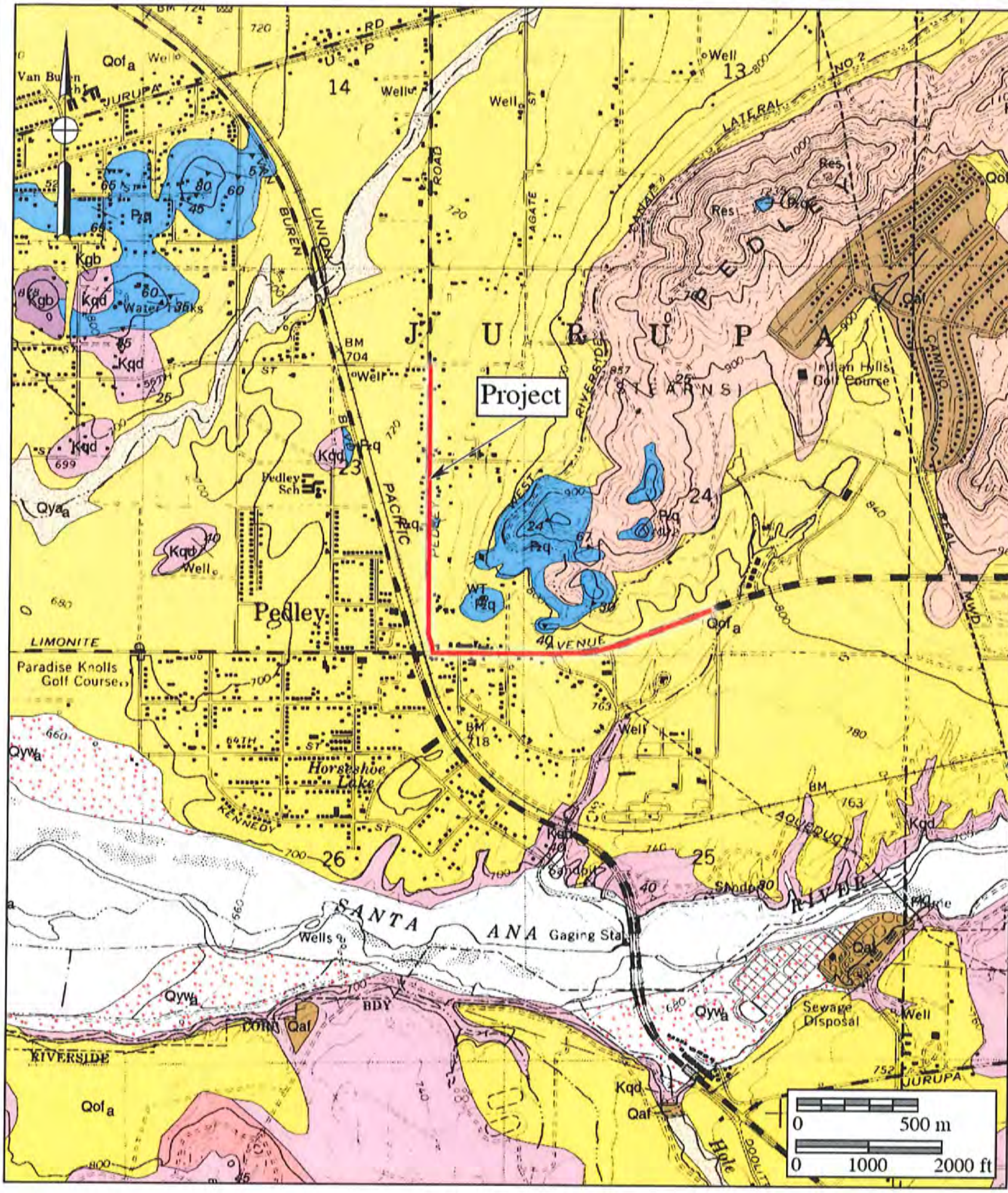


Attachment 3

Project Location Map

Riverside-Corona Feeder, Central Feeder Connection, Redlands

USGS *Redlands* Quadrangle (7.5 minute series)

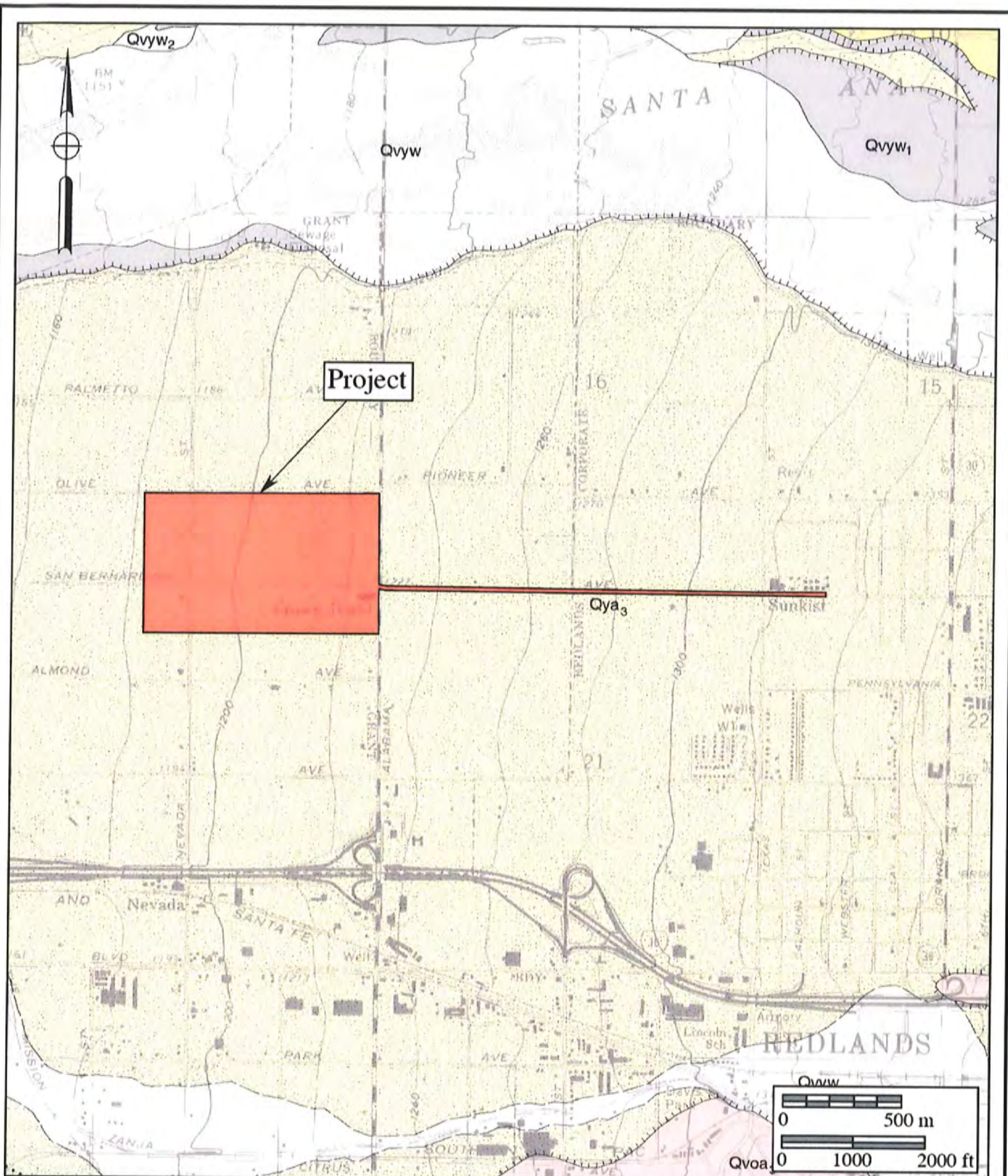


Attachment 4

Geologic Map

Riverside-Corona Feeder, Clay Street Connection, Pedley

Geology after Morton and Cox (2001)



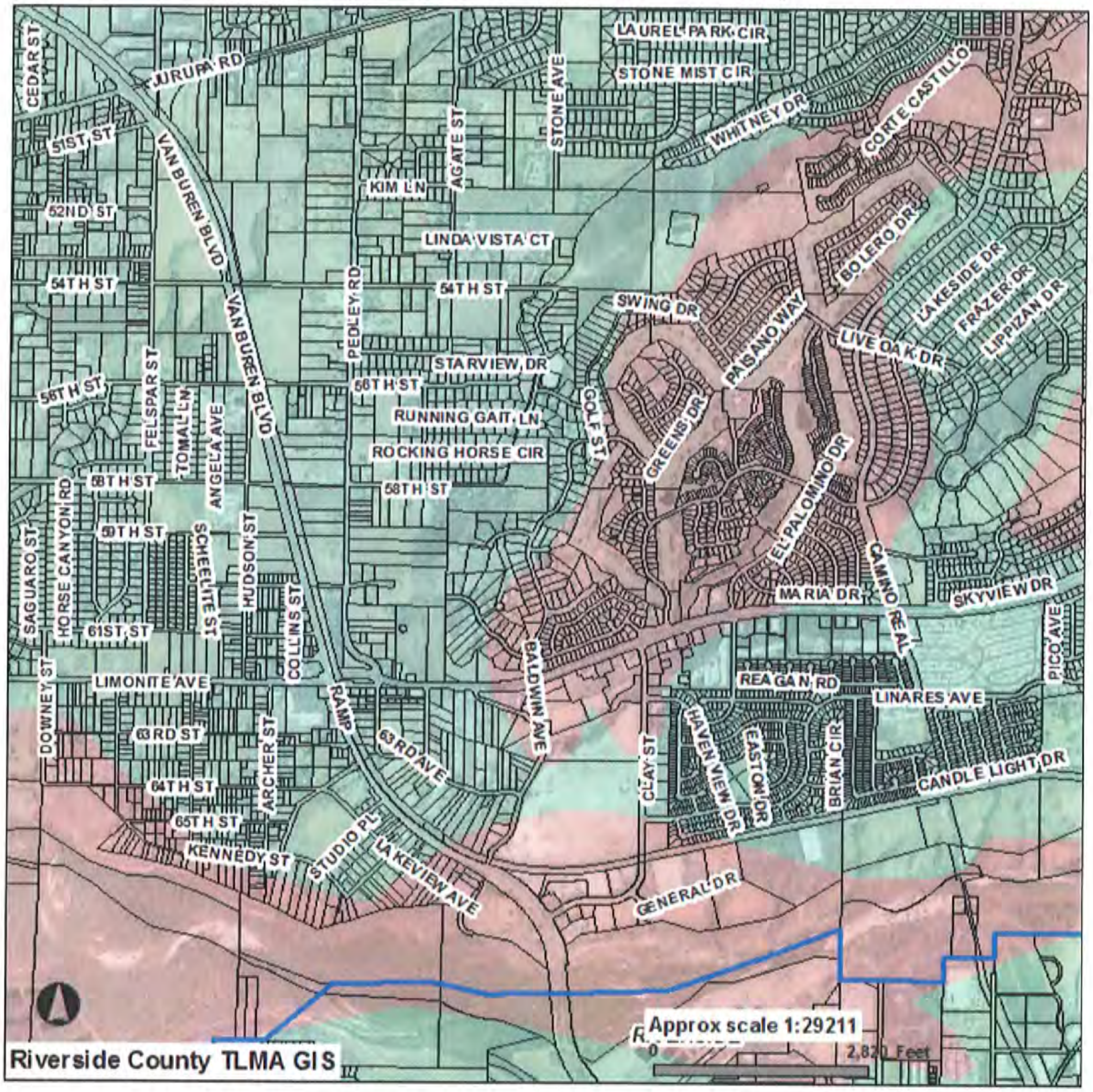
Attachment 5

Geologic Map

Riverside-Corona Feeder, Central Feeder Connection, Redlands

Geology after Morton and Weber (2001)

Clay Street Connection Paleo Sensitivity



PALEONTOLOGICAL SENSITIVITY

- PARCELS
- HIGH POTENTIAL/SENSITIVITY (HIGH A)
- LOW POTENTIAL
- CITY BOUNDARY

REPORT PRINTED ON...Mon Aug 31 2009 12:23:03 GMT-0700 (PDT)

Attachment 6

Paleontological Sensitivity Map

Riverside–Corona Feeder, Clay Street Connection

Riverside County TLMA GIS

Report Date:
August 31, 2009 12:10:08 PM PDT

PALEONTOLOGICAL SENSITIVITY REPORT

APN(s):
Click on the APN to display the Assessor's Map

PALEONTOLOGICAL SENSITIVITY:

- HIGH SENSITIVITY (HIGH A).

BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

- LOW POTENTIAL.

FOLLOWING A LITERATURE SEARCH, RECORDS CHECK AND A FIELD SURVEY, AREAS MAY BE DETERMINED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST AS HAVING LOW POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES SUBJECT TO ADVERSE IMPACTS.

- UNDETERMINED POTENTIAL.

AREAS UNDERLAIN BY SEDIMENTARY ROCKS FOR WHICH LITERATURE AND UNPUBLISHED STUDIES ARE NOT AVAILABLE HAVE UNDETERMINED POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES. THESE AREAS MUST BE INSPECTED BY A FIELD SURVEY CONDUCTED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST.

SPECIAL NOTES:

- NO SPECIAL NOTES

SAN BERNARDINO COUNTY MUSEUM

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COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

11 September 2006

Brian F. Smith and Associates
attn: George Kennedy, Ph.D.
14010 Poway Road, Suite "A"
Poway, CA 92064

re: **PALEONTOLOGY RECORDS REVIEW, CENTRAL FEEDER AND CLAY STREET CONNECTION PROJECTS, PEDLEY AND REDLANDS REGIONS, RIVERSIDE AND SAN BERNARDINO COUNTIES, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named development in the Pedley region of Riverside County and the Redlands region of San Bernardino County, California. Specifically, the Clay Street Connection in Pedley property crosses the southern portions of section 19, Township 2 South, Range 5 West, San Bernardino Base and Meridian, and section 24, T 2S, R 6W, SBB&M, as shown on the Riverside West, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1980). The Central Feeder Project alignment crosses portions of sections 15, 16, 17, 20, and 21, Township 1 South, Range 3 West, SBB&M, as shown on the Redlands, California 7.5' USGS topographic quadrangle (1967 edition, photorevised 1988).

Previous geologic mapping of the proposed Clay Street Connection Project area (Rogers, 1965; Morton and Cox, 2001) indicates that the entire alignment traverses surface exposures of old alluvial fan deposits of middle to later Pleistocene age (= unit $\mathbf{Qof_{a}}$). These Pleistocene sediments have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Pleistocene alluvial sediments elsewhere throughout Riverside and San Bernardino Counties and the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Pajak and others, 1996; Scott, 1997; Springer and others, 1998, 1999). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison, as well as plant macro- and microfossils (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002).

Previous geologic mapping of the region of the proposed Central Feeder Project (Bortugno and Spittler, 1986; Matti and others, 2003) indicates that the study area is situated entirely upon surface exposures of middle Holocene younger axial-valley alluvium (= unit **Qya$_3$**). These younger alluvial sedimentary units have low potential to contain significant nonrenewable paleontologic resources, and so are assigned low paleontologic sensitivity. However, these Holocene alluvial sediments may overlie subsurface Pleistocene older alluvium. If present in the subsurface, this alluvium would have high potential to contain fossil resources, depending upon its lithology, as discussed above.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-recorded paleontologic resource localities are present from along either of the proposed development alignments or from the Central Feeder study area, nor from within at least one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the proposed projects in Pedley and Redlands will cross Pleistocene older alluvial deposits, both at the surface (near Pedley) and a depth (in Redlands), that have high paleontologic sensitivity. Excavation in this older alluvium has high potential to impact paleontologic resources. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to nonrenewable paleontologic resources, including curation of recovered resources (Scott and others, 2004). This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations implemented by the County of San Bernardino and with the proposed guidelines of the Society of Vertebrate Paleontology.

The County of San Bernardino (Development Code §82.20.040) defines a qualified vertebrate paleontologist as meeting the following criteria:

Education: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology).

Professional experience: At least five years professional experience with paleontologic (not including cultural) resources, including the collection, identification and curation of the resources.

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include, but not be limited to:

(a) Field survey before grading. In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring.

(b) Monitoring during grading. A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Paleontologic monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

(c) Recovered specimens. Qualified paleontologic personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.

(d) Identification and curation of specimens. Qualified paleontologic personnel shall identify and curate specimens into the collections of the Division of Geological Sciences, San Bernardino County Museum, an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until curation into an established museum repository has been fully completed and documented.

(e) Report of findings. Qualified paleontologic personnel shall prepare a report of findings with an appended itemized of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino County Museum, will signify completion of the program to mitigate impacts to paleontologic resources.

For the Riverside County portion of the mitigation program, the mitigation program must still be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present along the proposed project alignment. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein

are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of all recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until such curation into an established museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

SAN BERNARDINO COUNTY MUSEUM

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(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org

COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

19 December 2006

Brian F. Smith and Associates
attn: George Kennedy, Ph.D.
14010 Poway Road, Suite "A"
Poway, CA 92064

re: **PALEONTOLOGY RECORDS REVIEW, "56TH STREET BOOSTER STATION EXPANSION PROJECT", COMMUNITY OF PEDLEY, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named development in the community of Pedley, Riverside County, California. Specifically, the proposed project alignments are is located in the southwestern quadrant of section 13, Township 2 South, Range 6 West, San Bernardino Base and Meridian, as seen on the Riverside West, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1980).

Previous mapping of the proposed property (Rogers, 1965; Morton and Cox, 2001) indicates that the proposed water line alignment across the base of the Pedley Hills will traverse surface rocks of undifferentiated Cretaceous diorite and quartz diorite (= unit **Kdqd**). These rocks have no potential to contain fossil resources, and so are assigned low paleontologic sensitivity. In contrast, the proposed water line alignment in the low-lying areas west of the Pedley Hills crosses surface exposures of old alluvial fan deposits of middle to later Pleistocene age (= unit $\mathbf{Qof_a}$). These Pleistocene sediments have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Pleistocene alluvial sediments elsewhere throughout Riverside and San Bernardino Counties and the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Pajak and others, 1996; Scott, 1997; Springer and others, 1998, 1999). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison, as well as plant macro- and microfossils (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999; Anderson and others, 2002).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-recorded paleontologic resource localities are present from along the proposed development alignment, nor from within at least one mile in any direction.

Recommendations

The results of the literature review and the search of the RPLI at the SBCM demonstrate that the proposed water alignment located west of Pedley Hills will cross Pleistocene older alluvial deposits that have high paleontologic sensitivity. Excavation in this older alluvium has high potential to impact paleontologic resources. A qualified vertebrate paleontologist must develop a program to mitigate impacts to these resources. This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present along the proposed project alignment. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of all recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until such curation into an established museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

References

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Springer, K.B., E. Scott, L.K. Murray and W.G. Spaulding, 1998. Partial skeleton of a large individual of *Mammut americanum* from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 18(3): 78-A.

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Woodburne, M.O., 1991. The Cajon Valley, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

NATURAL HISTORY MUSEUM
OF LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325
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e-mail: smcleod@nhm.org

14 January 2005

McKenna et al.
6008 Friends Avenue
Whittier, California 90601-3724

Attn: Jeanette A. McKenna

re: Paleontological resources for the proposed Pedley Hills area of Riverside County (E ½ Sect. 13, T 2 S, R 6 W & Sect. 18, T 2 S, R 5 W) project area

Dear Jeanette:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Pedley Hills area of Riverside County (E ½ Sect. 13, T 2 S, R 6 W & Sect. 18, T 2 S, R 5 W) project area as outlined on the sections of the Fontana and Riverside West USGS topographic quadrangle maps that you sent to me on 11 January 2005. We do not have any vertebrate fossil localities that lie directly within the proposed project boundaries, but we do have a locality somewhat nearby that occurs in sedimentary deposits similar to those that occur in the proposed project area.

Bedrock in the elevated Pedley Hills, occupying most of the southeastern one-half of the proposed project area, consists of granitic and other plutonic rocks that, of course, will be devoid of fossils. Surficial deposits in the remainder of the proposed project area, the less elevated areas of northwestern one-half and around the development in the south-central portion, consist of Quaternary Alluvium deposits with younger deposits occurring at the surface in the more northwestern part. We do not have any vertebrate fossil localities in the immediate vicinity from these deposits. Our closest fossil vertebrate locality in the Quaternary sediments is LACM 1207, directly southwest of the proposed project area just north of the city of Corona, where a specimen of a fossil deer, *Odocoileus*, was found.

Excavations in the plutonic bedrock in the Pedley Hills portion of the proposed project area will not uncover any vertebrate fossils. Any subsurface excavations in older Quaternary sedimentary deposits in the lower lying portions of the proposed project area have a good chance of encountering significant vertebrate fossil remains. Therefore, any substantial subsurface excavation in the lower lying portions of the proposed project area should be closely monitored to quickly and professionally collect any fossils discovered. The University of California at Riverside [collections and records now at the University of California at Berkeley Museum of Paleontology] may have additional fossil vertebrate locality information for the area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

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

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

15 September 2009

Mr. Richard J. MacHott
Albert A. Webb Associates
3788 McCray Street
Riverside, California 92506

Subject: Paleontological resource assessment, La Sierra Avenue Pipeline alignment, Riverside–Corona Feeder Project, Lake Mathews–Arlington Mountain area, Riverside County, California

Dear Mr. MacHott:

A paleontological resource assessment has been completed for the La Sierra Avenue Pipeline component of the Western Municipal Water District's Riverside-Corona Feeder Project, being an approximately 1.96 mile long alignment in the northern Lake Mathews–Arlington Mountain area of unincorporated Riverside County, California (Attachments 1 and 2). The project component alignment (Attachment 2) extends along La Sierra Avenue from the intersection with El Sobrante Road, near the north side of Lake Mathews reservoir, and northward to the intersection with Cleveland Avenue at the Riverside City Limits. Construction of the La Sierra Avenue Pipeline would involve open trenching and excavation to depths of about eight feet and placement of up to 42-inch diameter water pipe.

