

C.7 CULTURAL RESOURCES

This section addresses the environmental setting and impacts for cultural resources related to the construction and operation of the proposed water line and the provision of wastewater service. Specifically, Section C.7.1 provides a description of the environmental baseline and regulatory settings, followed by an environmental impacts analysis of the Proposed Project in Section C.7.2. Impact analysis for the alternatives is provided in Section D. The information in this section is based on Cultural Resources Investigations for the Proposed SCWC Bolsa Chica Water Line and Wastewater Project (November 6, 1999) prepared for Aspen Environmental Group by McKenna et al.

C.7.1 ENVIRONMENTAL BASELINE AND REGULATORY SETTING

C.7.1.1 Environmental Baseline

Cultural History Background

The environs of the Proposed Project are known to have been inhabited during prehistoric, historic, and modern times. Continuous, and at times sporadic, occupation by various populations (e.g., Gabrieliño and Juaneno) of slightly different origins and material culture can be identified in the area. Evidence of prehistoric, historic, and certainly modern land use has already been observed and assessed throughout the project area.

Prehistory. The study area is located in an ethnographic¹ area associated with the Gabrieliño (*Tongva*) of the Los Angeles, San Gabriel, Rio Hondo, and Santa Ana River drainage (roughly Los Angeles County today; McCawley 1996:23; Kroeber 1925:621; and Bean and Smith 1978:538). The properties are also peripheral to the Juaneno (of Orange County) and there is significant evidence to show that the area was inhabited by populations of Juaneno origin. Evidence for either group may be identified within the current project area.

The term "Gabrieliño" is a reference to the direct association between the Native American population of the San Gabriel Valley and the Mission San Gabriel de Archangel. The Mission was originally located in the Whittier Narrows area but relocated shortly after its founding because of unstable ground along the Rio Hondo/San Gabriel River channels. The ethnographic boundaries for the Gabrieliño are presented by Bean and Smith (1978:538) and refined by McCawley (1996). The Mission San Gabriel serviced the entire San Gabriel Valley, ranging from the coast to the San Gabriel/San Bernardino Mountains and from northern Los Angeles County to just north of San Juan Capistrano. The northern and eastern extent of their territory included the San Gabriel and San Bernardino Mountains and areas generally associated with the Serrano of the mountain and desert regions.

¹ Pertaining to the branch of anthropology that deals descriptively with specific cultures, especially those of primitive peoples or groups.

The Juaneno are associated with the Mission San Juan Capistrano in Orange County. Here, populations were identified in various densities, spatially occupying both coastal and inland locations and extending, at various times, as far north as the Bolsa Chica Mesa.

The Gabrieliño and Juaneno are societies identified by Late Prehistoric/Proto-historic ethnographic records and archaeological data identifying Late Prehistoric occupation of southern California. Changes identified between the earlier periods and the Late Prehistoric are evident in the archaeological record and in variations seen in technologies, social/community patterns and, in some cases, population estimates. Populations preceding the Gabrieliño/Juaneno, and likely directly related to the both the Gabrieliño and Juaneno, can be archaeologically identified as separate or variant forms of the evolving culture.

The Gabrieliño and Juaneno used numerous styles of bows, bedrock mortars, portable mortars, pipes, chisels, metates, manos, and various forms of chipped stone tools. Prior to the establishment of the Mission system, populations tended to live in larger villages with a series of "daughter" or "satellite" sites (limited activity areas) with lesser populations. Seasonal migration was practiced for the exploitation of resources and protection from seasonal weather conditions. Habitation structures were constructed of branches, grasses, and mud and interior hearths were used for heat. Cooking was generally conducted outdoors with hearths generally used for food preparation. Along the coast, the populations regularly exploited the wetlands and ocean resources. In the area of Bolsa Chica Mesa, the unique "cogged stones" were identified (see the description of site CA-ORA-83 later in this section). To date, the function of these stones remain unknown, despite years of study and attention by archaeologists and ethnographers.

Archaeological data and correlations with ethnographic data have resulted in the determination of a generalized chronology for prehistoric southern California. Current archaeological data has indicated that the coastal chronological data derived by Wallace (1955), Warren (1968), and later by Koerper and Drover (1983) can be generally applied to this region (Mason 1984; McKenna 1986). The coastal chronology generally accepted for southern California has been as follows:

*Early Man Horizon*². Pre-dating 6,000 B.C.; is characterized by the presence of large projectile points and scrapers, suggesting a reliance on hunting rather than gathering.

Milling Stone Horizon: 6,000 to 1,000 B.C.; characterized by the presence of hand stones, milling stones, choppers, and scraper planes; tools associated with seed gathering and shell fish processing with limited hunting activities; evidence of a major shift in the exploitation of natural resources.

Intermediate Horizon: 1,000 B.C to A.D. 750; reflects the transitional period between the Milling Stone and the Late Prehistoric Horizons; little is known of this time period, but evidence suggests interactions with outside groups and a shift in material culture reflecting this contact.

² A period of prehistoric time considered in terms of noteworthy events or developments.

Late Prehistoric Horizon: A.D. 750 to European Contact; characterized by the presence of small projectile points; use of the bow and arrow; steatite containers and trade items, asphaltum; cremations; grave goods; mortars and pestles; and bedrock mortars.

