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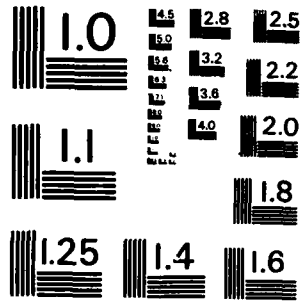
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RANGE IMPROVEMENT PROJECT
VANDENBERG AIR FORCE BASE
SANTA BARBARA COUNTY, CALIFORNIA

VOLUME I.

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Prepared for
Vandenberg Air Force Base
Civil Engineering Squadron
Environmental Planning Branch

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and
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1981

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RANGE IMPROVEMENT PROJECT
 VANDENBERG AIR FORCE BASE
 Santa Barbara County, California



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October 15, 1981

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TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
I. ENVIRONMENTAL BACKGROUND	1
II. REVIEW OF PREVIOUS RESEARCH IN ARCHEOLOGY	5
III. REVIEW OF THE VANDENBERG REGIONAL HISTORY	12
IV. SURVEY/TEST METHODS AND PROCEDURES	19
SITE INVESTIGATIONS	19
CA-SBa-603	21
CA-SBa-978	25
CA-SBa-625	29
CA-SBa-1111	33
CA-SBa-722	36
Shuman Creek Fenceline: CA-SBa-962	40
CA-SBa-1020	43
CA-SBa-1019	47
CA-SBa-1011	50
CA-SBa-1009	52
CA-SBa-1008	54
CA-SBa-1007	57
V. NATIONAL REGISTER EVALUATIONS	62
VI. SUMMARY	75
BIBLIOGRAPHY	77
SITE RECORDS	VOL. 2

ABSTRACT

Archaeological investigations were undertaken by Greenwood and Associates for 12 archaeological sites (CA-SBa-603, 625, 722, 962, 978, 1007, 1008, 1009, 1011, 1019, 1020, and 1111) of which four sites are located on South Vandenberg and the remaining eight are located in North Vandenberg.

It is the focus of this study to determine if the Range Improvement Project will have an adverse effect on cultural resources located within the project area. The investigations indicated that one site (CA-SBa-625) has been effectively destroyed by previous manmade construction activities and as such will not affect the proposed project. Seven sites appear to be eligible to the National Register (CA-SBa-603, 978, 1007, 1008, 1019, 1020 and 1111). Of these seven sites the proposed project will either not affect or have little significant affect on two sites (CA-SBa-603 and 1019). The remaining five sites have been determined to be potentially significant for nomination to the National Register of Historic Places and recommendations have been developed either to preserve the sites or to confine the impacts so that there will be little or no adverse effect.

The five additional sites (CA-SBa-625, 722, 962, 1009, and 1011) do not appear to be eligible to the National Register.

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Range Improvement Project Vandenberg Air Force Base

I. ENVIRONMENTAL BACKGROUND

Vandenberg Air Force Base lies very close to the north side of Point Conception, a geomorphological feature often accepted as the dividing line between marine, vegetation and geological resource associations of central and southern California. Its lands vary from coastal dunes through seasonally eroded terraces and mesas, to dry chaparral-covered interior ranges. Perennial streams are present, with at least one associated swamp, Barka Slough. The weather is partly influenced by the offshore meeting of warm and cold ocean waters in the vicinity of Points Arguello and Conception, and marine life, both molluscan and mammalian, includes species representative of both environments.

The Shuman Creek area is characterized by both active and stable dunes (west half of AF Map 10) and grasslands (east half of AF Map 10). Interior tributary canyons often support chia, oak woodland, oak grassland and sage chaparral, while soft chaparral typically covers the slopes (Spanne 1974).

The San Antonio terrace and canyon contains various vegetation communities. The terrace is the southern margin of a former freshwater swamp with tule, cattail and riparian woodlands (willow, cottonwood and live oak). The swamp was drained for sugar beet cultivation in the early 1900s; after the Government took over the area in World War II, the

reclaimed land was used for barley and grazing. Marsh and woodlands remain upstream at Barka Slough. The short, steep gradients on the south flank of the valley are covered with soft chaparral such as Artemisia californica, Mimulus longiflorus, Baccharis pilularis, Salvia spathacea and others. In the lower elevations are individuals or small stands of live oak (Quercus agrifolia) which grade into the grasslands with exotic annuals. The north flank of the valley is less steep and characterized by a mixture of grasslands, hard and soft chaparral, oak woodland and oak grassland. The various sages include chia (Salvia columbariae), thistle sage (S. carduacea), and black sage (S. mellifera), as described by Spanne (1973).

That portion of south Vandenberg investigated during this study falls into Zones III and IV as categorized by Glassow and Spanne (1976), and that report contains a review of the terrestrial and marine faunal resources available for prehistoric exploitation. Zone III (Honda Canyon to Rocky Point) is dominated by coastal sage scrub, particularly California sage (Artemisia californica), bush lupine (Lupinus arboreus), mock heather (Haplopappus ericoides), and black sage (S. mellifera). The interior edge of Zone III contains manzanita (Arctostaphylos spp.), wild lilacs (Ceanothus spp.), and scrub oak (Q. dumosa). North of this project area, Honda Creek and Gray Canyon contain perennial water and support a riparian woodland association of willow, cottonwood and live oak.

Glassow and Spanne's Zone IV of the southern coastal corridor extends from Rocky Point to Point Conception (1976). Prehistorically, this area was dominated by perennial grasses which have since been replaced by exotic annuals. In addition, Zone IV contains large colonies of coastal sage, mainly the purple variety (S. leucophylla). Inland, at higher elevations, are manzanita, coastal live oak (Q. agrifolia), and an occasional wild cherry (*Prunus* sp.), and near Tranquillon and Oak Mountains, occasional tanbark oak (Lithocarpus densiflora) and berry thickets (especially huckleberry, Vaccinium ovatum). Grazing has largely destroyed riparian woodlands associated with the few perennial streams in Zone IV, such as Aqual Vina, Jolloru Creek and Jalama Creek.

The reports available for review did not contain details of the geology of Vandenberg Air Force Base, and the scope of work precluded any primary research. Spanne (1973) has typified the topsoil of San Antonio Canyon as "recent period alluvium," noting that peat deposits occur in local stratigraphy exposed by road cuts and erosion. Chert of the Monterey formation is available in outcrops along the south flank of the canyon, as well as "some distance" from the north flank. In his 1974 report, Spanne identifies Franciscan chert deposits in a few north Vandenberg locations, especially near Point Sal, and he has suggested that chert blanks or preforms may be a specialized trade item of the prehistoric population (1975).

Serpentine is found near the mouth of Shuman Creek canyon, and was utilized prehistorically for jewelry, pipes and other artifacts. Asphaltum occurs in coastal regions of both north and south Vandenberg, as well as in natural seeps in the northeast corner of the Base.

Glassow and Spanne (1976) describe some of the culturally useful geological features of south Vandenberg, including chert, volcanic rhyolite (vessels and beads), chalcedony, agate, and quartz crystals. Spanne (1974) also included harder deposits of sandstone (bowls and pestles and serpentine) from the mouth of Honda Canyon as prehistorically utilized geologic resources.

II. REVIEW OF PREVIOUS RESEARCH IN ARCHEOLOGY

Although archeological work has been carried out in the Vandenberg region for more than 100 years, little systematic research beyond museum collection and artifact description was available prior to about 15 years ago. The following review is a brief summary of previous work, but does not claim to be exhaustive.

Between 1874 and 1876, Schumacher excavated several sites in the region (probably including SBa-1209, 1094, 512, 513, and 941), although several have not been relocated with any degree of reliability by later investigators. These excavations have been typified as "rather casual" (Glassow 1980:2-9), and were aimed mainly at recovery of artifacts for the Smithsonian Institution collections. Schumacher concentrated on the excavation of cemeteries but did not document his efforts in detail, partly because he was disappointed that they did not yield artifacts in the abundance he found during work in the Santa Barbara Channel region (Schumacher 1877). Bowers surface collected a number of sites in the Vandenberg region in 1877, although exactly which sites were visited remains conjecture based on cryptic and brief entries in an unpublished field journal. Although this effort was not scientific, it did contribute to the general awareness of the archeological potential of this region. Jones worked in the north Vandenberg region under the sponsorship of the

University of California, Berkeley, publishing a report in 1900. Glassow (1980) reports that Jones spent a total of 12 days in the field, and restricted his activities for the most part to the surface collection of larger sites encountered.

All three of these early investigators had the same objective--museum collection, artifact description, and sampling of "rich" sites. Glassow (1980) and Craig (1980) have evaluated these early efforts as merely historic curiosities; yet, despite the lack of systematic sampling procedures or recording of provenience and association, it is likely that analysis of these important collections, both skeletal and artifactual, may still yield information of value (Greenwood 1978:91).