Location

The La Sierra Avenue Pipeline alignment is shown on Attachment 2, on the U. S. Geological Survey 7.5-minute, 1:24,000 scale, Riverside West and Lake Mathews, California, topographic quadrangles, and begins in the south in the extreme southwest corner of Section 31, Township 3 South, Range 5 West, and continuing northward along the western edge of Section 31 and the adjacent eastern edges of projected Sections 36 and 25, Township 3 South, Range 6 West, San Bernardino Base and Meridian, in unsectioned lands of the Rancho El Sobrante de San Jacinto land grant.

Basis of assessment

The paleontological assessment herein is based on published geologic maps of the project area, and on the results of two museum collections and records searches. One collections and records search was conducted in September 2009 by the Division of Geological Sciences at the San Bernardino County Museum (SBCM) in Redlands, California, and is attached. A second collections and records search of the Natural History Museum of Los Angeles County (LACMNH) Invertebrate Paleontology collection records on the Museum's internet web site was conducted in April of 2009. The results of these collections and records searches are discussed below.

Geologic setting

The most recent geologic maps of the northern Lake Mathews area (Morton and Cox, 2001, Riverside West 7.5' quadrangle; Morton and Weber, 2001, Lake Mathews 7.5' quadrangle) show most of the project alignment to be located on surface exposures of Lower Cretaceous (~ 109 to ~ 113 million year old) granitic rocks of various compositions (primarily mixed (undifferentiated) granodiorite and gabbro (Kcgb), as well as monzogranite and subordinate granodiorite (Kcg), and hornblende gabbro (Kgb)) (Attachment 3). Sediments at the very northern end of the proposed alignment (approximately the northernmost 0.2 miles or less), near the intersection of La Sierra Avenue and Cleveland Avenue, are mapped as Quaternary old alluvial fan deposits (Qof_a) of middle to late Pleistocene age (Attachment 3). These older alluvial fan sediments, which cover extensive areas in the Corona and Riverside areas, mainly consist of indurated, reddish-brown sandy and gravely alluvial fan deposits and, locally, may include a thin, discontinuous surface layer of Holocene alluvial fan material (Morton and Cox, 2001).

Paleontological resource sensitivity

The Riverside County Transportation and Land Management Agency's Geographic Information System provides a means by which any area in the county can be evaluated for its paleontological resource sensitivity. Areas are ranked as having a High Sensitivity, or a Low or Undetermined Potential to yield significant nonrenewable paleontological resources. Areas ranked as having a high paleontological resource sensitivity or resource potential are "based on [the presence of] geologic formations or mappable rock units that … contain fossilized body elements, and trace fossils … [that] occur on or below the surface." These areas are shown in green on the Riverside County paleontological sensitivity maps (*e.g.*, Attachment 4) and are thus subject to implementation of monitoring and mitigation measures necessary to reduce any adverse impacts to nonrenewable paleontological resources to a level below significant. Areas ranked as having a low or undetermined paleontological resource potential are required to undergo a paleontological evaluation (literature search, records check, field survey, and determination by a qualified paleontologist) before they are accepted as having a "low potential for containing significant paleontological resources subject to adverse impacts" and therefore normally exempt from further mitigation.

Paleontological sensitivity report and map

A Paleontological Sensitivity Report and Map generated by the Riverside County Land Information System in August 2009 (Attachment 4) for the La Sierra Avenue component of the project is considerably misaligned (more than half a mile eastward) with the local geology as shown on the geologic map of the area (Attachment 3), probably due to differences in scale when the resource sensitivity database was compiled. Although the intent of the original paleontological resource sensitivity database was undoubtedly to assign a Low sensitivity to the various granitic rock types of the southern California batholith in the Lake Mathews-Arlington Mountain area, and to assign a High (High A) sensitivity to the adjacent Quaternary older alluvial fan (Qof_a) sediments extending northward onto the adjacent alluvial plain, the sensitivity boundaries are not close to coinciding with the mapped geologic contacts. We therefore are making our resource assessment and monitoring and mitigation recommendations based on the locations of the mapped geologic contacts between the granitic and sedimentary rock types (Attachment 3) rather than as shown on the Riverside County paleontological sensitivity map (Attachment 4).

As expected, the mixed granitic rocks that comprise the Arlington Mountain area north of Lake Mathews are assigned a low paleontological sensitivity and shown (or meant to be shown) in light brown on Attachment 4. Areas that are assigned a "Low potential" for yielding paleontological resources are subject to confirmation by a literature search and records check by a qualified vertebrate paleontologist as only having a low potential for containing significant paleontological resources (*i.e.*, fossils) that might be subjected to adverse impacts. We regard the SBCM record search report and review (Scott, 2009, attached) for the La Sierra Avenue pipeline alignment and adjacent areas as satisfying those requirements.

The limited area underlying or adjacent to the very northern end of the project alignment with a "High paleontological resource potential" is only partly shown in green on the sensitivity map (Attachment 4). However, as noted above, we regard the detailed geologic map (Attachment 3) to be a more reliable measure of the potential for discovering fossil resources, and therefore make our recommendations based on the geology of the area as shown by the mapped geologic contacts rather than those shown on the paleontological sensitivity map of the same area. Areas that should be assigned a High (High A) paleontological resource potential/sensitivity (*e.g.*, Pleistocene alluvial and alluvial fan sediments) should all be shown in green on Attachment 4.

Records search results – fossil localities

Two museum collections and records searches have been utilized for the paleontological assessment of the La Sierra Avenue pipeline alignment in order to document the presence of any previously recorded fossil localities nearby. The paleontological literature and collections and records review conducted by the San Bernardino County Museum (SBCM) did not reveal any recorded fossil localities along the pipeline alignment, nor at least one mile of the projected route. The search of the Natural History Museum of Los Angeles County's (LACMNH) Invertebrate Paleontology records on their internet web site yielded 95 localities in Riverside County, but none in Quaternary alluvial or alluvial fan deposits nor any from within many miles of the Lake Mathews–Arlington Mountain area and the proposed La Sierra Avenue pipeline alignment. Fossil invertebrates and macroscopic plant remains are rarely found in terrestrial and fluvial sediments that are deposited in alluvial and alluvial fan depositional environments.

Record search results – conclusions and recommendations

The SBCM collections and records search report and review concludes that Pleistocene alluvial and alluvial fan deposits in the Inland Empire of Riverside County have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils), particularly of terrestrial Ice Age mammals, most of which are now extinct. These and similar sediments therefore are assigned a high paleontological resource sensitivity. Fossils from similar alluvial and alluvial fan deposits in the Inland Empire include many species of large mammals, such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, sabre-toothed cats, and extinct horses, camels and bison (SBCM collections; see also references in Scott, 2009). For the La Sierra Avenue pipeline, only the area underlain by older, Pleistocene sediments (Qof_a) have high potential to contain significant fossil resources, and so are assigned a high paleontologic sensitivity."

Because of the high paleontological sensitivity assigned to the Pleistocene alluvial and alluvial fan deposits at the northern end of the La Sierra Avenue pipeline alignment, from the intersection of La Sierra Avenue and Cleveland Avenue (Riverside City Limits) and southward to the first surface exposures of grantic rocks as shown on Attachement 3, full time paleontological monitoring of excavation and trenching activities in these deposits (Qof_a) is recommended to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (*i.e.*, terrestrial Ice Age fossils). For the mixed granitic rocks to the south, no program to mitigate impacts to nonrenewable paleontologic resources is recommended nor considered necessary.

Summary

For a short section, less than a fifth of a mile at the very northern end of the La Sierra Avenue Pipeline component of the Riverside–Corona Feeder Project in the Lake Mathews–Arlington Mountain area of unincorporated Riverside County, a mitigation, monitoring and reporting program (MMRP) consistent with the provisions of the California Environmental Quality Act (CEQA), regulations currently implemented by the County of Riverside, and the proposed guidelines of the Society of Vertebrate Paleontology should be implemented for that part of the project alignment located along La Sierra Avenue between Cleveland Avenue and southward to the first surface exposures of granitic rocks. This part of the project is located across Quaternary older alluvial fan sediments (Qof_a on Attachment 3), which are known to contain the remains of Pleistocene ("Ice Age") terrestrial mammals (*e.g.*, mammoths and mastodons, sabre-toothed cats, camel, bison, giant ground sloth and others) within Riverside County, and thus will need to be monitored paleontologically. At a minimum, the MMRP should consist of those procedures outlined on page 6, following.

Thank you for the opportunity to have provided paleontological services on this project. If you have any questions, please feel free to contact us at our Poway address.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Gerald I. Shiller
California Professional Geologist No. 4558

PROFESSIONAL GEOLOGIST
GERALD I. SHILLER
PG-4558
STATE OF CALIFORNIA

Attachments: Index maps, geologic map, record search reports, paleo sensitivity report

REFERENCES

Morton, D. M., and Cox, B. F. 2001. Geologic map of the Riverside West 7.5' quadrangle, Riverside County, California. U. S. Geological Survey, Open-File Report 01-451: 1 map sheet with text (scale 1:24,000).

Morton, D. M., and Weber, E. H., Jr. 2001. Geologic map of the Lake Mathews 7.5' quadrangle, Riverside County, California. U. S. Geological Survey, Open-File Report 01-479 [version 1.0]: 1 map sheet with text (scale 1:24,000).

Scott, E. G. 2009. Paleontology records review, La Sierra Avenue and Mockingbird Canyon alignments, Lake Mathews region, Riverside County, California. Paleontological records search report prepared for Brian F. Smith and Associates, Inc., Poway, California, by the Division of Geological Sciences, San Bernardino County Museum, Redlands, California [attached].