More recent investigation of sites in the Newport Bay/Irvine area of Orange County (Mason and Peterson 1994) have yielded significant data resulting in refinements of the coastal chronological sequences. Mason and Peterson’s conclusions were based on the radiocarbon dates from 326 samples representing thirty-one archaeological sites or cultural contexts. Summarizing their results, Mason and Peterson (1994:55) found that the majority of sites were occupied during the Milling Stone (Horizon) period or the Late Prehistoric (Horizon) period “... without much overlap ...”. Only four sites yielded results suggesting occupation during more than one cultural period (e.g., CA-ORA-684³). In a few instances, dates suggested occupation during the Intermediate (Horizon) period.

The results of Mason and Peterson’s research (1994:57) do not necessarily change the basic chronology for prehistoric southern California, but distinguish more individualistic periods of occupation that are not necessarily evident in the analysis of an artifact assemblage. Mason and Peterson’s refined chronology is presented in Table C.7-1.

Table C.7-1 Refined Coastal Chronology as Defined by Mason and Peterson (1994)

Cultural Horizons	Defined 1986	Cultural Periods	Redefined 1994	Temporal Correlations
Paleo-Coastal (Early Man)	Pre-6000 B.C.	Paleo-Coastal	Pre-8000 B.P.	Pre-6000 B.C.
Milling Stone	6000 to 1000 B.C.	Milling Stone 1	8000 to 5800 B.P.	6000 to 3800 B.C.
		Milling Stone 2	5800 to 4650 B.P.	3800 to 2650 B.C.
		Milling Stone 3	4650 to 3000 B.P.	2650 to 1000 B.C.
Intermediate	1000 B.C. to A.D. 750	Intermediate	3000 to 1350 B.P.	1000 B.C. to A.D. 650
Late Prehistoric	A.D. 750 to European Contact	Late Prehistoric 1	1350 to 650 B.P.	A.D. 650 to 1350
		Late Prehistoric 2	650 to 200 B.P.	A.D. 1350 to Contact

The Mason and Peterson discussions emphasize that the early definitions of “horizons” were based on artifact assemblages and these correlations have not been altered by the redefined chronology. Through the application of radiocarbon dating and comparative site analyses, studies have resulted in identifying relatively discrete subdivisions within the Milling Stone and Late Prehistoric sites. A re-evaluation of previously evaluated archaeological sites along the coast of Orange County should be completed with the newer chronology in mind. Such a re-evaluation may lead to an understanding of the presence/absence of populations, certain natural resources, and so forth.

³ Designation given to a recorded archaeological site, with CA representing “California”, ORA representing “Orange County”, and numerals indicating the designated number of an individual site (referred to as the trinomial system).

The Historic Period. The earliest known records of European contact with southern California Native Americans date to the mid-1500s, representing the early explorations of the Spanish. These explorations resulted in the identification of populations from the ships but did not include direct contact. Personal contact was not made until the 1770s, when Father Garces traversed the Mojave Desert and entered coastal southern California through the Cajon Pass (Walker 1986).

In the 1770s, the Spanish padres, under the direction of Junipero Serra, began the process of establishing a series of missions throughout Alta California, as California was then known. The project area is within the boundaries of lands historically held by the Mission San Gabriel de Archangel, but also claimed by the Mission San Juan Capistrano. The Missions continued to hold large tracts until the Mexican government declared its independence from Spain and issued orders for the secularization of the missions (ca. 1824). By 1833-34, the majority of mission lands were taken from the Catholic Church and granted to individuals who had served as either Spanish or Mexican soldiers, settlers, financiers, etc. The Mexican government hoped to initiate a pattern of settlement in Alta California by relocating populations from Mexican settlements to California settlements (Hanna 1951; McWilliams 1973; Dumke 1944; and Scott 1977).

The Bolsa Chica Mesa area was occupied during historic times and sparse development was initiated in the late 1880s. Over the next fifty years, the populations grew and development continued, although activities on the Mesa, itself, were limited to activities such as farming and grazing.

A review of historic maps (1896, 1942, and 1943 U.S.G.S. 15' Downey Quadrangles) illustrates the relative development of the study area during historic/modern times. In 1898, there are few roads and the early development in Westminster. Of specific note is the presence of [Old] Bolsa Chica Road. Historic resources may be present in any of these areas, reflecting the early development of the Las Bolsas/Westminster community. Further south, the use of Bolsa Chica Mesa as a Gun Club dominated the area. The history of the Gun Club was documented by Scientific Resource Surveys (SRS, 1986) and Syda (1995).

By 1942-43, Barber City is identified west of Westminster (south of Rancho Road and west of present-day Bolsa Chica Road). The historic location of Barber City would place the small community within the current boundaries of the Seal Beach Naval Weapons Station. The northern extension of Old Bolsa Chica Road (north of Rancho Road) is not indicated on the 1942-43 maps, suggesting that the potential for existence of historic resources in this area is not high. The Las Bolsas Ditch is also illustrated on the 1943 map, running along Rancho Road (SW/NE).