There is a gap of about 40 years between Jones' work and the widespread survey of Clarence Ruth in the 1930s and later. Ruth made surveys in the Vandenberg region, although these were not systematic transects but "casual" (Glassow 1980:2-12), probably similar to "intuitive survey" methods discussed below. His provenience records seem accurate, and detailed at least to site. Ruth also carried out excavation of a number of cemetery sites; Glassow (1980) estimates at least eight, at times in conjunction with J. Lillard (Ruth 1936, 1937; Lillard 1937). Many of Ruth's sites were re-recorded by archeologists from the California Archaeological Survey at the U. C. Berkeley campus in the 1950s, and most

of the field notes and reports were released in an edited form in 1967. Although Ruth was concerned, like his predecessors, with museum collection and site locations, he did interpret his data in a regional scheme that parallels Rogers' chronology (1929), and Glassow states that "photographs and drawings of artifacts included in his reports verify the accuracy of these assignments" (1980:2-13).

After carrying out a few test excavations, George Carter (1941) also made an attempt to relate the stratigraphy of a single site to Rogers' (1929) and Olson's (1930) chronological schemes. Carter's report was basically notes on excavations, and only contains summary statistics of data. Glassow specifically criticizes this aspect of the report, noting that "it is difficult to evaluate his (Carter's) conclusions" without more information (1980:2-14). Although Ruth remained active as an amateur throughout the 1950s, basically no more systematic work was performed in this region until about 1969.

Beginning in 1969, Laurence Spanne carried out or directed a number of surveys in the Vandenberg region, eventually covering about 90% of the Base. The survey method was "controlled intuition," that is, coastal zones, major drainages, and areas assumed likely to contain sites were intensively surveyed, while less attention was given to other regions. Glassow (1980) suggested that this method was reasonably successful in locating major sites, but resurvey

in the southern coastal corridor revealed that Spanne had missed a number of less obvious minor sites. Spanne was working with marginal funds and inexperienced volunteer crews, so that overlooked sites and intuitive survey methods were probably unavoidable. Emphasizing mainly surface characteristics of sites, Spanne developed a working typology (mainly for prehistoric sites), mapped site locations, and provided a foundation for the study of settlement pattern and cultural evolution in the region. Only SBa-1010 was excavated during this period from 1969 to 1973 (Spanne 1970, 1971, 1974; Benson 1969).

In 1974 Spanne and Glassow resurveyed south Vandenberg's coastal corridor in connection with Space Shuttle construction, and doubled the number of sites previously recorded (Spanne and Glassow 1976; Glassow, Spanne and Quilter 1976). However, most of the newly discovered sites were small and light lithic or shellfish scatters. The coastal corridor surveyed was a strip 21 miles long and 3,000 feet wide, from north of the Santa Ynez River to just south of Rocky Point. Thirty-one sites were excavated with test units (one to seven per site) of varying sizes (1.5 m^2 to 1.0 m^2). These excavations were dug in 20 cm levels and screened with a 1/4 inch mesh. Control comparisons were made from column samples (20 cm^3) screened through 1/8 inch mesh. Neither of the two resulting reports included comprehensive analysis of the survey and excavation results beyond site and artifact

descriptions, although radiocarbon dates and shell bead cross dating did verify a chronology for south Vandenberg stretching back at least eight thousand years ago.

One data gap apparent in the survey work carried out by Spanne (and apparently Glassow) is that historical sites may have been neglected if not structure-related or not in conjunction with prehistoric artifacts.

In 1976 Craig and Glassow reported an intensive survey and described eight sites near the mouth of Oil Well Canyon (SBa-712, 1543, 1544, 1545, 1546, 1547, 635, 1106 - the latter two containing historic material).

In 1977 Glassow reported on an intensive survey in five areas on Vandenberg AFB, but we were unable to obtain a copy of the report. Glassow does not mention them in his 1980 review, unless it is obliquely as one of the several surveys of less than a hectare in area.

In 1977 Spanne reported on further surveys ("intensive") in connection with the widening of State Route 246 (Surf-Lompoc Road), as well as excavation of three impacted sites (SBa-539, 670, 931). This report is mainly site and/or artifact description, although Spanne did attempt to delineate activity emphasis of the three excavated sites.

In 1980 a number of reports appeared dealing with archeological investigations at Vandenberg. Kornfield and Glassow reported on survey and test excavations near Point Arguello, especially concentrating on SBa-1542, a quarry

site close to SBA-1111. This work was carried out in connection with the external tank tow route portion of the Space Shuttle program.

Craig (1980) carried out an intensive survey of the San Antonio terrace region (south of Shuman Canyon, north of San Antonio Creek). The area was covered with no more than 30 m intervals between field workers, and a few test auger bores were sunk to determine the depth of a few sites. The area surveyed is in the MX proposed facility region, but plans had not yet determined the exact location of structures and paved areas, so no excavation of possibly impacted sites was made, and the emphasis of the report was on site location and description (the latter following a typology similar to Spanne's earlier efforts (1974)). N. Farrell (1981: pers. comm.) has suggested that 30 m intervals and a few test augerings as a survey methodology in dunes may be inadequate, and that more intensive work is still needed. The terrace area surveyed for the MX report is west of this project's investigation on San Antonio terrace.

In 1980 Hooks, McCloskey and Associates prepared a report for land sales of tidal and submerged lands between Points Conception and Arguello. Considering the nature of the area, little of interest to the present review was reported except a brief history of the Sudden Ranch and Point Arguello lighthouse.

Glassow (1980) has presented an elaboration on previous excavation at SBA-539, 670, and 931 (see Spanne 1977), in which he attempts to relate these sites to a regional scheme based on chronology and settlement/land use patterns. This work includes a major review of previous archeological work at Vandenberg, and the present document is based in part upon his summary. In addition, at least one rock art site, a swordfish pictograph, has been recorded on Vandenberg AFB (Grant 1965: Fig. 71; Lee 1977: Fig. 12).

Although this summary probably includes the major work to date in the Vandenberg region, the limited time available made it impossible to follow through with a more complete bibliographic search or review of references cited in these reports, and thus no claim of complete coverage is made.

Records of previous investigations were reviewed to ensure that this study did not overlap areas already surveyed in connection with the MX projects. With the assistance of Nancy Farrell, MX archeologist at Vandenberg, topographic maps showing the MX survey were compared to the areas included within this scope of work; the former are west of these study areas on San Antonio terrace. The report, maps and site lists prepared by HRD Sciences (Craig 1980) were also reviewed. Their study area was west of the range improvement facilities on Shuman Creek. The only site on their list which also appears on the AF maps furnished for this investigation is SBA-1036, a small midden on the northwest 1/16 of Map 24, well west of this study. There is thus no duplication of work already completed by others.

III. REVIEW OF THE VANDENBERG REGIONAL HISTORY

The history of the Vandenberg region is sparse, because the area is fairly rural and remote, while local histories tend to emphasize urban development (i.e., growth of Lompoc, Santa Barbara, etc.). Time did not permit the development of an overview based on primary sources, and it was not possible to arrange consultations with either the historian in residence on Vandenberg Air Force Base or with professors at University of California, Santa Barbara. Unless specifically cited, the following summary is adapted from the work of T. Fitzgerald included as Chapter 5 in Glassow 1980.

Mission records indicate at least six historic Chumash villages in or near Vandenberg AFB, several on or near San Antonio terrace, although west of this project area (Craig 1980). The period between 1769 and 1816 is usually considered the major epoch of white exploration and missionization. Portolá passed through the region in about 1769, camping on or near the western edge of San Antonio terrace. To date, no remains of this overnight camp have been identified, although Craig (1980) reports some time spent in search. De Anza also passed through, first in 1774 when he camped on the southern edge of Santa Ynez River, and again in 1776 while going north with colonists.

By 1807 the majority of the native populations were located near missions, and for the most part villages lay abandoned. The missions were established inland, Mission La Purisima in 1788 (near present day Lompoc), and Santa Ynez in 1804. The missions were secularized in 1837, and Rancho Lompoc and Rancho Espada established in the south Vandenberg region. The ranchos were mainly involved with raising cattle (although see below); little modification of the land occurred beyond grazing and the introduction of exotic plants.

Rancho Lompoc passed through a series of owners until it was purchased by the Lompoc Land Company in 1874, and held by this firm until taken over by the Government in 1941. Fitzgerald reports that a mock town and infantry training took place near Surf.

Prior to World War II, the main developments in the region were railroad related. In 1899 the railroad passed through along the coast, and by 1901 was in use as a direct San Francisco-Los Angeles link. Surf was established between 1899 and 1901, existing mainly as a railroad town despite sporadic efforts to subdivide and develop coastal properties. State Route 246 was built and eventually paved as the Surf-Lompoc Road. In 1962 what remained of Surf was condemned by the Air Force and dismantled because the residents were exposed to unacceptable risks during missile tests.