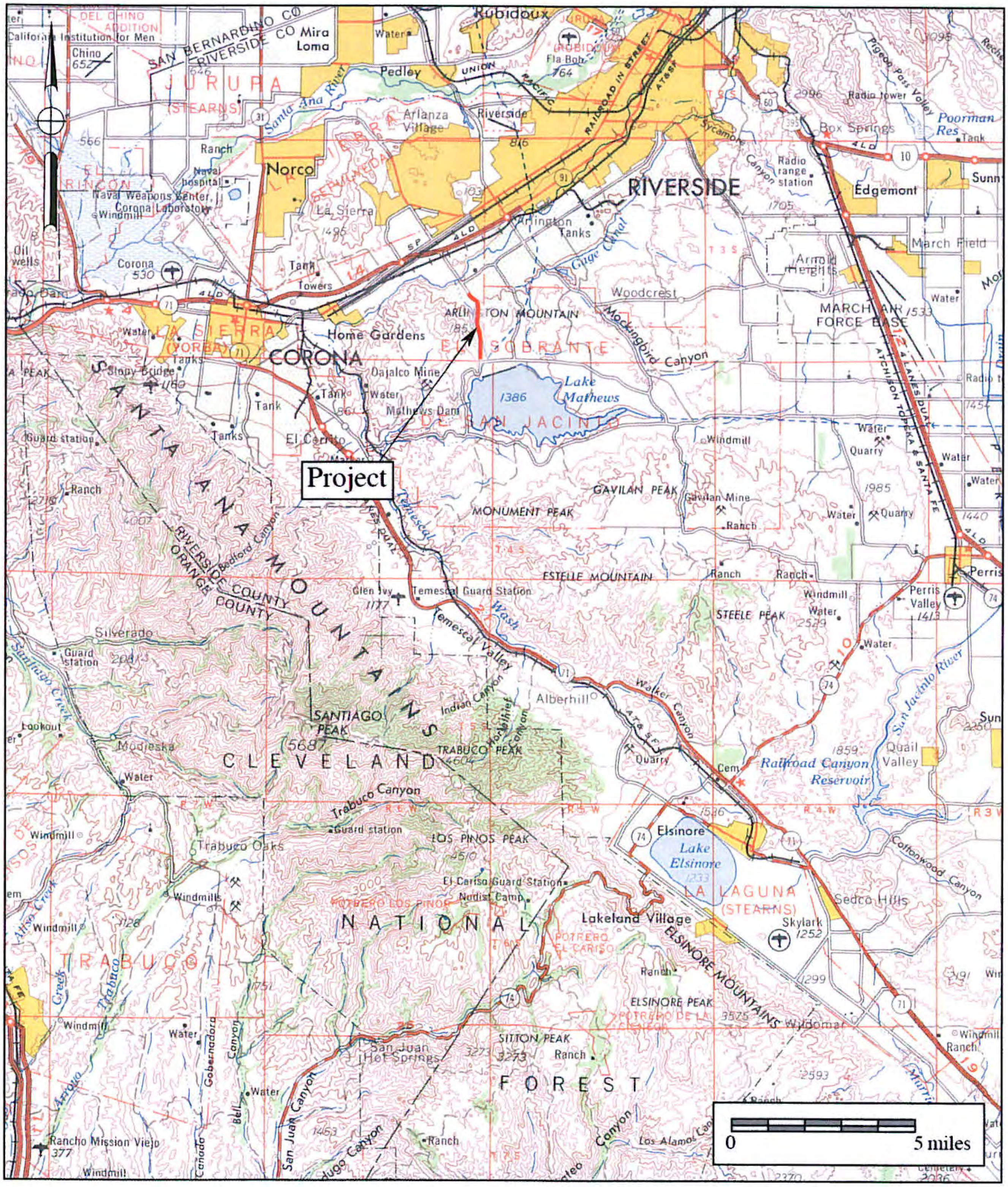
Paleontological Mitigation Program, La Sierra Avenue Pipeline

1. Monitoring of trenching and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Monitoring will be conducted in areas of trenching or excavation in undisturbed older alluvial fan sediments (Qof_a), as well as where over-excavation of any thin veneer of younger alluvial sediments will encounter the older alluvial fan deposits in the subsurface. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain or yield fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates if appropriate. Preparation of individual vertebrate fossils is often more time consuming than for accumulations of invertebrate fossils.

3. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retreivable storage (*e.g.*, the San Bernardino County Museum). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.

4. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to the appropriate Lead Agency, will signify satisfactory completion of the project program to mitigate impacts to any paleontological resources.

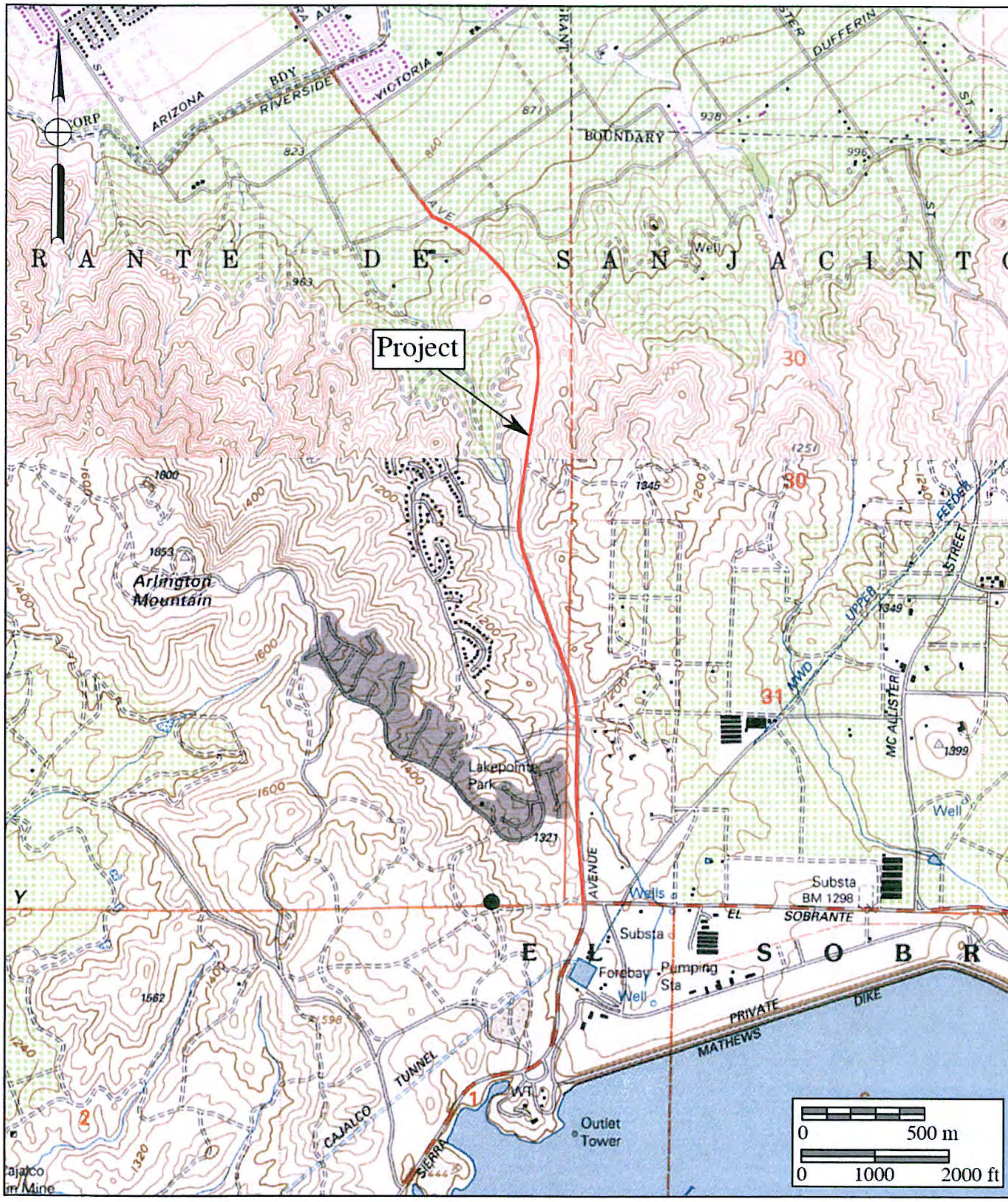


Attachment 1

General Location Map

Riverside-Corona Feeder, La Sierra Avenue Pipeline

USGS *Santa Ana* (1:250,000 series)

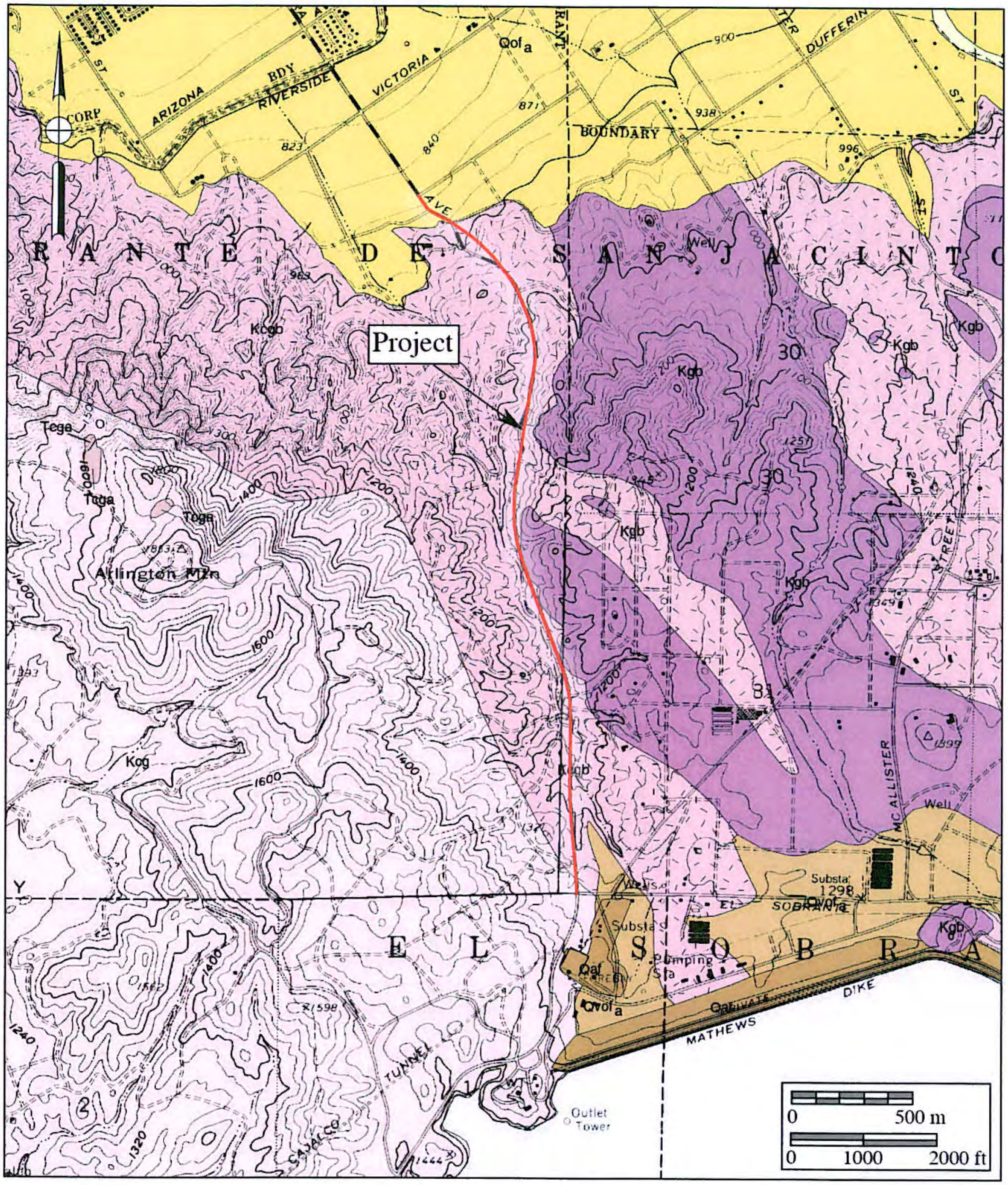


Attachment 2

Project Location Map

Riverside-Corona Feeder, La Sierra Avenue Pipeline

USGS *Riverside West* and *Lake Mathews* Quadrangles (7.5 minute series)