During World War II, the Seal Beach Naval Weapons Station was developed and subsequently, the Bolsa Chica Channel was completed. A major population increase occurred after the War and today, numerous cities, major streets, residential and commercial development, and infrastructure have been completed. The Bolsa Chica area is one of the last areas undeveloped in this area of southern California. Many prehistoric resources no longer exist due to extensive past development of the area, and others are still being identified and evaluated.

Previous Research

The current project area can be plotted on two U.S.G.S. quadrangles: the 7.5' Los Alamitos Quad-rangle and the 7.5' Seal Beach Quadrangle (see Figure C.7-1). An archaeological records check was completed for the areas including all proposed alternatives, which included a two-mile radius surrounding the Proposed Project. To summarize the extent of the studies, this records check was divided with reference to the two maps. Subsequently, these two sets of data are summarized separately and presented below.

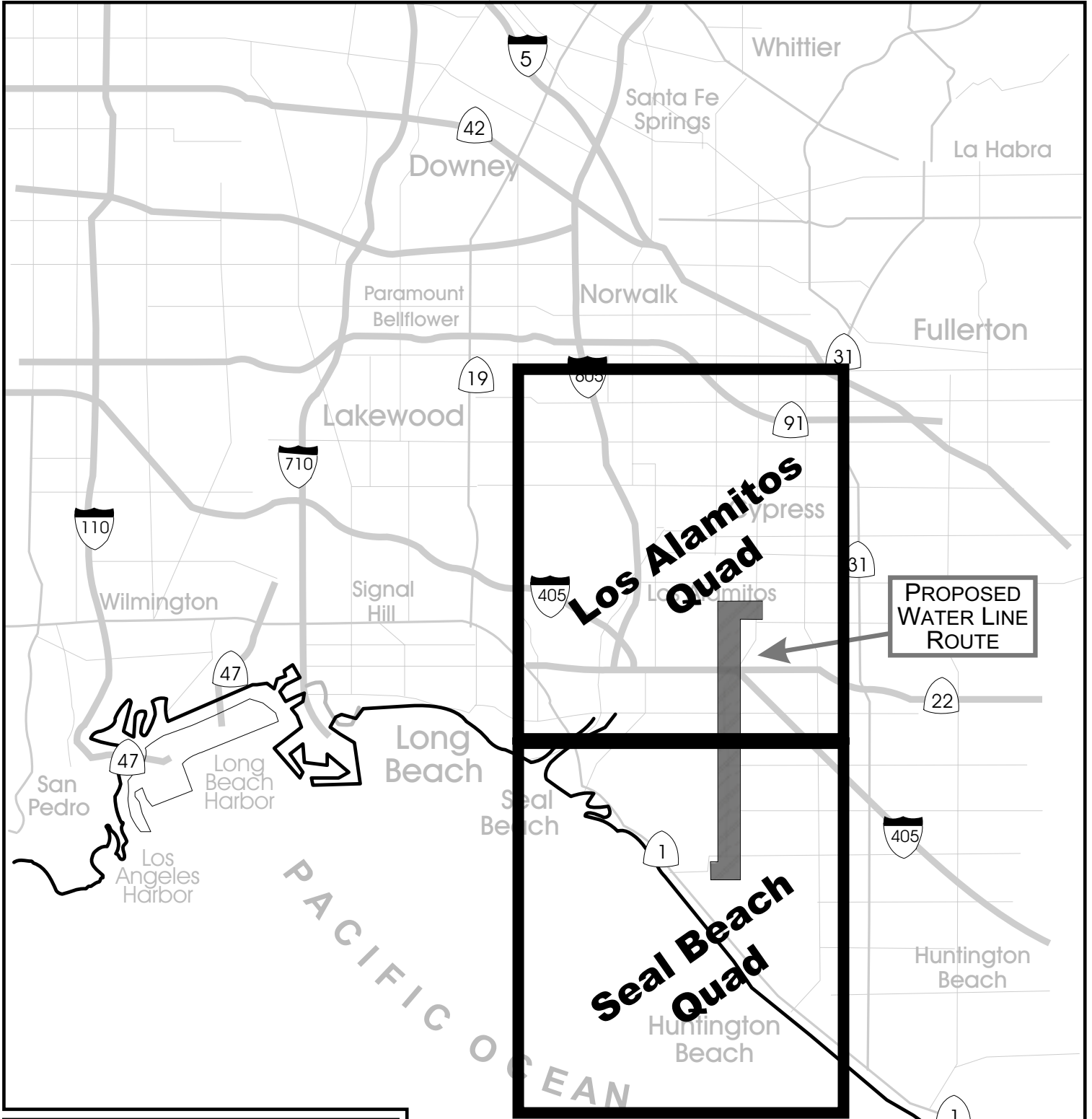
The Los Alamitos Quadrangle Research. Research data on file at the University of California, Los Angeles, South Central Coastal Information Center (UCLA-SCCIC) identified twenty-two studies within a two-mile radius of the Proposed Project (for a complete list of these, see McKenna et al. 1999). The majority of these studies were linear surveys along existing road alignments, small parcel surveys, or general overviews and all post-date 1978. As such, the majority of the studies were completed within urban or developed settings and probably do not represent a clear picture of the prehistoric occupation or use of the area.