Rancho Espada underwent a similar history of mainly ranching activities prior to Anglo-American development, although Thompson and West (1881) mention orchards and vineyards planted during the Spanish/Mexican period at "the Jalama" (Jalama Creek ?). In 1882 the rancho became the property of Robert Sudden (a native of Scotland), who initially grazed cattle before eventually breeding Clydesdale horses. The site of the main Sudden Ranch is north of Jalama Creek, and evidently at least nine structures were standing in 1980; Fitzgerald reported five main structures and four support structures (Glassow 1980). Red Roof Canyon, north and east of Honda Canyon, was a second locus of activity of the Sudden Ranch, but only foundations of structures remain (SBa-1148 in Spanne 1974). Fitzgerald did not cover aspects other than cattle and horse breeding on the Sudden Ranch, but Thompson and West provide a few clues about other activities. First of all they list Sudden's occupation as "wharfinger" in a tribute to local supporters of their history. Sudden was not covered in a biographical sketch of local residents, but he must have been a newcomer if the Fitzgerald date of 1882 for the purchase of the ranch is correct. In addition, Thompson and West discuss various important supply routes for Lompoc other than mud roads to Santa Barbara, including among the most important sources of supplies, freight ships unloading at Sudden's Wharf near Point Arguello, as well as wharfs at Points Purisima and Sal, and at Chute's Landing (1881).

Sudden's Wharf was listed as the closest to Lompoc by road, and nails, flour and other manufactured or milled goods arrived there, and locally produced agricultural products departed. Evidently the railroad was a deciding factor in the decline of the wharfs, although dates of the last shipping activities were not located. Sudden Wharf appears to have been located near the main Sudden Ranch at Jalama Creek, corresponding to Sudden's Landing on the AF maps, and to Sudden on the USGS Tranquillon Mountain map. Southern Pacific labor camps may have existed in the area, but the locations are not recorded (Hook, McCloskey and Associates 1980).

More information about the history of south Vandenberg and the Sudden Ranch is contained within recent cultural resources studies (Gebhard and Bricker 1980; Kahn, Snethkamp, and Pursell 1981; Stone and Gamble 1981). Point Arguello itself was mapped and named by the English captain, George Vancouver in 1793. After secularization, the lands formerly assigned to Mission La Purisima were included in the 24,992 acre Rancho Punta de la Concepcion granted to Anastacio Carrillo, and in the 1850s, figured in a number of transactions by prominent individuals such as Gaspar Orena, Isaac J. Sparks, Thomas B. Dibblee and Col. W. W. Hollister. When the Rancho Punto was divided, the land around Pt. Arguello was included in the Rancho la Espada. Robert Sudden, who had been associated with Hollister and the Dibblees in a wharf

3.75 miles east of the Point, purchased part of the Rancho la Espada in 1883. Oil exploration began on the ranch in 1924, and plans were developed for the town of Arlight at Arguello in 1925 (Gebhard and Bricker 1980:30-33).

The name of Red Roof Canyon is derived from the red pitch roofs on two frame houses built there by Sudden in 1883. The early development there also included a large frame barn, eucalyptus windbreak, privy, and water system. The ranch was active enough in horse breeding that a railroad stop was located opposite the main residence. Donald Sudden, grandson of the founder, built a larger residence in 1920, and added a chicken house, garden, grape arbor, piped water and a septic tank. One of the older residences was demolished in the late 1920s, and at about this time, Sudden leased his home to the Navy cooks stationed at Point Arguello, ending its use as ranch headquarters. The Army maintained an active installation during World War II, dismantling the camp after it was no longer needed. The residence was demolished about 1966, and the barn in 1970. Remains now visible through the overgrown vegetation at CA-SBa-1148 include tree lines, well, the entire barn foundation, cactus patch and several possible structure pads (Kahn, Snethkamp, and Pursell 1981:6-12).

Two coastal facilities on south Vandenberg were both built on land acquired from the Sudden Ranch. The original lighthouse and related structures at Point Arguello built

in 1901 were razed between World War II and the early 1950s; since all that remain are the foundations of the fog signal, light and water tank, and the post-World War II buildings, the site is no longer deemed eligible for the National Register (H. Dunbar 1981: pers. comm.). East along the coast, the U.S. Coast Guard Lifeboat Rescue Station, officially opened in 1936, has been recorded by HAER (Gebhard and Bricker 1980). The Rescue Station was transferred to the U.S. Navy in 1958, and to the U.S. Air Force in 1964. The buildings are abandoned, but retain their significance and integrity, and are eligible for nomination to the National Register (H. Dunbar 1981: pers. comm.). Vandenberg Air Force Base acquired the balance of the Sudden Ranch from the corporation in 1966.

Less is presently known of the history of north Vandenberg. The names of the Spanish/Mexican Ranchos can be found on maps. Thompson and West (1881) did not describe this area except to mention that cattle, sheep and horses were raised in the general vicinity. They also identify Swiss dairy farmers, apparently located to the east of Vandenberg. Spanne (1973) discusses draining of sections of Barka Slough in the San Antonio terrace region by the Union Sugar Company in order to plant sugar beets, and mentions possible "Oriental labor camps" in the area that have not been located. The USGS Casmalia map (1959) indicates a Marshallia Ranch with pre-1959 structures, but the sources consulted do not provide a date or history associated with this ranch. The USGS 1973 update shows that the Marshallia Ranch has become a golf course.

The final major historic activity in the Vandenberg region involved mining. Thompson and West (1881) report a great flurry of activity involving cinnabar (mercury) deposits around the year 1874, especially along the Santa Ynez River valley. Santa Ynez evidently had a "Chinese Camp" related to mining, but the deposits were not extensive enough to sustain long-term activities, and major mining activities had ceased around 1880. Fitzgerald (in Glassow 1980) mentions prospecting for various minerals including gold, silver, asbestos, mercury and lime, especially between Honda Canyon and the town of Surf. In 1899 leases were issued to permit gold mining in the Bear Creek area, and Fitzgerald cites a 1979 interview to the effect that gold had been found in that region as recently as 1920. However, the commercial success of gold mining must have been limited at best, for no other mining activities are recorded.

A peripheral source of information about historical activities on Vandenberg is that six sites marked on AF maps covering this project area have been classified as historic by previous archeological survey teams. CA-SBa-552 and 632 (AF Map 61), CA-SBa-619 (AF Map 62) and CA-SBa-1019 (AF Map 24) are listed by Spanne (either in the 1971 or 1974 report) as non-Spanish historical sites, but no further information is available beyond the site reports on file at UCSB. Craig and Glassow (1978) list two more, CA-SBa-1547 (AF Map 60) with "Anglo artifacts" as well as stone tools, and CA-SBa-635 (AF Map 61) with cow bones among the shellfish remains.

IV. SURVEY/TEST METHODS AND PROCEDURES

Site Investigations

For each site encountered the following procedures were utilized: 1) The surface dimensions of the site were found. 2) A site datum was established and appropriate bearings made to fix its position. 3) The area of potential impact(s) was located on the site. 4) Shovel and/or auger testing was conducted on or near the area of potential impact as well as a point or points within a portion of the site adjudged least likely to have been previously disturbed. This was done in order to assess the degree of site integrity, the amount of expected disturbance from the proposed impacts, and the artifact types and densities within the site. Each shovel test/auger test was recorded on a post hole recordation form generally indicating depth and findings. Each shovel test/auger test was screened through 1/8" screen. In addition, Munsell readings were made for each subsurface test. 5) A map was then formulated for each site showing its surface limits, as well as areas of previous disturbance.

The Shuman Creek fenceline where there was unobstructed visibility of the ground surface was surveyed by one person. Using a continuous zig zag transect with outer limits of not more than 7.5 m from the center line, the entire alignment of one mile was examined in half a day.

The San Antonio fenceline, approximately 4.75 miles long, was surveyed by two crews of two. Due to the density of cultigens and natural vegetation two persons were utilized to survey this fenceline. Two parallel transects not exceeding 10 meters from the center line were used to survey the fenceline in one day. Isolated single artifacts were recorded on the Isolated Archaeological Occurrence form and all sites within the potential area of direct impact were rerecorded on State of California Archaeological Survey forms.

As part of the objective to determine site density and chronology, a sample of artifacts and ecofacts from the surface, and all cultural materials from subsurface tests, were examined and quantified. Estimates of density of surface materials were made by counting the artifacts and ecofacts observed during survey transects; estimations of subsurface deposits were made by counting and identifying materials recovered by screening the earth removed by shovel and auger tests. An element of bias was introduced into such samples because the tests were located primarily in the areas of potential impact; thus the materials reported may not fully reflect the density, chronology, or activities (function, or site type) at any specific locality.

Archeological observations and test results are expressed in metric measurements, but the Air Force construction data are expressed in the English system, as supplied to the investigation, for ease of reference.

This site located in the mountains above the coastal plain lies on a small ridge with a small spring at its center. Surrounded by mixed chaparral the site could well be related to the gathering and processing of seed foods, notably purple sage. In addition the site offers a considerable vantage point from which large sections of the coastal plain could be viewed. This would be highly beneficial in regard to hunting and tracking game. The artifacts of the site appear to be related to the processing of food stuffs. This is suggested by the presence of several utilized flakes as well as numerous secondary flakes which may have been as well used.

The depth of the midden as well as the substructure density indicates the spot as being heavily used over a period or periods of time. The depth of the midden may indicate a temporary camp related to one of the larger more permanent sites on the coastal plain. Another factor that relates to usage of the site is the presence of three cores. The presence of these cores may indicate a need for manufacturing tools when others became lost or useless. This would be necessitated by long stays at the site and continuous processing of a particular resource or resources.