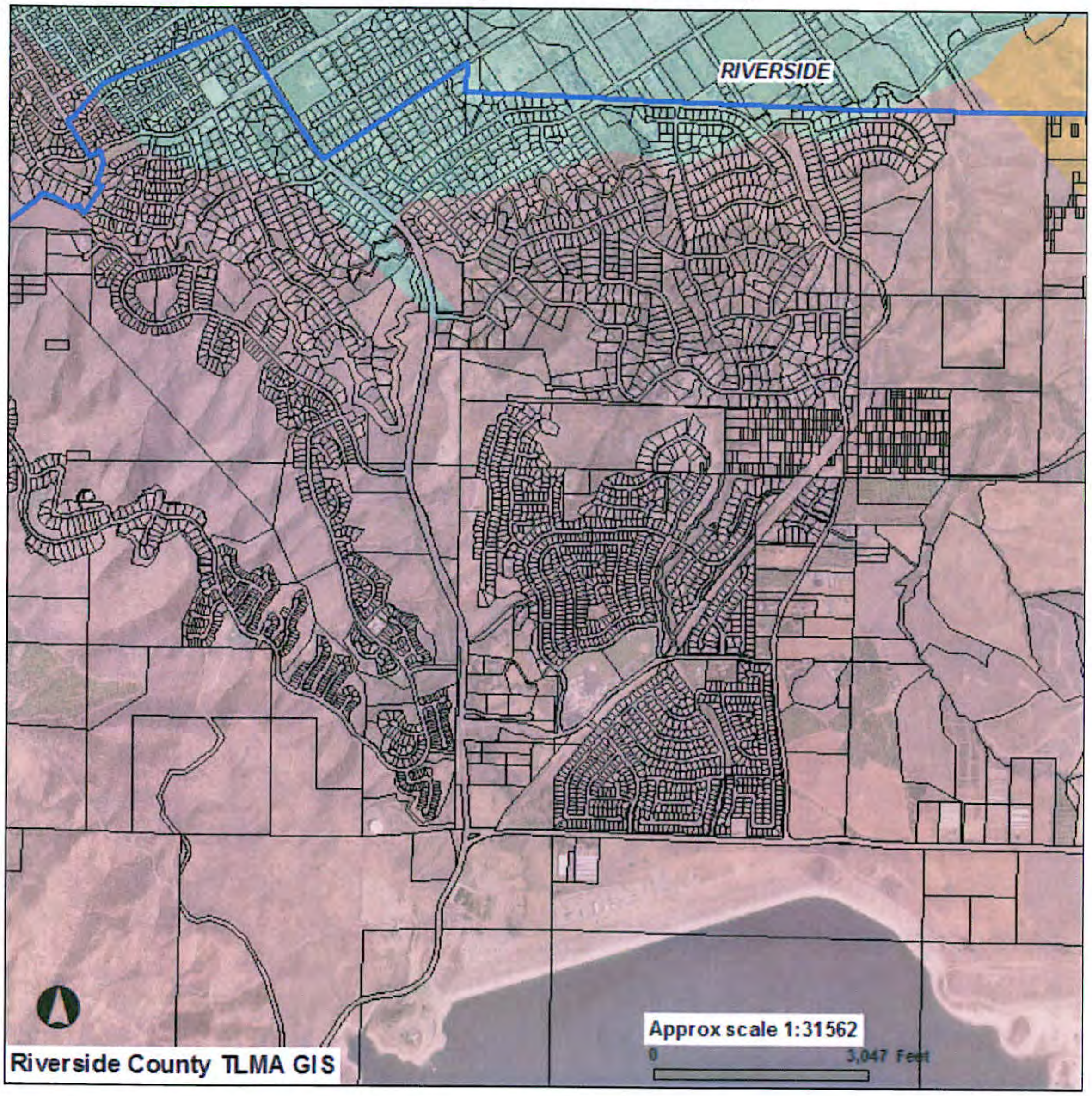
Attachment 3

Geologic Map

Riverside-Corona Feeder, La Sierra Avenue Pipeline

Geology by U. S. Geological Survey (2001)

La Sierra Pipeline Paleo Sensitivity



PALEONTOLOGICAL SENSITIVITY

PARCELS

CITY BOUNDARY

HIGH POTENTIAL/SENSITIVITY (HIGH A)

LOW POTENTIAL

UNDETERMINED POTENTIAL

REPORT PRINTED ON...Mon Aug 31 2009 12:00:30 GMT-0700 (PDT)

Attachment 4

Paleontological Sensitivity Map

Riverside–Corona Feeder, La Sierra Avenue Pipeline

Riverside County TLMA GIS

Report Date:
August 31, 2009 12:10:08 PM PDT

PALEONTOLOGICAL SENSITIVITY REPORT

APN(s):
Click on the APN to display the Assessor's Map

PALEONTOLOGICAL SENSITIVITY:

- HIGH SENSITIVITY (HIGH A).

BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

- LOW POTENTIAL.

FOLLOWING A LITERATURE SEARCH, RECORDS CHECK AND A FIELD SURVEY, AREAS MAY BE DETERMINED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST AS HAVING LOW POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES SUBJECT TO ADVERSE IMPACTS.

- UNDETERMINED POTENTIAL.

AREAS UNDERLAIN BY SEDIMENTARY ROCKS FOR WHICH LITERATURE AND UNPUBLISHED STUDIES ARE NOT AVAILABLE HAVE UNDETERMINED POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES. THESE AREAS MUST BE INSPECTED BY A FIELD SURVEY CONDUCTED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST.

SPECIAL NOTES:

- NO SPECIAL NOTES

SAN BERNARDINO COUNTY MUSEUM

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COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

11 September 2006

Brian F. Smith and Associates
attn: George Kennedy, Ph.D.
14010 Poway Road, Suite "A"
Poway, CA 92064

re: **PALEONTOLOGY RECORDS REVIEW, LA SIERRA AVENUE AND MOCKINGBIRD CANYON ALIGNMENTS, LAKE MATHEWS REGION, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-referenced properties north of Lake Mathews in Riverside County, California. The proposed La Sierra Avenue alignment traverses portions of section 31, Township 3 South, Range 5 West, San Bernardino Base and Meridian, as well as sections 25 and 36 (projected), T 3S, R 6W, SBB&M, as shown on the Lake Mathews, California and the Riverside West, California 7.5' United States Geologic Survey topographic quadrangle maps (1967 edition, the latter photorevised 1980). The proposed Mockingbird Canyon alignment crosses portions of sections 21, 22, 27, and 28, Township 3 South, Range 5 West, SBB&M, as seen on the Riverside West, California 7.5' United States Geologic Survey topographic quadrangle map (1967 edition, photorevised 1980).

Previous geologic mapping of the area (Rogers, 1965; Morton and Cox, 2001; Morton and Weber, 2001) indicates that the majority of the proposed Sierra Avenue alignment traverses Cretaceous granitic rocks, including surface exposures of hornblende gabbro (= unit **Kgb**) and undifferentiated granodiorite and gabbro of Cretaceous age (= **Kcgb**). These exposures of the Peninsular Ranges batholith have low potential to contain fossil resources and are assigned low paleontologic sensitivity. However, the northern portion of this alignment crosses old alluvial fan deposits of middle to later Pleistocene age (= unit $\mathbf{Qof_a}$). These Pleistocene sediments have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Pleistocene alluvial sediments elsewhere throughout Riverside and San Bernardino Counties and the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Pajak and others, 1996; Scott, 1997; Springer and others, 1998, 1999, 2007). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison, as well as plant macro- and microfossils (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999, 2007; Anderson and others, 2002).

Previous geologic mapping (Rogers, 1965; Morton and Cox, 2001) shows that the proposed Mockingbird Canyon alignment crosses several rock units, including the Val Verde tonalite (= unit **Kvt**), old alluvial fan deposits of middle to later Pleistocene age (= **Qof**$_a$), and Holocene and possibly latest Pleistocene alluvial fan deposits (= **Qyf**$_a$). Of these units, only the older Pleistocene sediments have high potential to contain significant fossil resources, as discussed above, and so these sediments are assigned high paleontologic sensitivity. Additionally, the younger Holocene sediments may overlie older Pleistocene alluvium present at depth. The Val Verde tonalite has no potential for fossil resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this records search indicated that no paleontologic localities are recorded within the boundaries of the proposed study areas, nor from within at least one mile in any direction.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation into undifferentiated granitic rocks of Cretaceous age has low potential to impact paleontologic resources. These rocks are assigned low paleontologic sensitivity. *No program to mitigate impacts to nonrenewable paleontologic resources is recommended for these rocks.*

However, the Pleistocene older alluvium present along the northern part of the proposed La Sierra Avenue alignment, and along portions of the proposed Mockingbird Canyon corridor, have high paleontologic sensitivity. Paleontologically sensitive older alluvium may also be present at depth, overlain by Holocene sediments. Excavations in portions of the proposed alignments where these Pleistocene or younger sediments are present will require a qualified vertebrate paleontologist to develop a program to mitigate impacts to nonrenewable paleontologic resources, including curation of recovered resources (Scott and others, 2004). This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations implemented by the County of Riverside and with the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present along the proposed project alignments. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein

are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of all recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until such curation into an established museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

References

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

15 September 2009

Mr. Richard J. MacHott
Albert A. Webb Associates
3788 McCray Street
Riverside, California 92506

Subject: Paleontological resource assessment, Mockingbird Connection, Riverside–Corona Feeder Project, Arlington Heights, Riverside, and adjacent unincorporated Riverside County, California

Dear Mr. MacHott:

A paleontological resource assessment has been completed for the Mockingbird Connection component of the Western Municipal Water District's Riverside-Corona Feeder Project, being an approximately 1.8 mile long alignment in the southern Arlington Heights area of the City of Riverside and in adjacent areas of unincorporated Riverside County, California (Attachments 1 and 2). The project component (Attachment 2) consists of an approximately 0.8 mile alignment along Irving Street from the Gage Canal southward before turning eastward for ~ 0.4 miles, southward for ~ 0.25 miles and then westward ~ 0.35 miles to its terminus at Van Buren Boulevard outside of the Riverside city limits in the old Spanish land grant lands of Rancho El Sobrante de San Jacinto in unincorporated Riverside County. Construction of the Mockingbird Connection component of the project would involve open trenching and excavation activities up to eight feet deep for up to 42-inch diameter pipe, and construction of a five million gallon covered tank reservoir. The depth of excavation for the proposed tank reservoir has not yet been determined (*i.e.*, not yet designed).

Location

The Mockingbird Connection alignment is shown on Attachment 2, on the U. S. Geological Survey 7.5-minute, 1:24,000 scale, Riverside West, California, topographic quadrangle, and crosses much of Section 21, the southwest corner of Section 22, the northwest corner of Section 27, and the northeast corner of projected Section 28, Township 3 South, Range 5 West, San Bernardino Base and Meridian. The project alignment is adjacent to (east of) the current (open-air) Mockingbird (Canyon) Reservoir and Mockingbird Canyon. The proposed covered tank reservoir will be located on the hillside above and east of Mockingbird Canyon.

Basis of assessment

The paleontological assessment herein is based on published geologic maps of the project area, and on the results of two museum collections and records searches. One collections and records search was conducted in September 2009 by the Division of Geological Sciences at the San Bernardino County Museum (SBCM) in Redlands, California, and is attached. A second collections and records search of the Natural History Museum of Los Angeles County (LACMNH) Invertebrate Paleontology collection records on the Museum's internet web site was conducted in April of 2009. The results of these collections and records searches are discussed below.