Only four prehistoric sites have been recorded in this area and none are within the defined pipeline alternative alignments. Prehistoric sites identified include: CA-ORA-1352, CA-ORA-1463, CA-ORA-1502, and CA-ORA-1505. All four sites are located within the Seal Beach Naval Weapons Station and approximately 1.5 miles west of the Bolsa Chica Road alignment.

No historic archaeological sites have been recorded in the area. However, ten “built environment⁴” resources have been recorded, including Nos. 176496 through 176505. These are also located within the Naval Weapons Station and over 1.5 miles west of the Bolsa Chica Road alignment. There are no listed properties within the study area - federal, state, or local.

The Seal Beach Quadrangle. Research regarding the properties within the Seal Beach Quadrangle showed that the areas to the south were more complex than areas further north. Records at the UCLA-SCCIC indicate that at least fifty-one studies have been completed within a two-mile radius of the southern extent of the proposed pipeline route (see McKenna et al. 1999). Additional studies that have

⁴ Isolated historic resources now surrounded by modern historic development.



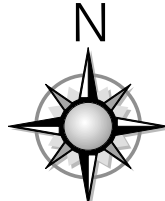
PROPOSED
WATER LINE
ROUTE

**Bolsa Chica Water Line
and Wastewater Project**

Figure C.7-1

**USGS Quad Maps
for Cultural Resources
Records Check**

Aspen
Environmental Group



Scale in Miles

C:/ks/projects/bolsa_chica/regional

been completed in the Bolsa Chica Mesa area were identified from a cross-listing provided by SRS (1999) as a supplement to the archaeological resources check (see McKenna et al. 1999).

With the exception of the more comprehensive studies on Bolsa Chica Mesa (south of Los Patos), the majority of these previous studies address small parcels, individual site studies, linear alignments, and other small study areas. The majority of studies were concentrated on the Mesa or within the Seal Beach Naval Weapons Station.

Archaeological sites (prehistoric and historic) are scattered throughout the area. Prehistoric resources tend to cluster on Bolsa Chica Mesa and Huntington Mesa, with historic resources located between the two mesas. The identification of additional prehistoric resources has been hampered by modern development within the City of Huntington Beach and oil field development in unincorporated Orange County.

Based on the spatial patterning of known sites within the area, it is apparent that the “rim” of Bolsa Chica Mesa and Huntington Mesa was extensively occupied during the prehistoric periods. Additional sites are likely to be present to the northeast (around Slater Avenue, Warner Avenue, Springdale Street and Edwards Street (the area generally referred to as Wintersburg). Prehistoric sites identified within the two-mile radius of the current study area include: CA-ORA-82, CA-ORA-85, CA-ORA-87, CA-ORA-88, CA-ORA-142, CA-ORA-288, CA-ORA-290, CA-ORA-298, CA-ORA-365, CA-ORA-368, CA-ORA-555, CA-ORA-1078, CA-ORA-1308, CA-ORA-1309, CA-ORA-1441, CA-ORA-1503, CA-ORA-1504, CA-ORA-83/86/144, and CA-ORA-84/289. Prehistoric Isolates have also been identified: 100047 through 100051. These isolates were scattered throughout the oil field area between the mesas, suggesting redeposition or sparse use of the area.

Prehistoric sites located on Bolsa Chica Mesa include: CA-ORA-78/H, CA-ORA-83/86/144, CA-ORA-84/289, CA-ORA-85, and CA-ORA-288. Originally defined as eight individual sites (by surface and subsurface testing), the site boundaries have been defined and redefined by numerous individuals over the past twenty years. Today, there are still some questions regarding the defined boundaries of the sites and the UCLA-SCCIC has noted five loci by combining some individual sites into single, larger sites.

Sites located nearest the proposed pipeline alignment are CA-ORA-85 (west of the reservoir site), CA-ORA-288 (south of the reservoir site), and CA-ORA-83/86/144 (east of the reservoir site). Little to no study has been completed in the area between these three loci. Therefore, the potential for additional subsurface resources cannot be ruled out and the proposed pipeline route on Los Patos and the reservoir site should be considered highly sensitive for potentially significant prehistoric resources.

CA-ORA-85

CA-ORA-85 is located south of Los Patos Avenue and west of the terminus of the proposed water transmission line. CA-ORA-85 was recorded in 1964 by Dixon and Eberhart as a “... shell midden on highest ground in area; overlooks swamp to west and marine terrace to south ...”, originally identified as Standt’s Site “6” and Herring’s Site “D”. Deposits were reported to a depth of two feet below the present surface (the deep plow zone) and items recovered from the surface of the site included manos,

hammerstones, a bowl and metate fragments; all of these artifacts being indicative of a Milling Stone Horizon or later occupation of the area. The artifacts were curated at Cal State Los Angeles. Dixon and Eberhart made specific reference on their record form to an association with CA-ORA-83, the “Cogged Stone” site.

In 1970, Ross and McCurdy re-recorded the site, citing a 1968 article by Herring. Ross noted that a portion of the site was disturbed by the construction of Los Patos Avenue, illustrating that the site extended further north and within the property used by the Bolsa Chica Gun Club (until 1964). Ross identified this site as being almost twice the size reported by Dixon and Eberhart and added the presence of flakes to the overall inventory of artifacts.