Dimensions

The horizontal dimensions of the site are 63 m northeast-southwest by 60 m northwest-southeast. The site is oriented to the northeast-southwest. Vertically, some depth was

indicated on the initial recordation in 1970 (Spanne 1970b). This was indicated by rodent burrow openings where cultural materials were found. Current investigations indicate that the deposit extends to a depth of 96 cm.

Disturbance

Three types of disturbance were noted for Ca-SBa-603:

1. Cattle disturbance in the form of trails and mires were noted throughout the site. Areally this type of disturbance covers approximately 1.5% of the site. Vertical disturbance is estimated to range from 5 to 20 cm.
2. Vehicular disturbance in the form of roads, tracks, and road grading was noted. Area covered by this type of disturbance is estimated to be no more than 5%.
3. Structural disturbance in the form of fences and two structures were noted. The two structures and the associated disturbance cover approximately 1 to 2% of the site. Vertical disturbance is approximately 0.6 to 1.0 m. A recent fire (June 1981) destroyed the northern building which in turn caused the north retaining wall to collapse and start to erode.

Nature of the Proposed Impact

In order to protect the spring from various types of contamination it is proposed to replace what once was the

northern structure. This will entail placement of driven posts spaced every 5 ft to a depth of 3 ft to 4 ft, effectively forming a square 22 ft by 20 ft. In addition, to prevent rodent entry and sloughing or eroding away of the sides of the spring depression, a 2 ft by 2 ft trench will be dug around the building adjacent to the driven posts. Redwood board or planks will be fastened to the posts and the trench backfilled.

Archeological Investigations

To determine what impact the proposed range project will have it was necessary to determine the depth of the deposit as well as the areal boundaries. To this end six auger holes were excavated to determine depth, evaluate artifact density as well as the presence and nature of disturbance. In addition, a sample of surface artifacts was recorded as to mineral type, artifact type, size and color.

The following table indicates the depth of the archeological deposit and in association with visual observations an estimate has been included indicating the amount of disturbance.

The density of cultural materials on the surface is estimated to range from a high of four artifacts per m^2 to a low of one artifact per m^2 . Lithic materials observed included chert, chalcedony and shale. Of the 23 items closely examined out of an estimated total of 200 seen, there were four primary flakes (chert), seven secondary flakes (chert), one secondary flake (shale), one tertiary flake (chert), four

utilized chert flakes, two chalcedony cores, one chert core, two chert bifaces, and one fragment of Mytilus sp.

The following data were compiled from the subsurface tests:

<u>Auger test</u>	<u>Depth</u>	<u>Artifacts and ecoacts</u>
Line 1,1	65	8 chert flakes, 2 unidentified shell fragments
1,2	70	1 unidentified shell fragment
1,3	65	1 chert flake, 1 unidentified shell fragment
1,4	85	5 chert flakes, <u>Haliotis</u> sp. fragment, <u>Mytilus</u> sp. fragment
Line 2,1	40	1 unidentified shell fragment
2,2	55	1 chert flake, 1 bone fragment, 6 unidentified shell fragments

<u>Location</u>	<u>Depth of Deposit</u>	<u>Depth of Hole</u>	<u>Estimation of Vertical Disturbance</u>
Line #1	cm	cm	cm
Post hole 1	65	100	0-10
Post hole 2	70	87	0-10
Post hole 3	65	80	0-35
Post hole 4	85	96	0-10
Line #2			
Post hole 1	40	60	0-5
Post hole 2	55	80	0-35

The investigations indicate that the upper 35 cm of the site, particularly in the area of the previous impacts, has been heavily disturbed. It also indicates, within the limitations of our study, that below 35 cm no significant impact has occurred other than where footings have been placed.

Evaluation of the Project Impact Upon Cultural Resources

Based on the field investigation the proposed project will impact CA-SBa-603, particularly if the proposed structure is to be expanded beyond its previous footings. The impact will disturb approximately 8 m³ of the site with half

of that already disturbed by previous impacts. This loss will be tolerable particularly since the proposed project will arrest erosion caused by the previous impacts.

Indirect Impact: Based on the field evaluation the indirect impacts are a more serious threat to the site than the proposed project. A cattle trough located to the south of the extant structure has become mired due to trough overflow and cattle stepping in it. Although this area has been previously impacted, the cattle pose a continuing problem of vertical and horizontal erosion. The structure on one hand is tolerable because it is designed as a one time impact that will arrest continuing erosion while the trough on the other hand poses a smaller but continuing impact.

Recommendations

It is recommended that the proposed replacement structure be built as planned. It is further recommended that the cattle trough of the southern extant structure be rebuilt so that it will not mire the surrounding ground surface or that it be removed from the site area.

CA-SBa-978

This site is located on a gentle west-facing slope in the bottom of Jolloru canyon. The principal topographic features of the site are the spring and surrounding drainages. Mixed chaparral and grasses make up the dominate vegetation communities.

In terms of artifacts, the site appears to be dual in nature with manufacturing of tools one aspect, and

extractive/processing the second. The cores and tertiary flakes may be related to tool manufacturing, and the secondary flakes in combination with the topographic ecological setting provide a case for food processing. The higher density (relative to other sites) of shell indicates that the site may be related to a coastal village the shell representing food brought in during the processing operation. The presence of burnt shell would tend to support this. The depth of the cultural deposit (94 cm) suggests long term usage but the lack of a 'dark' midden soil indicates short periods of usage.

Dimensions

The site is oriented east-west with dimensions 50 m north-south by 62 m east-west. This project's investigation indicates a cultural deposit extending to 94 cm.

Disturbance

Three types of disturbance were noted for this site:

1. Heavy equipment activities. This type of disturbance was noted on the northwest edge of the site and may be attributable to a bulldozer/heavy equipment cut which would allow vehicular access to the pasture on the east slope. The area of disturbance covers approximately 1% of the site.
2. The second source of disturbance is the cattle trough. The trough is rusted through and all its water inundates an estimated 100 m² and then drains to the south over the edge of a bank. The

water combined with cattle activities has become a mire with an estimated vertical disturbance of 25 cm. In addition, the point in the slope where the mire drains off is eroding an area estimated to be 2 m².

3. Cattle activities on the southeast edge of the site combined with the spring have caused a large mire covering an estimated 400 m².

Nature of the Proposed Impacts

Due to age and resultant decay it is proposed to replace the existing cattle trough and to install protective guard posts to protect various mechanisms vital to its successful operation.

This will entail the removal of the old trough, the placement of a new one, the placement of a rock base; the various mechanisms needed will be mounted on one or more posts which shall be attached to the trough or on posts which shall not exceed a depth of two feet.

If the trough can be indeed constructed in such a manner where ponding will not occur, the direct impact of construction will be negligible. Further, if existing pipes or pipe trenches needed to operate the trough are utilized little or no new impact will occur.

Nature of the Archeological Investigation

To determine the extent of impact the proposed project will have on CA-SBa-978, three auger tests were excavated.

Two of the auger tests were located near the area where the present trough stands and the third was located in an area central to the whole site. Generally the findings indicate that the maximum site depth does not exceed 94 cm. In regard to the area of impact the two auger drillings indicate that cultural materials do not exceed 50 cm in depth. Due to trough leakage and cattle activity approximately 10 m² was heavily mired. The mired area was probed and was found to extend some 25 cm in depth indicating a maximum total vertical disturbance of 2.5 m³ overall.

To assess site content and density as suggested by surface remains, the following cultural materials were examined out of an estimated site total of 100; all lithic artifacts are chert:

<u>Artifacts</u>	<u>No. recorded</u>	<u>Ecofacts</u>	<u>No. recorded</u>
Primary flakes	1	<u>Mytilus</u> sp.	46
Secondary flakes	9	<u>Chiton</u> sp.	1
Tertiary flakes	3	<u>Tivela stultorum</u>	1
Cores	2	<u>Unidentified</u>	3

The surface density is estimated to range from a high of seven artifacts per m² to a low of one artifact per m². The subsurface tests revealed the following:

<u>Auger test</u>	<u>Depth</u>	<u>Artifacts and ecofacts</u>
1	50	3 chert flakes, 1 <u>Mytilus</u> sp. fragment
2	50	1 <u>Mytilus</u> sp. fragment
3	94	2 <u>Mytilus</u> sp. fragments

Evaluation of the Proposed Impact Upon Archeological Resources

Direct Impact: Based on the field investigation the proposed project will have negligible impact upon CA-SBa-978. If the impact is limited to the existing area of the present trough and no new pipelines are needed and the ponding effect is eliminated, the proposed project will have little impact on the site.

Indirect Impacts: Again, indirect impacts pose a more serious threat to the resource than the proposed construction. The trough will attract cattle specifically to the site area and thereby cause horizontal displacement of surface artifacts as well as the deepening of extant cattle trails and perhaps the formation of new ones. This type of impact must be viewed as a continuing one which in combination with erosion may constitute a serious threat to the present cultural resources.

Recommendations

It is recommended that the site CA-SBa-978 be protected from the aforementioned indirect impact and to that end the trough be relocated to some other locale in which cattle travel will not impact the site.