Geologic setting

The most recent geologic maps of the Mockingbird Canyon area (Morton and Cox, 2001, Riverside West 7.5' quadrangle; Morton and Weber, 2001, Lake Mathews 7.5' quadrangle) show the project alignment to be located on surface exposures of Lower Cretaceous (~ 100 ± million year old) granitic rocks (Val Verde tonalite, Kvt) of the Val Verde pluton and overlain in places by Quaternary (early Pleistocene) very old alluvial fan sediments ($Qvof_a$), and marginal to more extensive Quaternary (middle to late Pleistocene) older alluvial fan sediments (Qof_a), and by Quaternary (Holocene and late Pleistocene) young alluvial fan sediments in Mockingbird Canyon (Attachment 3, after Morton and Cox, 2001, and Morton and Weber, 2001). Most of the alignment is across areas of Quaternary older alluvial fan sediments (Qof_a), which also cover extensive areas in the Corona and Riverside areas. The deposits mainly consist of indurated to slightly indurated, reddish-brown sandy alluvial fan sediments and, locally, may include a thin, discontinuous surface layer of Holocene alluvial fan material (Morton and Cox, 2001). The very old alluvial fan deposits ($Qvof_a$) are mostly well dissected, well indurated, reddish-brown sand deposits, often with well developed pedogenic soils as much as 2 to 3 m thick.

Paleontological resource sensitivity

The Riverside County Transportation and Land Management Agency's Geographic Information System provides a means by which any area in the county can be evaluated for its paleontological resource sensitivity. Areas are ranked as having a High Sensitivity, or a Low or Undetermined Potential to yield significant nonrenewable paleontological resources. Areas ranked as having a high paleontological resource sensitivity or resource potential are "based on [the presence of] geologic formations or mappable rock units that … contain fossilized body elements, and trace fossils … [that] occur on or below the surface." These areas are shown in green on the Riverside County paleontological sensitivity maps (*e.g.*, Attachment 4) and are thus subject to implementation of monitoring and mitigation measures necessary to reduce any adverse impacts to nonrenewable paleontological resources to a level below significant. Areas ranked as having a low or undetermined paleontological resource potential are required to undergo a paleontological evaluation (literature search, records check, field survey, and determination by a qualified paleontologist) before they are accepted as having a "low potential for containing significant paleontological resources subject to adverse impacts" and therefore normally exempt from further mitigation.

Paleontological sensitivity report and map

A Paleontological Sensitivity Report and Map generated by the Riverside County Land Information System in August 2009 (Attachment 4) for the Mockingbird Connection component of the project is considerably misaligned (more than half a mile eastward) with the local geology as shown on the geologic map of the area (Attachment 3), probably due to differences in scale when the resource sensitivity database was compiled. Although the intent of the original paleontological resource sensitivity database was undoubtedly to assign a Low sensitivity to the granitic rocks (Kvt) of the Val Verde pluton and related batholithic rocks west of Mockingbird Canyon, and to assign a High (High A) sensitivity to the adjacent Quaternary older (Qof_a) and very old alluvial fan ($Qvof_a$) sediments marginal to Mockingbird Canyon and extending northward onto the adjacent alluvial plain, the sensitivity boundaries are not even close to coinciding with the mapped geologic contacts. We therefore are making our resource assessment and monitoring and mitigation recommendations based on the locations of the mapped geologic contacts between the granitic and sedimentary rock types (Attachment 3) rather than as shown on the Riverside County paleontological sensitivity map (Attachment 4).

As expected, the mixed granitic rocks that comprise the Val Verde pluton and the adjacent area to the west of Mockingbird Canyon are assigned a low paleontological sensitivity and shown (or meant to be shown) in light brown on Attachment 4. Areas that are assigned a "Low potential" for yielding paleontological resources are subject to confirmation by a literature search and records check by a qualified vertebrate paleontologist as only having a low potential for containing significant paleontological resources (*i.e.*, fossils) that might be subjected to adverse impacts. We regard the SBCM record search report and review (Scott, 2009, attached) for the Mockingbird Canyon and adjacent areas as satisfying those requirements.

Areas underlying or adjacent to the project alignment with a "High paleontological resource potential" are only partly shown in green on the sensitivity map (Attachment 4). However, as noted above, we regard the detailed geologic map (Attachment 3) to be a more reliable measure of the potential for discovering fossil resources, and therefore make our recommendations based on the geology of the area as shown by the mapped geologic contacts rather than those shown on the paleontological sensitivity map of the same area. Areas that should be assigned a High (High A) paleontological resource potential/sensitivity (*e.g.*, Pleistocene alluvial and alluvial fan sediments) should all be shown in green on Attachment 4.

Records search results – fossil localities

Two museum collections and records searches have been utilized for the paleontological assessment of the Mockingbird Connection alignment in order to document the presence of any previously recorded fossil localities nearby. The paleontological literature and collections and records review conducted by the San Bernardino County Museum (SBCM) did not reveal any recorded fossil localities along the pipeline alignment, nor within at least one mile of the projected route. The search of the Natural History Museum of Los Angeles County's (LACMNH) Invertebrate Paleontology records on their internet web site yielded 95 localities in Riverside County, but none in Quaternary alluvial or alluvial fan deposits nor any from within many miles of the Mockingbird Canyon area and the proposed Mockingbird Connection alignment. Fossil invertebrates and macroscopic plant remains are rarely found in terrestrial and fluvial sediments that are deposited in alluvial and alluvial fan depositional environments.

Record search results – conclusions and recommendations

The SBCM collections and records search report and review concludes that Pleistocene alluvial and alluvial fan deposits in the Inland Empire of Riverside County have a high potential to contain significant nonrenewable paleontological resources (*i.e.*, fossils), particularly of terrestrial Ice Age mammals, most of which are now extinct. These and similar sediments therefore are assigned a high paleontological resource sensitivity. Fossils from similar alluvial and alluvial fan deposits in the Inland Empire include many species of large mammals, such as mammoths, mastodons, giant ground sloths, dire wolves, short-faced bears, sabre-toothed cats, and extinct horses, camels and bison (SBCM collections; see also references in Scott, 2009). For the Mockingbird Connection, only those areas underlain by older Pleistocene sediments (Qof_a and $Qvof_a$) have high potential to contain significant fossil resources, and so are assigned a high paleontologic sensitivity.

Because of the high paleontological sensitivity assigned to the Pleistocene alluvial fan deposits (Qof_a and $Qvof_a$) along most of the Mockingbird Connection alignment east of Mockingbird Canyon as shown on Attachment 3, full time paleontological monitoring of excavation and trenching activities in these sediments is recommended to mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources (*i.e.*, terrestrial Ice Age fossils). For the granitic rocks of the Val Verde pluton east of Mockingbird Canyon, no program to mitigate impacts to nonrenewable paleontologic resources is recommended nor considered necessary. The proposed covered tank reservoir site is also located in the granitic terrain and therefore will not require paleontological monitoring of any excavation activities at that site.

Summary

For the Mockingbird Connection component of the Western Municipal Water District's Riverside-Corona Feeder Project in the southern Arlington Heights area of Riverside and in the adjacent area of unincorporated Riverside County, a mitigation, monitoring and reporting program (MMRP) consistent with the provisions of the California Environmental Quality Act (CEQA), regulations currently implemented by the City and County of Riverside, and the proposed guidelines of the Society of Vertebrate Paleontology should be implemented for all of the project alignment except where mapped as Cretaceous granitic rocks on the geologic map of the area (Kvt on Attachment 3). The parts of the project alignment located across Pleistocene older alluvial fan (Qof_a) and very old alluvial fan sediments ($Qvof_a$), which are known to contain the remains of Pleistocene ("Ice Age") terrestrial mammals (*e.g.*, mammoths and mastodons, sabre-toothed cats, camel, bison, giant ground sloth and others) within Riverside County, will need to be monitored paleontologically. At a minimum, the MMRP should consist of those procedures outlined on page 7, following.

Thank you for the opportunity to have provided paleontological services on this project. If you have any questions, please feel free to contact us at our Poway address.

Sincerely,

George L. Kennedy, Ph.D.
Senior Paleontologist

Gerald I. Shiller
California Professional Geologist No. 4558

PROFESSIONAL GEOLOGIST
GERALD I. SHILLER
PG-4558
expires 3/31/11
STATE OF CALIFORNIA

Attachments: Index maps, geologic map, record search reports, paleo sensitivity report

REFERENCES

Morton, D. M., and Cox, B. F. 2001. Geologic map of the Riverside West 7.5’ quadrangle, Riverside County, California. U. S. Geological Survey, Open-File Report 01-451: 1 map sheet with text (scale 1:24,000).

Morton, D. M., and Weber, E. H., Jr. 2001. Geologic map of the Lake Mathews 7.5’ quadrangle, Riverside County, California. U. S. Geological Survey, Open-File Report 01-479 [version 1.0]: 1 map sheet with text (scale 1:24,000).

Scott, E. G. 2009. Paleontology records review, La Sierra Avenue and Mockingbird Canyon alignments, Lake Mathews region, Riverside County, California. Paleontological records search report prepared for Brian F. Smith and Associates, Inc., Poway, California, by the Division of Geological Sciences, San Bernardino County Museum, Redlands, California [attached].