Additional studies at CA-ORA-85 include those of ARA (1964), Chace (1969), Ross and Desautels (1970), Cooley (1973), Cottrell and Rice (1975), Mason (1987), and McKenna and Mason (1987). Van Bueren and Sorenson (1988) completed an updated archaeological site survey record, summarizing the earlier studies and describing the site as “... a scatter of marine shellfish remains, groundstone tools, flaked stone tools, cores, debitage, hammerstones, human and animal bones, anthrosols, and possibly daub ...” (Van Bueren and Sorenson 1988:1). Site size was redefined to be between the sizes recorded by Dixon and Eberhart v. Ross and McCurdy. Site depth was recorded as -90 cm. The presence of human remains (Herring 1968:4) on the surface suggested the presence of additional buried remains.

Recently reported studies by SRS (Whitney-Desautels 1995:5) resulted in a redefinition of site boundaries, stating the boundaries of CA-ORA-85 show the site to be smaller than indicated by Eberhart in 1964 and consistent with the boundaries identified by ERC (1988). The SRS results were based on studies completed in 1990-1991.

The base map provided by SRS (1995:5) illustrates that the studies completed by SRS (in 1990-1991), those of ERC (1988), and those of SRS (1986) were all completed in the central and western portions of the site. No subsurface testing was conducted along the eastern edge of the site, although soil color and Eberhart’s original site boundary extended to the east. The SRS and ERC excavations emphasized the presence of midden deposits in the central portion of the identified site.

The SRS data, summarized in 1995, shows that CA-ORA-85 was occupied for a period of time when CA-ORA-83 was also occupied (c. 3500-4000 years B.P.). Artifact counts from CA-ORA-85 show Site 85 yielded more millingstone fragments, projectile points, drills/reamers/gravers, flake scrapers, worked bone, needles/awls, whistles, rattles, worked shell, and game pieces - from a smaller area of less years of occupation - than CA-ORA-83, a larger and more complex site. These inverted numbers of artifacts illustrate a variation between CA-ORA-85 and CA-ORA-83, but also a level of association in the form of similar materials.

McKenna et al. (1999) conclude that there is a potential for subsurface deposits east of the defined site boundaries of CA-ORA-85 and there is potential for this area to yield data different from either CA-ORA-85 or CA-ORA-83.

CA-ORA-288

CA-ORA-288 is located south of CA-ORA-85 (at the southern edge of Bolsa Chica Mesa) and originally recorded by Dixon and Eberhart (1964) and correlated with Herring's Site "B" (CA-ORA-84). The site was re-recorded by Ross and McCurdy in 1970, and assigned a duplicated trinomial (CA-ORA-288). The UCLA-SCCIC correlated this site location with CA-ORA-84 (and 289), reaffirmed the location between CA-ORA-83 and 85 (Ross and McCurdy 1970:1). This site was disturbed by the construction of World War II bunkers and subsequent farming (i.e., disking and clearing). Gross prepared a subsequent site record for this site, describing the site as a prehistoric midden with intrusive historic remains (1986:1), concluding the site was essentially destroyed and incapable of yielding significant archaeological data.

In 1998, Van Bueren and Sorenson revisited the site, concluding the "... Observation of Cut banks along steeper portions of terrace margin and previously reported excavations. Deeper deposits may exist in portions of site ... ARI (1971) noted the presence of a living surface/housefloor at base of cultural deposit in E portion of site they excavated ..." (Van Bueren and Sorenson 1988:1).

SRS completed additional studies at CA-ORA-84 (288), emphasizing that the sampling of site materials was limited to a portion of the site defined by the "... geological bank facing and trenching ..." locations (SRS 1988:19). Terrain conductivity studies yielded data indicating disturbances associated with pipeline excavations in the northern portion of the site. Despite disturbances, profiles from excavation units illustrated that some intact deposits were still present within the site. Site occupation was relatively short - between 4200 and 4920 years B.P. (SRS 1988:47). CA-ORA-84/288 was occupied for a period consistent with the occupation of CA-ORA-83/86/144 and this site may extend further north, nearer the proposed location of the reservoir site, as the excavations completed to date were halted at the pipeline cut in the northern portion of the site area.

CA-ORA-83/86/144

CA-ORA-83/86/144 is located along the eastern side of Bolsa Chica Mesa. CA-ORA-83/86/144, as in the case of CA-ORA-85/288, is a grouping of three sites resulting from years of investigation on Bolsa Chica Mesa. Nonetheless, some archaeologists would still argue that these are three distinct sites. In late 1986, SRS produced a relatively larger document addressing CA-ORA-83, the "cogged stone site ..." (Whitney-Desautels et al. 1986), which presents the most recent attempt to analyze, evaluate, and understand this site.

Essentially, Whitney-Desautels considers CA-ORA-83, CA-ORA-86, and CA-ORA-144 as separate sites. CA-ORA-83 is a loci located to the south and CA-ORA-86 (Herring's Site E) was once reported as a northern loci of CA-ORA-83. Studies completed at CA-ORA-83 include those of Eberhart (1968), Ross and Desautels (1970), ARI (1971a and b), Munoz (1973 and 1975), Butzbach (1975), Carter and Howard (1975) and SRS (1981 and 1982). The boundaries of CA-ORA-83 have been assessed and reassessed with each study. Surface artifact recovery negated the potential to de-fine the site boundaries by surface materials. Subsurface testing identified numerous areas of material concentrations, suggesting intra-site loci (Mason and Peterson 1986:85).