CA-SBa-625

This site is located midway up the west slope of Tranquillon Mountain and east of Ladrones canyon. Specifically the site is located on an artificial terrace where a spring

either artificially or naturally exists. The vegetation though considerably disturbed is again indicative of a mixed chaparral (purple sage was one of the principal plants around the site area). Though the artifacts were scanty in numbers those found may be indicative of an extractive/processing function. The relationship of fresh water, plant food communities, an excellent vantage point and close proximity to the coastal plain below suggest a multi-functional usage of the site. Unfortunately the heavy disturbance over the site precluded any determination of cultural depth, and indication of seasonality. A most interesting comparison might have been made with CA-SBa-603 which duplicated more or less the physical characteristics of CA-SBa-625.

Dimensions

The site is 92 m north-south by 50 m east-west. The site is oriented to the north-south. The site covers 5900 m². When the site was recorded in 1970 (Spanne 1970b), it was recorded as a surface site. Current investigations confirm the site as a surface manifestation.

Disturbance

This site has been effectively destroyed by previous disturbance. The area of the site appears to have been heavily graded. A cistern and road are the only visible reasons for the grading activities. The road east-west oriented bisects the north of the site while immediately to

the south of the road lies a cistern. The cistern appears to have fill piled around it. The area south of the cistern appears to have been graded. It is probable, since no obvious spoil is present around the edge of the site, that the area south of the cistern was graded for fill which was then used to bulwark the cistern. The soil around the cistern is approximately two meters higher than the ground surface on the south side. Other factors that tend to confirm the extent of disturbance is the presence of vegetation commonly associated with disturbed earth such as mustard and milk thistle. Another factor was the presence of exposed bedrock which appears to be uncommon geomorphically for this slope.

Further disturbance is evidenced by a cattle trough and subsurface pipes running from the cistern to the cattle trough (north-south) and from the cistern running west down slope. The previous disturbance appears to have completely disturbed the site both vertically and horizontally.

Nature of the Proposed Impact

Modification to this site will consist of placing a rock base around the extant trough to prevent ponding. Further modifications may include trenching for replacement of pipes but this had not been formalized at the time of investigation.

Nature of the Archeological Investigations

To determine if the proposed project would affect a subsurface cultural deposit as well as to determine the amount

of previous vertical disturbance three auger tests were excavated. None of the auger tests indicated any subsurface deposit. The soils from each auger test were extremely differentiated and as such were not comparable.

Five objects were examined of the estimated 20 present on the surface; these included four secondary flakes and one median biface fragment, all chert. There was no visible shell. The surface is heavily disturbed, but an estimate of surface density is one artifact per 25 m². No cultural materials were recovered from the auger tests below the surface.

Evaluation of the Proposed Impact Upon Archcological Resources

Based on the field investigation it appears that CA-SBa-625 has been heavily modified in the past by previous construction and due to such modification has been effectively destroyed in terms of in situ provenance. As such, the proposed impact will cause no effective impact to the remnant manifestations of CA-SBa-625.

Recommendations

It is recommended that the proposed project proceed as planned.

CA-SBa-1111

This site is located on a coastal strip which runs north to south. The site rises to the north on the lower slope of Vina Peak which is part of the Punta de la Concepcion area of the Santa Ynez Mountains. Vegetation for the site principally consists of introduced grasses and some coastal sage. The bedrock chert outcrops, cores, broken and complete nodules of chert and secondary flakes indicate quarry activities and probably preliminary manufacturing as evidenced by the large number of unused secondary chert flakes and absence of tertiary flakes.

Dimensions

The site is 700 m north-south by 300 m east-west. The overall orientation is east-west.

The vertical dimensions as recorded by W. B. Sawyer in 1974 indicate a depth range of 1.5 to 2 m. Current investigations indicated, in the two areas tested, an approximate maximum depth of 60 cm. Of the two auger tests both encountered a rock lens of shale pebbles with an average diameter of 4 cm. Since Sawyer (1974) did not indicate his source of information for depth we would surmise that he estimated it and as such does not conflict with our data.

Disturbance

Disturbance for this site is mainly in the form of roads either paved or dirt as well as a railroad bed with associated

berm. The main road, railroad track and associated ditches cover an area estimated to be 730 m by 30.5 m along the east-west axis of the site. A small access road to the north of the main road has disturbed approximately 152 linear m by 1.8 m with no apparent subsurface disturbance. The amount of vertical disturbance caused by the main road and railroad is estimated to be well beyond the maximum depth of the cultural deposit (maximum estimated depth is 1.8 m).

Nature of the Proposed Impact

The proposed impact to this site consists of digging a two by two by 400 foot long trench along the eastern boundary of the CA-SBa-1111. Because of ownership problems this pipeline may be constructed elsewhere on the site as opposed to its currently mapped position (Rafter 1981:pers. comm.).

Nature of the Archeological Investigations

Two auger tests were excavated to determine the depth of the deposit. The first auger test was aligned as closely as possible to the position of the pipeline as indicated on the project map. The second auger test was located 46.2 meters to the west of the first, also along the mapped route of the pipeline. The first auger test indicated a maximum depth of 50 cm while the second indicated a maximum depth of 53 cm. In addition to the auger tests the site was intensively transected in order to determine its boundary. The surface boundaries appear to closely approximate the previously mapped limits of the site; no changes were made.

An estimate of surface density is a high of 100 artifacts/ ecofacts per m² to a low of one item per 20 m². Of those selected for closer examination, there were 11 secondary flakes, three cores, and 10 nodules, all chert, and three fragments of Haliotis sp. Auger test No. 1 yielded four chert flakes to a depth of 60 cm., and auger test No. 2 produced 13 chert flakes to a depth of 60 cm.

Evaluation of the Proposed Impact Upon Archeological Resources

Though it is not certain where the proposed impact will occur, it is known that locating the pipeline within the currently established boundaries of the site will certainly impact it. Because of the length of the pipeline and size of excavation to contain it a significant impact will occur.

Recommendations

Our recommendation would be to bring the pipeline from the dirt road/trail intersect at the 450 elevation southward along the trail cross the coast road, and extend eastward along the railroad tracks to Sudden Road. This plan would reduce the impact to non-site areas and where the pipeline would enter the site it would be in areas already impacted.

Another alternative is that the proposed pipeline as now mapped be detoured above the site to a point north of where Sudden Road intersects the coast road. This will diminish the effective impact to approximately 61 m which in close proximity to the road intersect will provide a tolerable impact. This is based on the assumption that the intersect point is to some extent already disturbed by road and railroad construction.

CA-SBa-722

North Vandenberg: Based on the maps with site locations and other data provided by the Air Force, Interagency Archaeological Services inadvertently called for the investigation of CA-SBa-772 in its scope of services. The background research revealed the discrepancy in the USGS quadrangle and A.F.C.I. map designations, and at first attributed the problem to an error in site recording. However, when the field investigation began, it became apparent that the description of CA-SBa-772 in no way resembled the physical reality. The Casmalia USGS quadrangle supplied by the I.A.S. was consulted to correct the error without undue loss of project time. The actual site in the study area is correctly designated as CA-SBa-722.

This site is located on a gentle to moderate slope on the south side of Shuman canyon. The major topographic characteristic of the site is the gentle to moderate slope and spring. The on-site vegetation is dominated by a mixed chaparral community while the northern downslope of the site is dominated by a wetland plant community.

In regard to artifacts the site appears to be related to extractive/processing functions as evidenced by the large number of secondary flakes which it is expected were utilized to process plant and animal foods. The wetlands below would have offered in addition to a variety of plant resources numerous hunting opportunities. As the site had an elevated

position served by water and effectively straddles the ecotone, it is surprising that the site was not more extensively used. There does not appear to be any strong indications that the site was more than seasonally used as evidenced by the lack of site depth and artifactual diversity. The site also lacks even in the most fragmentary form any evidence of shell. This of course may relate to sampling errors but other bias may be involved, more reflective of aboriginal usage. No explanation is offered at this time.

Dimensions

The site is oriented east-west with dimensions 375 m east-west by 115 m north-south. These dimensions conflict with the mapped boundary of CA-SBa-722 on A.F.C.I. 10. The site was extended primarily westward due to the presence of flakes in that area.

For the major portion of the site depth is given as an estimate only. Not wishing to unnecessarily impact the site subsurface testing was limited to the proposed area of impact only. Our investigation indicated that the area of proposed impact, the spring, does not have a subsurface component, as opposed to the upper portions of the site. The upper undisturbed area of the site is estimated to have a possible depth range of 20 to 60 cm. This is subjective and is based on our experience with other sites investigated within this project.

Disturbance

Disturbance can be related to two factors, previous road construction and the railroad. The railroad has tracks running east-west across the northern boundary of the site. Because of access roads along the tracks a considerable area has been disturbed. However because no artifacts were found north of the tracks but are found immediately south of them, it may be assumed that northern boundary to some extent has been disturbed, but also probably reflects the actual site boundary. Access roads to the tracks form the boundary on the western edge while El Rancho Road and associated disturbance effectively bounds the south half of the site. The spring and therefore the area of proposed impact is outside the area of demonstratable cultural manifestations. El Mirage Road combined with the steeply vegetated slope associated with the spring precluded our finding a realistic southern boundary.