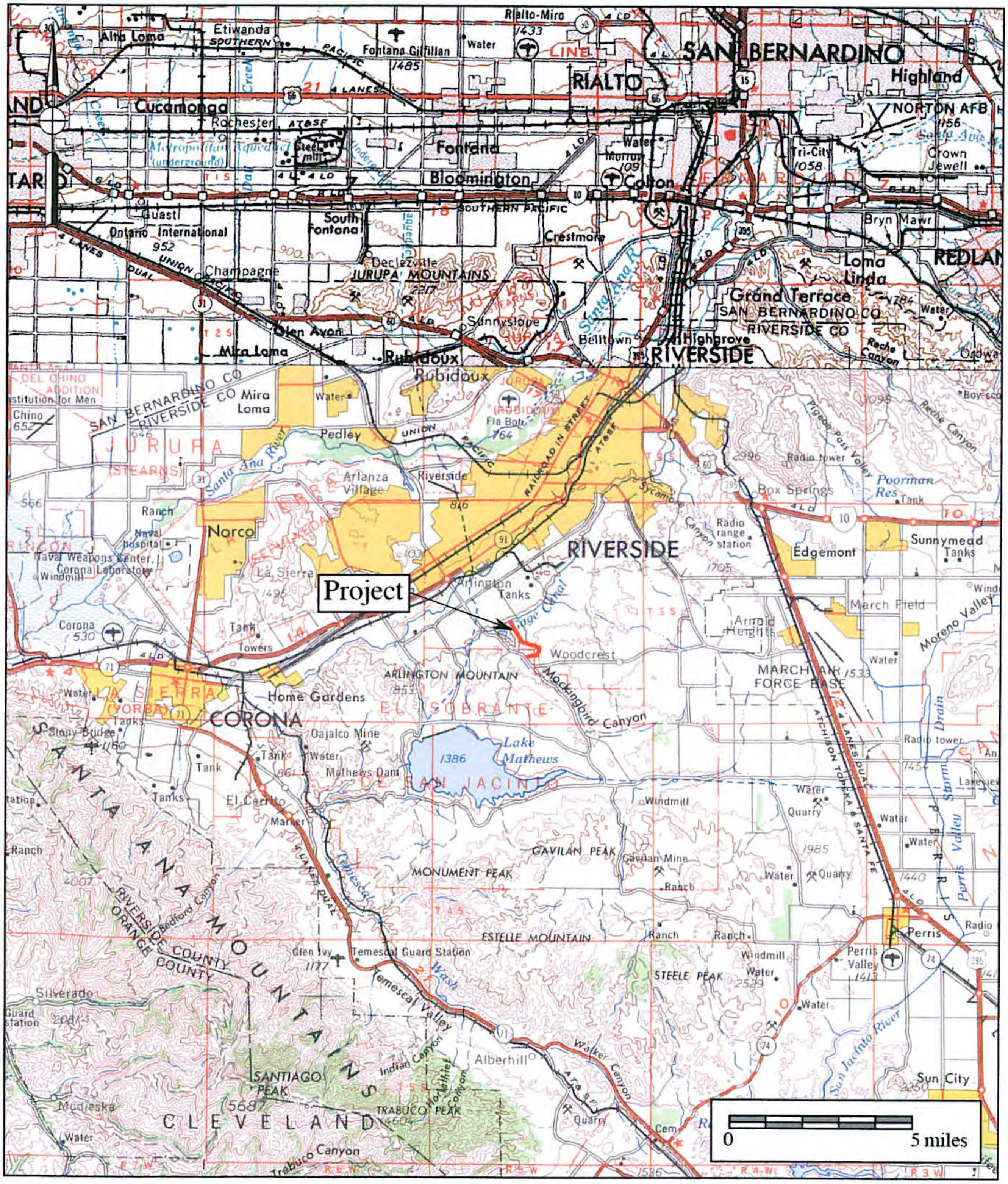
Paleontological Mitigation Program, Mockingbird Connection

1. Monitoring of trenching and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Monitoring will be conducted in areas of trenching or excavation in undisturbed older alluvial fan sediments, as well as where over-excavation of the thin veneer of younger alluvial sediments will encounter the older alluvial fan deposits in the subsurface. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain or yield fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates if appropriate. Preparation of individual vertebrate fossils is often more time consuming than for accumulations of invertebrate fossils.

3. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retreivable storage (*e.g.*, the San Bernardino County Museum). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities.

4. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to the appropriate Lead Agency, will signify satisfactory completion of the project program to mitigate impacts to any paleontological resources.

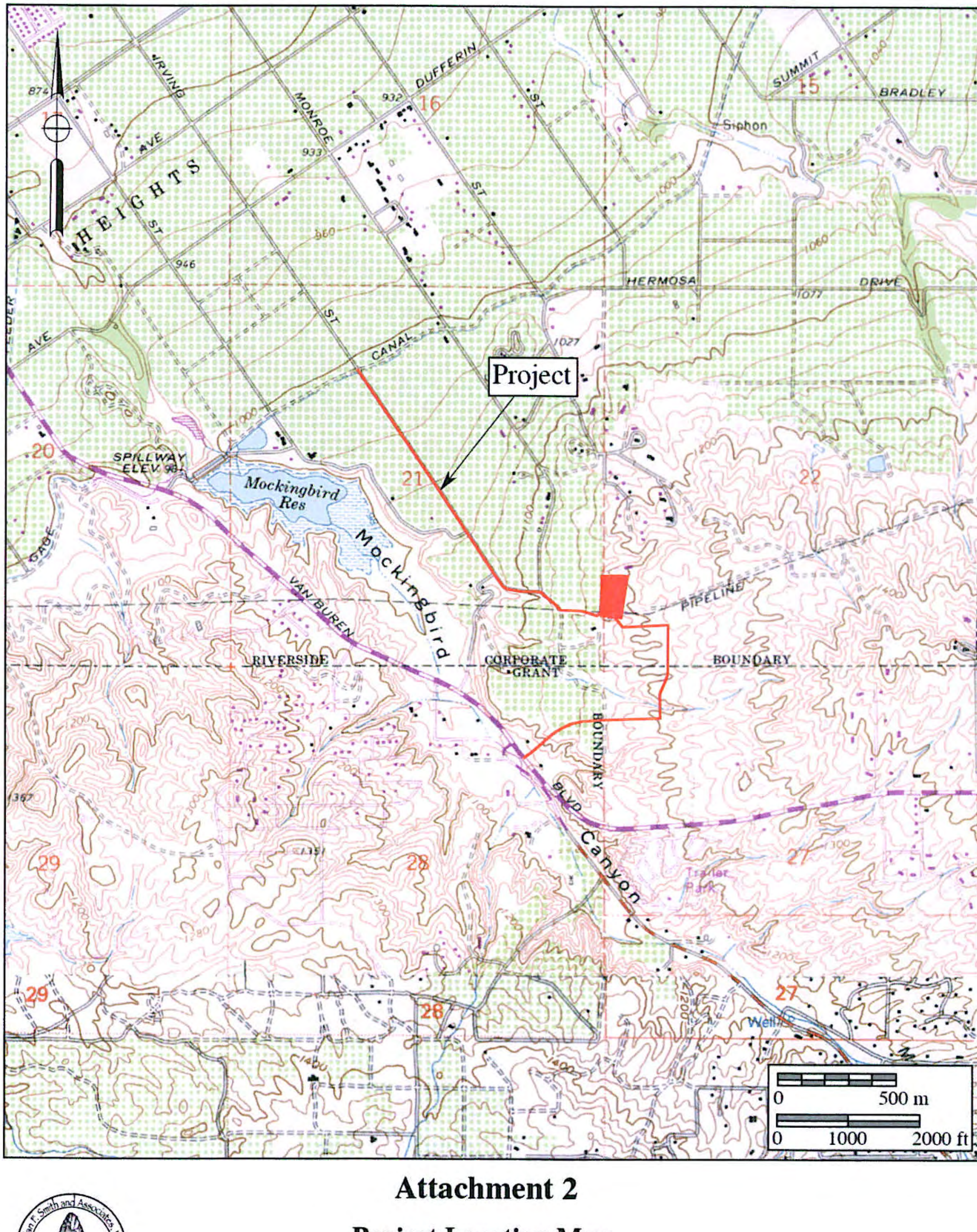


Attachment 1

General Location Map

Riverside-Corona Feeder, Mockingbird Connection

USGS *San Bernardino* and *Santa Ana* (1:250,000 series)

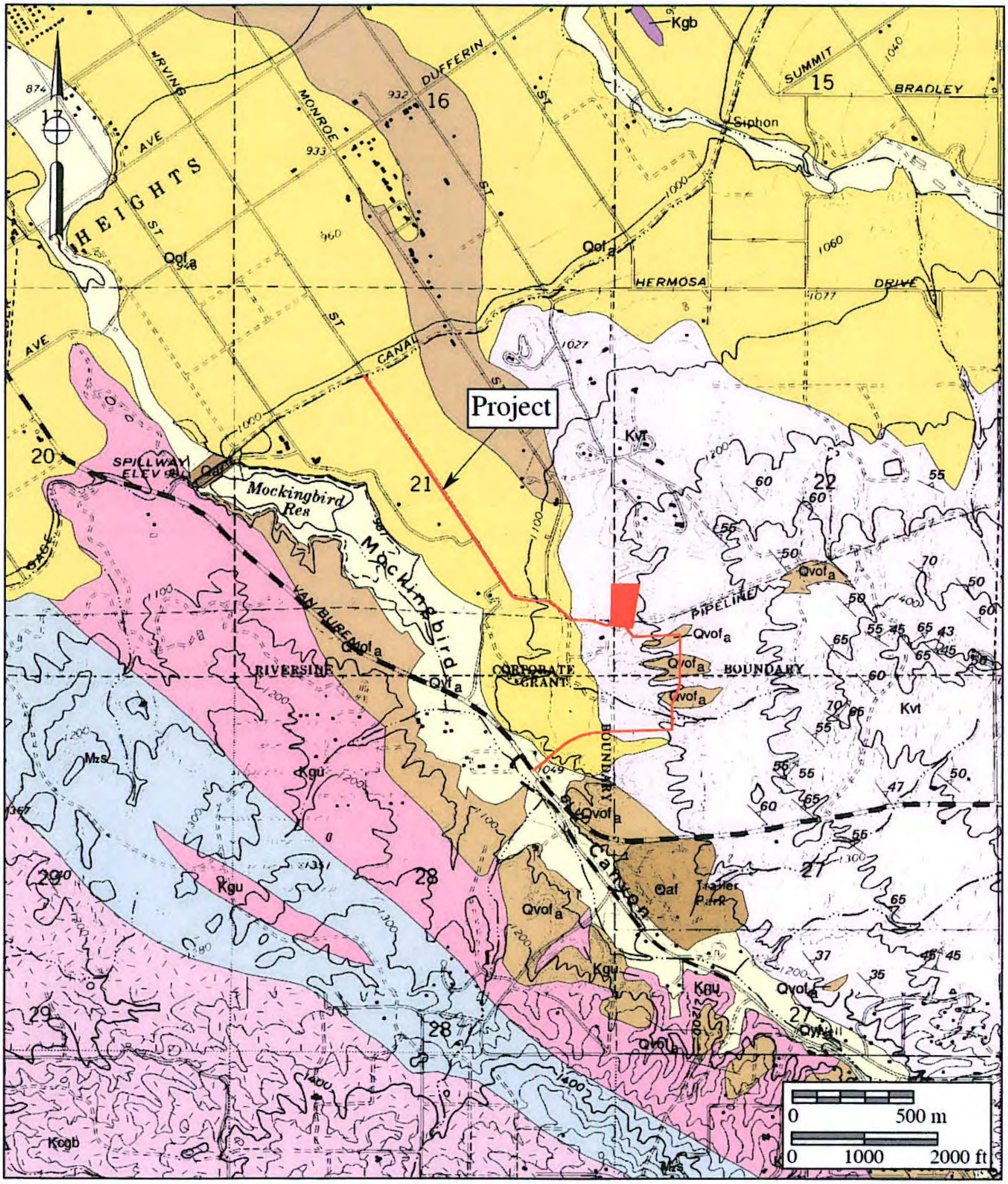


Attachment 2

Project Location Map

Riverside-Corona Feeder, Mockingbird Connection

USGS *Riverside West* and *Lake Mathews* Quadrangles (7.5 minute series)