Artifacts were recovered from essentially all areas tested within CA-ORA-83, although there was a noticeable drop in counts towards the northern extent of the site, justifying the argument that these sites may be separated by space and time. Cogged stones, for which CA-ORA-83 was named, were not identified as CA-ORA-86 and their function remains unknown. No function for these items has been definitively accepted by the archaeological community (to date) and the extensive testing has not resulted in any acceptable explanation for their origin or presence.

Human remains have been recovered from CA-ORA-85/86/144 and reburied in the southern portion of the property (Mountford 1999, personal communication). The likelihood of additional human remains is relatively high, given the most recent find(s) within the boundaries of CA-ORA-86 (Suchy 1999).

CA-ORA-86, considered an individual site by SRS, was originally recorded as Herring's Site E, following its identification by Strandt (1921). This site is nearest the current study area (at Los Patos and Bolsa Chica Road). CA-ORA-86 was later recorded or investigated by Dixon and Eberhart (1964), PCAS (1965), Eberharet 1966), ARI (1970 thru 1975), ARMC (1981), SRS (1981-1982), Infotec (1988-1989), Chambers Group (1991), Orange County (1994), Petra Resources (1995), and SRS (1999). SRS (1999:12) summarizes that CA-ORA-86 was subjected to twenty-seven different investigations since 1921.

SRS (1999) summarized the testing of CA-ORA-86 and showed that, despite earlier studies and the previous SRS conclusions, the site did extend west of the Bolsa Chica Mesa access road, essentially in the form of identifiable subsurface shell concentrations. Shell was recovered from all auger holes placed by SRS. No subsurface testing occurred west of the SRS testing (approximately 40 meters west of the Bolsa Chica Road/Los Patos intersection). Basically, every area tested yielded cultural materials (including some human remains) and the western site boundary was redefined. However, the lack of testing to the west raises the potential for additional materials to be located west of CA-ORA-86, as defined.

Native American Consultation

In accordance with Section 5097.98 of the Public Resources Code, representatives of the Gabrieliño and Juaneno were contacted as part of this study. The Chair of the Gabrieliño, Anthony Morales, was contacted by McKenna et al. and informed of this study. Mr. Morales requested that he be kept informed and permitted the opportunity to provide a qualified Native American archaeological monitor at the time of excavation. Likewise, McKenna et al. contacted the Chair of the Juaneno, Sonia Johnston, at the Southern California Indian Center in Garden Grove. Ms. Johnston also wishes to be kept informed and permitted to provide a Juaneno Native American monitor.

Current Research Findings

Despite many years of study at the Bolsa Chica Mesa sites, certain basic questions still remain unanswered. Specifically, the boundaries of many sites are still in question. The eastern boundaries of CA-ORA-85 have not be definitively established, but limited only by the extent of testing in known site areas. Further, the western boundaries of CA-ORA-86 have been expanded to the west and may extend

further west. No testing has been done in more western areas, but, archaeological monitoring of the Sandover project site (SRS 1999, in preparation) has yielded additional materials, including human remains.

CA-ORA-84, cross-referenced with CA-ORA-288, is identified to the south, but may extend further north, towards and into the proposed reservoir site. Early documentation indicated that materials were located along the Los Patos right-of-way, further suggesting additional material may be present. The lack of testing in the triangle between CA-ORA-84, 85, and 86 limits the understanding of the relationships between these three loci, suggesting additional and potentially significant remains may be present and available for research. No area of Bolsa Chica Mesa failed to yield some evidence of cultural remains.

CA-ORA-83, the most heavily tested site on the Mesa, is still not fully understood. The basic function of “cogged stones” remains unknown, and recent research did not address the issue. The cultural affiliation of CA-ORA-83, a long-term occupation site, has still not been determined. It was occupied during the periods of occupation for other sites on Bolsa Chica Mesa (the Milling Stone Horizon), but no synthesis of this data has been developed. Further, the materials recovered from Bolsa Chica Mesa have not been analyzed with respect to the new coastal chronology.

At this time, and in some conflict with recently completed documentation, the alignment of the proposed pipeline on Bolsa Chica Mesa must still be considered highly sensitive for significant prehistoric remains, including human remains. Site boundaries have not been definitively outlined because of a lack of subsurface investigations between previously recorded sites. In addition, the most recent reports have not incorporated the recently revised coastal chronology for Orange County coastal sites (Mason and Peterson 1994). Such analysis would be needed to more adequately address the occupations of Bolsa Chica Mesa and the inter- and intra-site associations.

C.7.1.2 Regulatory Setting

The California Environmental Quality Act (CEQA) provides clear guidance on the protection of cultural resources. The regulatory requirements are briefly described herein.

Under CEQA, the term “historical resources” includes:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources.
- A resource included in a local register of historical resources, or identified as significant in a historical resource survey, 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.
- 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 a historical resource, provided that there is substantial evidence supporting this

contention. 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.