Nature of the Proposed Impact

The project consists of building a small spring box at the springhead and then laying of pipe northward along the surface.

Archeological Investigations

Investigations centered on two problems: 1) establishment of boundaries for the site and 2) whether or not cultural materials could be found around the springhead. Ten meter parallel transects established the western, northern, and

eastern boundaries. An auger test was excavated near the springhead, five meters southwest. The auger test was excavated to 60 cm. No cultural materials were recovered. Of the approximately 150 items of cultural material visible on the surface, the 11 artifacts inspected were all chert and comprised one primary flake, eight secondary flakes, one tertiary flake, and one biface which was non-diagnostic. Surface density is estimated to have a range from three artifacts per m² to one artifact per 100 m². No shell was observed. No artifacts were recovered in the subsurface testing.

The heavy vegetation, deep duff and muck from the spring prevented any visual observation of cultural materials. If the spring existed while CA-SBa-722 was being utilized by prehistoric populations, it is probable that the spring was used, and indeed may have been causal to the occupation. In summary no cultural materials were found around the spring, but this may be related to limitations in observation and/or cultural materials being swept downslope by water action caused by the steep slope above the spring. An area downslope of the spring was inspected for artifacts but vegetation and duff proved to be too dense to allow inspection of the ground surface.

Evaluation of the Proposed Impact Upon the Cultural Resources

Based on the field evaluation it is unlikely that there will be any significant impact to CA-SBa-722.

Recommendations

We recommend that the project proceed as planned.

Shuman Creek Fenceline

CA-SBa-962

This site is located near the mouth of Shuman canyon in a relatively flat area, with stabilized dunes comprising the southern half of the site. The vegetation is primarily modern or introduced as evidenced by iceplant and introduced grasses. In regard to artifactual content little can be said due to the paucity of artifacts. The lack of artifacts suggests (relative to dune coverage and disturbance) that the site was intermittently used. The major topographic features of the site, the dunes and position within the mouth of the canyon, suggest a strategic value, perhaps in relation to hunting. This site with its dunes would make an excellent locale for the ambush of game being driven down the canyon. Suffice to say these points are speculative without further artifactual evidence.

Site Dimensions

Horizontal: The boundaries of the site must remain somewhat ambiguous due to the presence of sand dunes in the southern half

of the site. Since the sand dunes tend to obscure site boundaries, only an extensive shovel testing program would be capable of defining the boundaries. Therefore, only the area of impact was investigated by shovel test. The boundaries at this time are 152 m north-south by 121 m east-west. Vertical extent: A single shovel test was excavated along the line of the proposed fenceline. The test indicated a depth of approximately 50 cm.

Disturbance

Disturbance can be primarily associated with previous road construction. Located at the intersect of Taft and El Rancho Roads the site appears to have been bisected northwest-southeast by El Rancho Road and northeast-southwest by Taft Road.

Beyond the site being bisected by the two roads, both roads have a large berm in association which partially covers the site. The berm along El Rancho Road is approximately one meter high and three meters wide. This exists along the southern side of the road and appears to have been created by the construction of the road. The north side of the road appears to be relatively untouched but higher than the original ground surface south of the road. An estimate of the site area disturbed by the road construction is not feasible due to the hidden nature of the south side of the site.

Nature of the Proposed Impact

The proposed construction of the fenceline will impact CA-SBa-962 in at least two ways: 1) steel posts will be placed every 10 to 15 feet and to a depth of 2 to 3 1/2 feet

deep and 2) corner posts will require cement piers to anchor them measuring 8 x 18 x 18 inches.

Archeological Investigations

Investigations for this site consisted of intensively transecting the site to determine if cultural materials were present on the surface. An extremely light scatter of flakes was found south of the road (El Rancho) but none was found within the sand dunes north of the road. Of the estimated five lithic items, one was a chert secondary flake. One fragment of unidentified shell was observed. The number and distribution of visible manifestations is probably a result of the sand dune setting. A single shovel test was conducted along the route of the proposed fence line and recovered two chert secondary flakes to a depth of 40 cm.

Evaluation of the Projects Impact Upon Cultural Resources

Based on the field investigation it appears that the proposed project will have an adverse impact on buried archeological materials. Since the actual subsurface dimensions are unknown there is no way to assess what percentage of site destruction would be carried out if the project proceeded as is. Considering the amount of damage that has already occurred to the site any further modification may significantly limit the quality of information the site may contain.

Recommendations

Since the southerly boundary is unknown, altering the fenceline in that direction would necessitate further and probably damaging work by archeologists. The area between the road and sand dunes would provide an excellent compromise. The fence could generally follow its proposed course but would not affect the site. Considering that this point along the road has already been disturbed by previous road construction, it would provide a satisfactory line for the fence impact.

San Antonio Creek Fenceline: This part of the range improvement project consists of building a fence 4.75 miles long, predominantly along the north bank of San Antonio Creek.

CA-SBa-1020

Located on the north bank of San Antonio Creek the site lies at the interface of a creek bank terrace and slope of an adjacent hill. In terms of vegetation the site lies in an ecotone: the bank terrace is composed of introduced grasses with a grove of eucalyptus trees on the northern edge; the hillside is a mixed chaparral community. The site composed of an historic and prehistoric component is heavily obscured by a thick mat of duff. The prehistoric artifacts are relatively sparse and may be more characteristic of slopewash from the high density site CA-SBa-1019 which is located above. From the subsurface materials its usage was

not extensive. The historic artifacts do suggest, compared to other sites within this investigation, intensive usage. The artifacts found while not particularly temporally sensitive indicate that the site may have been used in the early 1900s as evidenced by the purple glass. Also the artifacts are more expressive of a domestic nature as opposed to a more commercial/working origin. Plates, glassware and crockery suggest a residential origin. The eucalyptus trees may also relate to the 'residence' as they do not seem to function as a linear or crop windbreak as they have sometimes been used. Their grove-like aspect suggests they were planted around a house or residence.

Site Dimensions

Horizontal dimensions of the site are 67 m north-south by 55 m east-west. Vertically, the site has been previously described by L. Spanne in 1972 as surface to shallow. Our investigations indicated a depth of 40 cm near the position of the proposed fenceline.

Disturbance

Disturbance is difficult to define for this locality due to the thick mat of duff that covers the site. Generally the historical component does not appear to have been recently disturbed. Due to the relatively undisturbed nature of the area and thickness of the duff it appears that disturbance in recent years has been minor. In the same vein the disturbance for the prehistoric component is difficult to assess

not only due to the duff but also relative to the historic intrusion. Again there is no obvious disturbance but it is suggested simply due to the superimposition of the historic over the prehistoric.

Nature of the Proposed Impact

The impact to this site relates to fencing construction which will necessitate the placement of a fence post every 10 to 15 feet set at a depth of 2.5 feet.

Archeological Investigations

The archeological investigations consisted of intensive transects and the excavation of two shovel tests. The first shovel test was excavated near the proposed fenceline. Artifacts both prehistoric and historic were recovered to a depth of 40 cm. The second shovel test was excavated in a flat amongst a grove of eucalyptus trees to a depth of 60 cm; however, no cultural materials were recovered. In general the intensive transects and first shovel test indicated that the main concentration of the site is on the creek terrace along the proposed area of impact.

Of the cultural materials visible on the surface, estimated at about 80, 20 items were selected for closer examination.

<u>Artifacts</u>	<u>No. Recorded</u>	<u>Ecofacts</u>	<u>No. Recorded</u>
Plate frag., porcelain	1	<u>Tivela stultorum</u>	10
Plate frag., earthenware	4		
Glass frag., aqua	1	Bone	1
Crockery frag., brown	1		
Cup frag., earthenware	1		
Secondary flake, chert	1		

All lithic material observed was chert. The surface density is projected as one artifact per 100 m².

The subsurface testing produced the following results:

<u>Shovel test</u>	<u>Depth</u>	<u>Artifacts and ecofacts</u>
1	40	1 frag. sun colored amethyst glass, 1 frag. brown glazed crockery, 2 secondary flakes of chert
2	60	None

Evaluation of the Project's Impact Upon Cultural Resources

There will be a direct adverse impact upon cultural resources at CA-SBa-1020. 40 fence posts will be placed within the southern boundary of the site, and because of the curvature of the creek one or two of these posts may be anchored in cement thereby increasing the impact to the site.

Recommendations

To offset the proposed impact to CA-SBa-1020 it is recommended that the fenceline be located at the bank of San Antonio Creek or as close as feasibly possible to the creek bank. In this particular location the fenceline angles out from the creek bank and bisects the creek terrace. If the fenceline is realigned along the creek bank it is unlikely significant archeological materials will be impacted. This is based on the assumption that the creek bank would not be occupied per se because of the general instability of such banks, and the limited usage a creek bank might provide any particular group, other than trash deposition. If the creek bank has been utilized to dispose of trash most of it

would have been washed away as the creek bank does not have any slope and having none would not prevent artifacts or debris from being redeposited elsewhere.