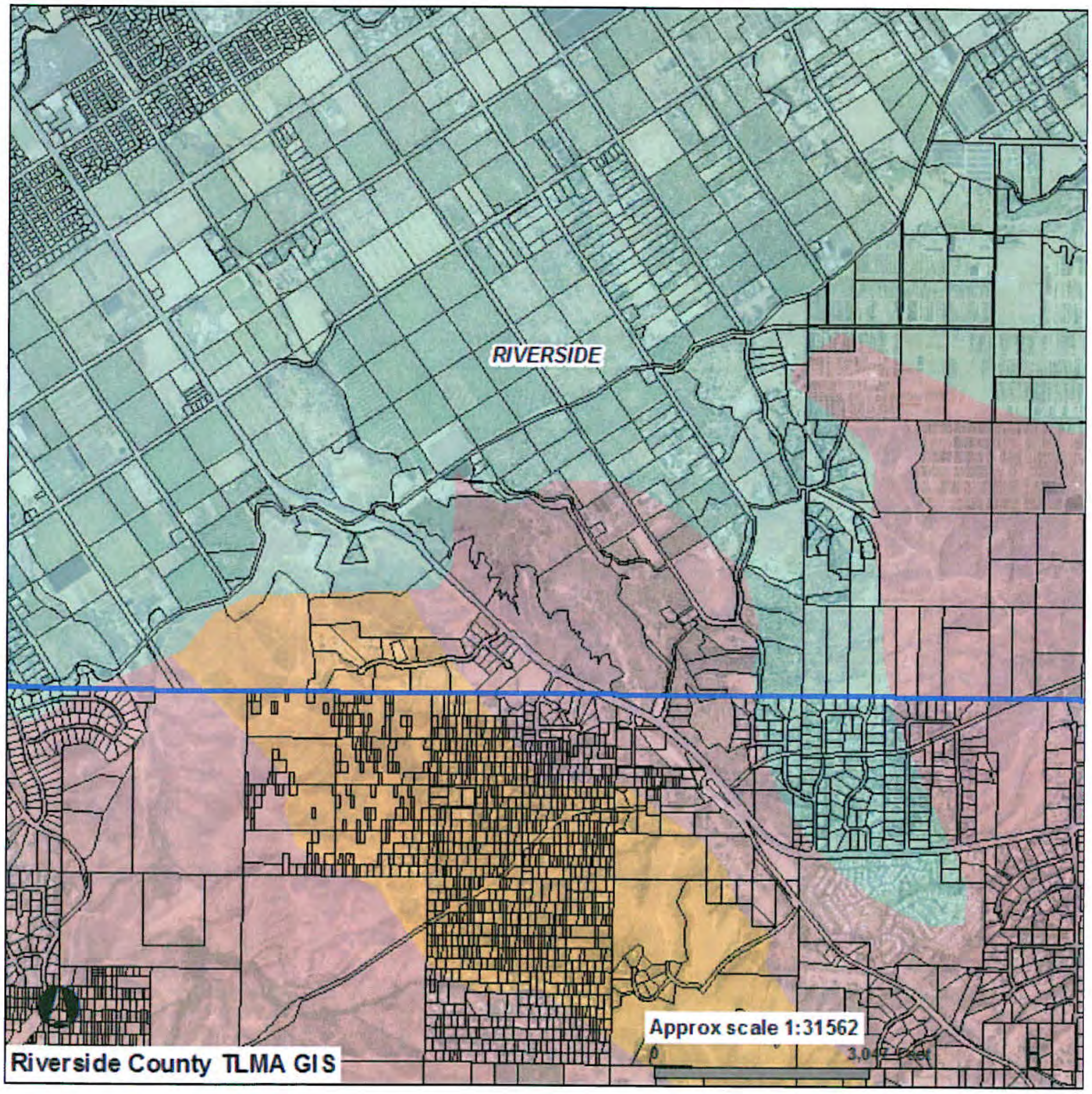
Attachment 3

Geologic Map

Riverside-Corona Feeder, Mockingbird Connection

Geology by U. S. Geological Survey (2001)

Mockingbird Connection Paleo Sensitivity



PALEONTOLOGICAL SENSITIVITY

- PARCELS
- CITY BOUNDARY
- HIGH POTENTIAL/SENSITIVITY (HIGH A)
- LOW POTENTIAL
- UNDETERMINED POTENTIAL

REPORT PRINTED ON...Mon Aug 31 2009 11:57:18 GMT-0700 (PDT)

Attachment 4

Paleontological Sensitivity Map

Riverside–Corona Feeder, Mockingbird Connection

Riverside County TLMA GIS

Report Date:
August 31, 2009 12:10:08 PM PDT

PALEONTOLOGICAL SENSITIVITY REPORT

APN(s):
Click on the APN to display the Assessor's Map

PALEONTOLOGICAL SENSITIVITY:
- HIGH SENSITIVITY (HIGH A).
BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

- LOW POTENTIAL.
FOLLOWING A LITERATURE SEARCH, RECORDS CHECK AND A FIELD SURVEY, AREAS MAY BE DETERMINED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST AS HAVING LOW POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES SUBJECT TO ADVERSE IMPACTS.

- UNDETERMINED POTENTIAL.
AREAS UNDERLAIN BY SEDIMENTARY ROCKS FOR WHICH LITERATURE AND UNPUBLISHED STUDIES ARE NOT AVAILABLE HAVE UNDETERMINED POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES. THESE AREAS MUST BE INSPECTED BY A FIELD SURVEY CONDUCTED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST.

SPECIAL NOTES:
- NO SPECIAL NOTES

11 September 2006

Brian F. Smith and Associates
attn: George Kennedy, Ph.D.
14010 Poway Road, Suite "A"
Poway, CA 92064

re: **PALEONTOLOGY RECORDS REVIEW, LA SIERRA AVENUE AND MOCKINGBIRD CANYON ALIGNMENTS, LAKE MATHEWS REGION, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Kennedy,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-referenced properties north of Lake Mathews in Riverside County, California. The proposed La Sierra Avenue alignment traverses portions of section 31, Township 3 South, Range 5 West, San Bernardino Base and Meridian, as well as sections 25 and 36 (projected), T 3S, R 6W, SBB&M, as shown on the Lake Mathews, California and the Riverside West, California 7.5' United States Geologic Survey topographic quadrangle maps (1967 edition, the latter photorevised 1980). The proposed Mockingbird Canyon alignment crosses portions of sections 21, 22, 27, and 28, Township 3 South, Range 5 West, SBB&M, as seen on the Riverside West, California 7.5' United States Geologic Survey topographic quadrangle map (1967 edition, photorevised 1980).

Previous geologic mapping of the area (Rogers, 1965; Morton and Cox, 2001; Morton and Weber, 2001) indicates that the majority of the proposed Sierra Avenue alignment traverses Cretaceous granitic rocks, including surface exposures of hornblende gabbro (= unit **Kgb**) and undifferentiated granodiorite and gabbro of Cretaceous age (= **Kcgb**). These exposures of the Peninsular Ranges batholith have low potential to contain fossil resources and are assigned low paleontologic sensitivity. However, the northern portion of this alignment crosses old alluvial fan deposits of middle to later Pleistocene age (= unit **Qof$_a$**). These Pleistocene sediments have high potential to contain significant nonrenewable paleontologic resources, and so are assigned high paleontologic sensitivity. Pleistocene alluvial sediments elsewhere throughout Riverside and San Bernardino Counties and the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Pajak and others, 1996; Scott, 1997; Springer and others, 1998, 1999, 2007). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, sabre-toothed cats, large and small horses, large and small camels, and bison, as well as plant macro- and microfossils (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999, 2007; Anderson and others, 2002).

Previous geologic mapping (Rogers, 1965; Morton and Cox, 2001) shows that the proposed Mockingbird Canyon alignment crosses several rock units, including the Val Verde tonalite (= unit **Kvt**), old alluvial fan deposits of middle to later Pleistocene age (= **Qof**$_a$), and Holocene and possibly latest Pleistocene alluvial fan deposits (= **Qyf**$_a$). Of these units, only the older Pleistocene sediments have high potential to contain significant fossil resources, as discussed above, and so these sediments are assigned high paleontologic sensitivity. Additionally, the younger Holocene sediments may overlie older Pleistocene alluvium present at depth. The Val Verde tonalite has no potential for fossil resources.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this records search indicated that no paleontologic localities are recorded within the boundaries of the proposed study areas, nor from within at least one mile in any direction.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation into undifferentiated granitic rocks of Cretaceous age has low potential to impact paleontologic resources. These rocks are assigned low paleontologic sensitivity. *No program to mitigate impacts to nonrenewable paleontologic resources is recommended for these rocks.*

However, the Pleistocene older alluvium present along the northern part of the proposed La Sierra Avenue alignment, and along portions of the proposed Mockingbird Canyon corridor, have high paleontologic sensitivity. Paleontologically sensitive older alluvium may also be present at depth, overlain by Holocene sediments. Excavations in portions of the proposed alignments where these Pleistocene or younger sediments are present will require a qualified vertebrate paleontologist to develop a program to mitigate impacts to nonrenewable paleontologic resources, including curation of recovered resources (Scott and others, 2004). This mitigation program must be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations implemented by the County of Riverside and with the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present along the proposed project alignments. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein

are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of all recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage (e.g., SBCM). These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until such curation into an established museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

References

Anderson, R.S., M.J. Power, S.J. Smith, K.B. Springer and E. Scott, 2002. Paleoecology of a Middle Wisconsin deposit from southern California. Quaternary Research 58(3): 310-317.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

EASTERN INFORMATION CENTER

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

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Inyo, Mono, and Riverside Counties

May 4, 2010
EIC-RIV-ST-920

Cathy Perring
Albert A. Webb Associates
3788 McCray Street
Riverside, CA 92506

Re: Updated Cultural Resources Records Search for the Reach H Portion of the Western Municipal Water District Riverside-Corona Feeder Pipeline Project

Dear Ms. Perring,

We received your request on April 20, 2010, for a cultural resources records search for the Reach H Portion of the Western Municipal Water District Riverside-Corona Feeder Pipeline project, located in multiple sections of T.3 and 4S, R.6W, SBBM, in Riverside County. We have reviewed our maps, records, and reports against the project area defined on the maps you provided.

Our records indicate that 26 additional cultural resources studies have been conducted within a half-mile radius of your project area between 2003 and today. One of these studies involved the entire project area, two involved portions of the project area, and 10 were adjacent to the project area.

No additional cultural resources properties have been recorded within the boundaries of the project area between 2003 and today. Our records indicate that two additional properties have been recorded within a half-mile radius of the project area between 2003 and today.

Additional sources of information consulted are identified below.

> National Register of Historic Places (NRHP): no listed properties are located within the boundaries of the project area.
>
> California Office of Historic Preservation (OHP), Archaeological Determinations of Eligibility (ADOE): no listed sites are located within the boundaries of the project area.

California Office of Historic Preservation (OHP), Historic Property Directory (HPD): no listed properties are located within the boundaries of the project area.

Note: not all properties in the California Historical Resources Information System are listed in the OHP ADOE and HPD; the ADOE and HPD comprise lists of properties submitted to the OHP for review.

The 1901 and 1942 USGS Riverside 15', the 1947 USGS Corona 15', and the 1901 USGS Elsinore 30' topographic maps do not indicate the presence of possible historical structures or features within the boundaries of the project area.

According to the study that involved the entire project area (RI-5056), there is a moderate probability of cultural resources being present within the boundaries of the project area and limited monitoring is recommended along the Riverside Canal. A statewide list of cultural resources consultants can be found online at http://chrisinfo.org.

Sincerely,

Rachel Jacobus
Administrative Assistant

Enclosure