- Resources that are deemed by a lead agency as a historical resource (as defined in Public Resources Code Sections 5020.1(j) or 5024.1).

CEQA requires that effects on archaeological sites resulting from project development need to be considered. This requires that if a project has the potential to impact an archaeological site, a lead agency shall first determine whether the site is a historical resource. If a lead agency determines that the archaeological site is a historical resource, the provisions of Section 21084.1 of the Public Resources Code, and Section 15126.4 of the CEQA Guidelines apply. If an archaeological site does not meet the criteria for definition as a historical site, but does meet the definition of a unique archeological resource, the site shall be treated in accordance with the provisions of Section 21083.2.

If an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources are not therefore considered to have a significant effect on the environment.

It is also required, 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 Section 5097.98.

CEQA also provides detailed guidance in relation to the accidental discovery of any human remains in the course of construction. In addition, under Section 21082 of the Public Resources Code, a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be a historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work can continue on other parts of the building site while historical or unique archaeological resource mitigation takes place.

C.7.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The impacts to cultural resources arising from the Proposed Project are associated with the construction of the water transmission line, particularly the portion of the water line that would be located on Bolsa Chica Mesa. Studies conducted for this report conclude that while some portions of each alignment are considered sensitive for prehistoric and/or historic resources, others are considered less sensitive for similar resources. Overall, the pipeline excavations will require an on-site archaeological monitor and Native American monitor to oversee and evaluate any cultural materials identified during the construction of the pipeline.

C.7.2.1 Significance Criteria

The CEQA Guidelines provide clear advice on how impacts to cultural resources are to be evaluated. These Guidelines are summarized, below, in order to illustrate how the potential impacts of the Proposed Project were evaluated.

Impacts of the Proposed Project would be considered significant if:

- Construction causes substantial adverse change in the significance of a historical resource through physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.
- The significance of a historical resource is materially impaired if the project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for:
 - The California Register of Historical Resources; or
 - A local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code; or
 - The California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Based on these guidelines, the alignment and location of the Proposed Project was examined to determine the potential impact to cultural resources and culturally sensitive areas. Construction on areas where cultural resources are located is likely to result in a significant, but mitigable impact.

In general, the cultural resources along the proposed pipeline route are historic and prehistoric resources relating to prior human occupation of the area. These resources are generally buried. As a result, the impacts to cultural resources are largely limited to the construction phase of the Proposed Project. If cultural resources are discovered during construction, evaluation and remediation (if required) will need to occur in accordance with the CEQA Guidelines (see Section C.7.1.2).

The *Bolsa Chica Report Local Coastal Program EIR* identified several Project Design Features and Orange County Standard Conditions that mitigate cultural resource impacts associated with future development on Bolsa Chica Mesa. Project Design Features of the Local Coastal Program (LCP) that address cultural resources include: 1) implementation of a data recovery program; 2) preparation of a research design for recovered material analysis; 3) controlled grading programs monitored by an archaeologist and Native American; 4) evaluation of historic structures; and 5) a reburial agreement for Native American remains. The County's Standard Conditions applicable to cultural resources on Bolsa Chica Mesa include: 1) establishment of procedures for construction monitoring by a County-certified archaeologist; 2) completion of literature and records searches for recorded sites and previous surveys; 3) a field survey of previously unsurveyed areas; 4) subsurface testing and surface collection as appropriate (testing locations not specified); and 5) salvage excavation of archaeological resources in the permit area. These Project Design Features and Standard Conditions would be applicable to those components of the Proposed Project located within the boundaries of the LCP area.

C.7.2.2 Construction Impacts

The alignment of the proposed water transmission line passes through areas that have moderate to high sensitivity for prehistoric and historic resources (see Section C.7.1.1). The potential for construction of the pipeline to unearth and materially alter these resources therefore represents a potentially significant (**Class II**) impact. The mitigation measure, described below, is designed to mitigate the impacts associated with unanticipated discovery of cultural resources during construction.

Impact: Pipeline construction could disturb cultural resources as it passes through areas of moderate to high sensitivity for prehistoric and historic resources (**Class II**).

Mitigation Measure:

CR-1 SCWC shall provide a qualified archaeological monitor at excavations for the proposed pipeline where it passes through areas of moderate to high sensitivity for prehistoric and historic resources. If evidence of cultural remains is encountered, Native American representatives will be notified and afforded the opportunity to review the find. During the archaeological monitoring program, the archaeological monitor will visually inspect the excavation areas and have the authority to halt any grading or construction activities in areas where cultural resources are identified. Once identified, the monitor(s) will complete an initial assessment and, if the resources appear to represent a significant find, they will halt activities until a Phase II⁵ evaluation of the resource(s) can be completed (in accordance with the CEQA Guidelines).

None of the identified prehistoric resources north of Los Patos Avenue will be impacted by the Proposed Project. However, the potential for additional resources in the vicinity of Heil Avenue is relatively high. Likewise, the proposed alternatives should not impact the identified sites on Bolsa Chica Mesa unless the extent of the deposits is redefined.