CA-SBa-1019

Although this site was not called out as being within the impact zone our reconnaissance indicated that this site actually extended beyond its formerly recorded boundaries and may be impacted by the proposed project. CA-SBa-1019 occupies a prominent hill which gently slopes southward to San Antonio Creek. The hilltop provides a large flat area where the site is essentially the densest. This site is a dual component site with a prehistoric and historic component. The vegetation of the site is dominated on the upper slopes by a mixed chaparral; the lower reaches of the site is composed of eucalyptus trees and introduced grasses. In regard to the prehistoric artifacts there is a diversity of tools, concentrations of artifacts, primarily secondary flakes, and some depth. The lack of a dark soil midden indicates that the site may not have been occupied for long periods of time but the subsurface densities on the upper slope indicate at minimum heavy seasonal usage. Such heavy usage may have been the exploitation of the Barka Slough area located to the east of CA-SBa-1019. Barka Slough and San Antonio creek would have offered abundant plant and animal resources that could easily have been exploited from CA-SBa-1019.

Dimensions

The plan dimensions of the site are 380 m north-south by 820 m east-west. The general orientation is east-west. The depth of the site is approximately 50 cm.

Disturbance

Manmade disturbance appears to be minimal, particularly in the area of proposed impact. Based on the inherent limits of this type of investigation it was also impossible to determine how much disturbance was made by the historic occupation on the prehistoric component, and how much disturbance has since occurred to the historic component.

Archeological Investigations

Because this site was so large, the emphasis of this investigation was limited to the general area of potential impact. Three shovel tests were excavated, two in what was considered a high density area and one in the area of proposed impact. The first shovel test (to a depth of 40) did not uncover cultural materials. The second shovel test found prehistoric materials to 50 cm. Further depth determinations could not be made owing to the loose sandy conditions of the soil. The third shovel test was located adjacent to the area of the proposed impact and excavated to a depth of 50 cm; no cultural materials were found. This indicates that the area of impact may only be a surface manifestation of the site, and not extend to any appreciable depth.

Eight of the surface artifacts were examined of the several hundred observed. Prehistoric artifacts included three secondary chert flakes and one pecked sandstone cobble. The historical materials were one white earthenware fragment, one brown earthenware fragment, one piece of clear glass and one sun colored amethyst glass shard. The surface density is estimated to be a maximum of five artifacts per m² down to one artifact per 10 m². The shovel test results were as follows:

<u>Shovel test</u>	<u>Depth</u>	<u>Artifacts and ecofacts</u>
1	40	None
2	50	5 chert secondary flakes
3	50	None

The historical materials lacked marks or diagnostic attributes and could not be identified or dated, other than the sun colored amethyst glass which is probably pre-1910.

Evaluation of the Project's Impact on Cultural Resources

Because the proposed fence line closely follows the north bank of the creek, it does not appear that significant damage or alteration would occur, particularly if the cultural materials as indicated by our investigations are limited to the surface.

Recommendations

The data indicate that the proposed project will have a minimal impact upon the cultural resources present; therefore, we recommend the project proceed as planned.

This site lies on a flat plain immediately north of San Antonio creek. The site was described by Spanne in 1972 as a light density flake scatter with some evidence of shell, primarily Mytilus and Tequila. Since no surface indications of the site were found and because subsurface investigations revealed little in terms of artifacts we must assume that the site was intermittently used, using as our basis Spanne's findings of 1972.

Dimensions

The site measures 55 m north-south by 57 m east-west. The vertical depth has been previously estimated by Spanne (1972) to be 60 cm or less. Our investigations indicated an approximate depth of 25 cm.

Disturbance

The disturbance to this site appears to be related to the current cultivation practices. Plowing the field has probably damaged the site to some extent and the barley density has reduced visibility to almost nothing, thereby preventing a visual delineation of the site.

Archeological Investigations

Two shovel tests were excavated to determine the depth of the cultural deposit. The first shovel test, excavated to 30 cm, did not reveal or suggest any subsurface deposit along the proposed line of impact. The second shovel test

was excavated near what was assumed to be the geographical center of the site as indicated by Spanne in 1972. Excavated to 40 cm, two fragments of Mytilus were found. Intensive transects also failed to find any surface indications of the site. Because of the difficulties in defining the boundaries of the site we must accept Spanne's boundaries as proposed in 1972 (61 m north-south by 37 m east-west). Based on our investigations, it appears that the site may have some depth but this must be viewed with caution as it may relate to soil mechanics and not cultural deposition. If CA-SBa-1011 is a surface site it may have suffered considerable horizontal displacement. L. Spanne in his recordation of the site indicates it had been under cultivation at one time, and has probably been under cultivation since then. Plowing and dissociation of the earth may have caused significant damage to this site.

Evaluation of the Project's Impact Upon Cultural Resources

Based on our investigations the proposed project will not have an adverse impact on CA-SBa-1011. Between eight to twelve fence posts will be located within the recorded boundaries of the site. Based on the currently available information the proposed impact does not appear to be significant. This is based on the probable disturbance factors, the paucity of artifacts, and the assumption that the creek bank would

be least likely to contain significant prehistoric materials. The last assumption is supported by the first post hole which failed to reveal any cultural materials.

Recommendations

Based on the findings of our investigation the proposed range improvement project will have little or no adverse impact to CA-SBa-1011. Therefore, we recommend the project proceed as planned.

CA-SBa-1009

This site is on a flat alluvial terrace immediately north of San Antonio Creek. Again, as with CA-SBa-1011 there were no surface indications of the site. The sub-surface examination also failed to practically indicate or shed light on the nature of the site. Spanne describes the site as a light density flake scatter with some shell present. The site may functionally represent a temporary food processing camp. The stream south of the site as well as the wetlands of Barka Slough would have provided excellent opportunities for the gathering of food stuffs.

Dimensions

It measures 100 m northeast-southwest by 60 m northwest-southeast. The overall orientation is east to west. Vertical depth has been estimated to be less than 60 cm (L. Spanne 1972). Spanne (1972) also indicates but does not state why, that the site may be buried. Our investigations indicated a

depth of approximately 20 cm, and nothing suggested a deeper deposit. A survey of the creek bank also failed to find any indication of a deeper deposit.

Disturbance

As in the findings for CA-SBa-1011 disturbance appears to be related to cultivation. The investigation indicated a loosely compacted soil zone of the upper 20 cm which may correspond to a plow zone. Another factor that may be related to cultivation are soil desiccation cracks approximately 10-15 cm in depth and one to two cm wide. These cracks are present throughout the site and in all probability have caused artifacts to be removed from their original locations.

Archeological Investigations

Two shovel tests were excavated, one near the recorded center of the site and the other along the line of proposed impact. The first shovel test along the creek bank was excavated to 45 cm. No artifacts were recovered. The second shovel test was excavated to 40 cm. Two pieces of Mytilus were recovered at 20 cm. In addition to the shovel test an intensive visual reconnaissance of the site was made.

Nineteen transects spaced no more than three meters apart were conducted over the area previously recorded as being part of the site. No artifacts were observed. Based on the field evaluation the site appears to be basically hidden

through a combination of cultivation and soil mechanics. This is ameliorated by the previous recordation and somewhat by our own shovel test investigations.

Evaluation of the Project's Impact Upon Cultural Resources

According to fencing specification approximately 26 to 40 fence posts will be erected within the boundaries of the site. The fence posts will physically impact the area designated as CA-SBa-1009 but considering the difficulty of finding the site the actual probability of disturbing significant remains must be remote. This is primarily based on the sparseness of artifactual materials, both surface and subsurface.

Recommendations

It is recommended that the proposed project proceed as planned. Based on overall findings regarding this site it appears that the site is a sparse or light density site that is broadly distributed over a wide area, and as such should not be significantly damaged by the proposed project.

CA-SBa-1008

This site is situated on a flat alluvial plain immediately west and north of San Antonio creek. This site is a dual component site with prehistoric and historic components. The artifacts of the prehistoric component do not particularly lend themselves to any specific trend or functional assessment. The lack of artifacts however does indicate that the site was most probably intermittent in usage and due to its proximity related

to the exploitation of the wetlands area. The artifacts of the historic component are numerous and as such function as an be described to them suggests a domestic nature or usage.

Dimensions

The plan dimensions are 60 m east-west by 70 m north-south. The depth is estimated to be 40 cm based on the shovel tests conducted for this site.

Site Description

This site was originally described by L. Spanne in 1972 as a trace density chipping and shell site with some historic features and artifacts. Functionally the prehistoric component may represent a temporary food processing site with an historic habitation site superimposed.

Disturbance

Disturbance is limited to cultivation practices as previously discussed for CA-SBa-1011 and CA-SBa-1009.

Archeological Investigations

To investigate this site two shovel tests were excavated and a program of intensive surveying was implemented. The first shovel test excavated near the potential line of impact was dug to a depth of 40 cm. Artifacts, both historical and aboriginal, were found continuously from 0 to 40 cm. The second shovel test was excavated to 25 cm with both historic and prehistoric artifacts being recovered, principally tile fragments and chert

flakes. Excavation was terminated at 40 and 25 cm respectively due to extreme soil compaction. It is estimated that the deposit may extend at least another 30 cm, based on the relatively high density of materials found in the shovel test.