The construction of the proposed pipeline and the construction of the proposed underground reservoir would occur in the vicinity of an identified prehistoric site (CA-ORA-83/86/144) near the junction of Los Patos Avenue and Bolsa Chica Road. As this study has shown, the precise boundaries of this site are not certain. Construction in the near vicinity of the site therefore represents a potential source of damage to this site. The potential impact to this site is significant, but mitigable (**Class II**). The mitigation measure proposed is to ensure that construction is monitored. If cultural resources are discovered during construction, evaluation and remediation will occur in accordance with CEQA guidelines.

Impact: Construction occurring in the vicinity of the identified prehistoric site, identified as CA-ORA-83/86/144, has the potential to damage the cultural resource (**Class II**).

Mitigation Measure:

⁵ Phase II testing for the evaluation of cultural resources can take many forms and is often left to the individual Archaeological Principal Investigator as to how to proceed. Minimally, controlled excavations will be required to recover an adequate sample of the find to assess significance. Shovel testing, trenching, and/or other forms of testing may also be employed, depending on the nature of the find.

CR-2 SCWC shall provide a qualified archaeological monitor and Native American monitor at the excavations for the proposed pipeline in the vicinity of prehistoric site CA-ORA-83/86/144. During the archaeological monitoring program, the archaeological monitor (and Native American) will visually inspect the excavation areas and have the authority to halt any grading or construction activities in areas where cultural resources are identified. Once identified, the monitor(s) will complete an initial assessment and, if the resources appear to represent a significant find, they will halt activities until a Phase II evaluation of the resource(s) can be completed (in accordance with the CEQA Guidelines).

Proposed construction activities also have the potential to disrupt those prehistoric sites identified as CA-ORA-84, -85 and -288. As the preceding discussion shows, the boundaries of these sites have not been unambiguously delineated. Therefore, proposed construction has the potential to damage these sites. The potential impact to this site is significant, but mitigable (**Class II**). Given the indistinct boundaries of these sites, it is appropriate that monitoring of construction occur in order to mitigate the potential impact associated with discovery and disruption of sites.

Impact: Construction occurring in the vicinity of identified prehistoric site, identified as CA-ORA-84, -85 and -288, has the potential to damage these cultural resources (**Class II**).

Mitigation Measure:

CR-3 SCWC shall provide a qualified archaeological monitor and Native American monitor to oversee the excavations of the proposed pipeline in the vicinity of prehistoric site CA-ORA-84/85/288. During the archaeological monitoring program, the archaeological monitor (and Native American) will visually inspect the excavation areas and have the authority to halt any grading or construction activities in areas where cultural resources are identified. Once identified, the monitor(s) will complete an initial assessment and, if the resources appear to represent a significant find, they will halt activities until a Phase II evaluation of the resource(s) can be completed (in accordance with the CEQA Guidelines).

Construction in the vicinity of the proposed underground reservoir at the terminus of the proposed pipeline also has the potential to create impacts on cultural resources. The reservoir site was indirectly addressed in the 1996 EIR (County of Orange 1996) through reference to a number of identified archaeological sites (CA-ORA-78, 83, 84, 85, 86, etc.). Although Sites 78, 84, and 86 were determined to be insignificant in the 1996 EIR, recent identification of additional deposits and human remains require that this designation be reassessed. Therefore, the area of the reservoir site/pipeline connection should be formally tested for significant cultural resources prior to grading, to ascertain whether this area contains subsurface prehistoric deposits and/or whether or not additional evidence of human remains are present. It is considered highly likely that such resources are present and construction would therefore result in significant impacts unless appropriate mitigation is carried out (**Class II**).

Impact: Potential impact on prehistoric resources resulting from construction at the reservoir site/pipeline connection on Bolsa Chica Mesa (**Class II**).

Mitigation Measure:

CR-4 The area of the pipeline connection to the underground reservoir on Bolsa Chica Mesa shall be formally tested for significant cultural resources prior to grading to ascertain whether this area contains subsurface prehistoric deposits and/or whether or not additional evidence of human remains are present. Based on the results of testing, all grading at the reservoir site must be monitored by a qualified archaeologist and a Native American monitor.

C.7.2.3 Operational Impacts

Impacts resulting from the operation of the Proposed Project are not anticipated. The research conducted for the purposes of this report has identified a number of historic and prehistoric sites. All of these sites are archaeological in character – they all provide physical evidence of prior human use and occupation of the area. These archaeological resources are, in turn, all buried, either totally or partially. Accordingly, disturbance and damage to these sites can only result from construction activities that involve earthworks. Impacts to these resources will thus be confined to the construction phase of the project. The operation of the project is highly unlikely to cause impacts to cultural resources.

C.7.2.4 Impact and Mitigation Summary

Table C.7-2 Impact and Mitigation Summary – Cultural Resources

Impact	Class	Mitigation Measures
1. Pipeline construction could disturb cultural resources as it passes through areas of moderate to high sensitivity for prehistoric and historic resources	II	CR-1
2. Impact to area identified as CA-ORA-83/86/144 (at Los Patos and Bolsa Chica Road	II	CR-2
3. Impact to areas peripheral to those identified as CA-ORA-84 and 85 (and 288)	II	CR-3
4. Pipeline connection at Reservoir Site is likely to impact resources associated with prehistoric occupation of Bolsa Chica Mesa	II	CR-4

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