The transect program revealed a relatively moderate to high density flake scatter as well as a variety of historic artifacts throughout the site area. Surface density is estimated to range from five artifacts per m² to one artifact per 20 m².

From the surface, 29 of the estimated site total of 200 objects were chosen for examination.

<u>Artifacts</u>	<u>No. Recorded</u>	<u>Ecofacts</u>	<u>No. Recorded</u>
<u>Prehistoric</u>			
Secondary flakes, chert	1	<u>Mytilus</u> sp.	1
Core, chert	1	<u>Haliotis</u> sp.	2
		<u>Tivela stultorum</u>	2
		Unidentified shell	1
		Unidentified bone	1
<u>Historical</u>			
Roof tile fragments	7		
Glass, clear	3		
Bottle glass, olive	1		
Glass, aqua	2		
Earthenware, white	4		
Concrete fragment	1		
Cement fragment	1		
Copper wire, 1-strand	1		

The subsurface testing yielded the following data:

<u>Shovel test</u>	<u>Depth</u>	<u>Artifacts and ecofacts</u>
1	40	1 secondary chalcedony flake, 4 secondary chert flakes, 3 frags. (roof ?) tile, 1 frag. green bottle glass
2	25	2 secondary chert flakes, 3 bone frags., 2 tile frags., 1 frag. fused clear glass

Evaluation of the Project Impact on Cultural Resources

Based on the fencing specification it appears that between 20 and 30 fence posts may be placed through the site. This would have an adverse impact upon the cultural resources of CA-SBa-1009.

Recommendations

It is recommended that the fenceline bypass the site to the west and thereby avoid any adverse impact. It is estimated that there would be a loss of 8,372 m² or cultivation or grazing. The site because of its dual character and high densities of observable artifacts merits protection on the basis of potential information.

CA-SBa-1007

As with CA-SBa-1008 this site is located on a flat alluvial plain and immediately east of San Antonio Creek. Similar to CA-SBa-1008 there are two components to the site, one prehistoric and one historic. The prehistoric artifacts are less dense subsurface than CA-SBa-1008 and may be reflective of an aboriginal desire to stay on the east side of the creek, for purposes of concealment or other less obvious reasons. The differences in subsurface densities between the two sites are far greater than one would expect if both sites had equally used without regard to topography. Under Summaries and recommendations patterns between sites will be further elaborated.

In regard to the artifacts of the historic component it appears evident that the two sites differ in artifactual content but in reality may complement each other. The artifacts of CA-SBa-1007 appear to be rather restricted in the utilitarian sense. In combination with the larger tools found in the creek bank the other surface artifacts appear to be restricted in function. This indicates or suggests that the east of the creek was the work area of the residence of the west side of the creek or CA-SBa-1008. The two historic components may well represent a farm/ranch complex related to each other.

Disturbance

As previously established for CA-SBa-1011, 1008, and 1009, the predominant source of disturbance is linked to cultivation and soil mechanics.

Archeological Investigations

Two shovel tests were excavated; the first near the line of proposed impact and the second near the geographic center of the site. The first shovel test was excavated to a depth of 40 cm. No artifacts were encountered. The second shovel test could only be excavated to a depth of 25 cm due to soil compaction. A variety of artifacts was encountered; based on the high density, it is reasonable to assume that the actual depth may extend another 20 cm.

A program of intensive pedestrian transects was also implemented to delimit the surface boundaries of the site. The surface transects revealed light to moderate flake densities throughout the site as well as locales of historic artifacts. In an investigation of the creek banks a large number of historic artifacts were found, including a threshing machine and towing plow. Much of the material is locked into the banks by vegetation growth and out of the main flow of water as the culvert only permits a central flow. It appears that the material was stored at the bank edge which has since sloughed away.

A sample of 25 from the estimated 100 artifacts on the surface was selected for closer inspection, with the following results:

<u>Artifacts</u>	<u>No. recorded</u>	<u>Ecofacts</u>	<u>No. recorded</u>
<u>Prehistoric</u>			
Secondary flake, chert	1	<u>Mytilus sp.</u>	2
Core, chert	1	<u>Tivela stultorum</u>	2
<u>Historical</u>			
Cement irrigation pipe, upright	1		
Cement chunks	2		
Sewer pipe frag.	1		
Milled plank	1		
Iron bracket	1		
Iron plate (machinery)	1		
Amorphous metal	1		
Bottle neck, brown crown	1		
Clear glass frags.	2		
Metal axle cap	1		
*Hay thresher	1		
*Plow	1		
*Wooden bench	1		
*Wooden gate	1		
*Galvanized tin roofing	1		
*Cement slab	1		
*50 gallon drum	1		

* These items were all partially buried in east bank of creek adjacent to the site.

The surface density of cultural materials is estimated to range from a high end of three artifacts per m² to a low of one artifact per 150 m².

Nature and distribution of materials recovered from the subsurface tests are as follows:

<u>Shovel test</u>	<u>Depth</u>	<u>Artifacts and ecofacts</u>
1	40	None
2	25	1 unidentified shell fragment, 1 iron bar, 1 frag. clear bottle glass, amorphous metal, 1 wire nail

None of the material was temporally or culturally diagnostic.

Evaluation of the Proposed Impact Upon Cultural Resources

Based on our field evaluations and comparison with the specifications for the proposed fencing it appears that between 10 to 15 fence posts will be placed within the site boundaries. Further, several posts may be constructed as corner posts which, because of the need for stabilization, would create a larger area of impact. Though shovel test No. 1 did not reveal any artifacts, the high density of historic artifacts along the creek bank indicates that the bank edge may contain significant historic deposits missed by our investigation. In conclusion the fenceline may have an adverse impact upon CA-SBa-1007.

Recommendations

It is recommended that the fenceline be realigned away from the site, in this instance to the east. Approximately

3840 m² would be lost for usage. This alternative has the added benefit of protecting the site from further damage due to cultivation. Another alternative would be to reduce the number of fence posts by half, thus lessening the potential impact to acceptable levels.

V. NATIONAL REGISTER EVALUATIONS

The National Register of Historic Places is the major means by which archeologists and government agencies provide for the evaluation of significant cultural resource properties according to the following criteria:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance 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 of importance in prehistory or history. (30 CFR 60.)

Since almost any cultural resource could qualify under one of the criteria, particularly D, which assesses the degree to which the source has yielded, or is it likely to yield, information of importance in prehistory or history, a more developed system for evaluating significance for determination of eligibility to the National Register has been proposed. Researchers (Scovill et al. 1972; Moratto and Kelly 1976; Schiffer and Gumerman 1977; Grady 1977; Glassow 1977b; have suggested the following criteria:

1. Scientific Significance - how the resource fits into research programs and research designs formulated to derive cultural information indicating past economic system, subsistence and procurement activities or other activities reflecting man's utilization of any area.
2. Historical Significance - how the resource can be identified with particular persons, cultures, or events.
3. Ethnic Significance - how the resource is held by ethnic populations in terms of religious or social importance.
4. Public Significance - how the resource could be used for interpretive purposes for the general public.
5. Legal Significance - how the resource fits the legal criteria (e.g., National Register of Historic Places).
6. Monetary Significance - how much would it cost to extract all the significant information that the resource represents utilizing today's standards and techniques.

The common approach presently is to focus on Item 1, scientific research; in other words, the significance of the resource is usually judged by whether study of that resource can be expected to answer current research questions (Schiffer and Gumerman 1977:241).

A number of broadly based research problems for prehistoric sites in the Vandenberg area are now in current usage. Chiefly developed by Glassow (1978), these questions cover such problems as settlement patterns within Vandenberg, regional comparisons of settlement patterns subsistence variability and change, regional differences in subsistence and so on. These questions provide a framework for evaluating whether a site is significant

based on its potential to answer current research questions. Unfortunately, current research evaluation of frameworks at Vandenberg do not consider historic cultural resources. In regard to historic resources few if any questions have been developed enough to provide a basis for the formation of an evaluative scale so that their significance could be determined. The only evaluative work in regard to historic resources was done by Glassow (1976:145). In a ranking of unexcavated sites nine "Anglo" sites were given the second highest ranking in terms of significance. This high ranking appears to have been made on the premise that without any prior research the sites must be presumed to be important. Though these sites were not investigated and as such no data base was developed to help evaluate future impacts to these and similar sites, there was nonetheless an inherent presumption and as such a precedent that these sites are significant.

To maintain continuity between studies Glassow's criteria of significance for unexcavated sites will be utilized to evaluate levels of significance for the 12 sites in the range improvement project. The criteria are necessarily vague but can be used to provide a preliminary indication of significance.

1. Sites that are largely destroyed: These sites have been almost completely destroyed by construction activities in recent years. Their research value--and consequently their significance--is practically nil.

2. Sites with light scatters of flakes and/or shell: These sites are all very similar in their surface characteristics. Since they are so abundant, their individual significance is relatively low. Also they may represent seasonal sites occupied intermittently by populations from the larger midden sites in the project area for purposes of specialized food collection activities.

3. Sites with moderately dense scatters of flake and/or shell: These sites are similar to the above but have denser quantities of material on their surfaces. Still, no definite midden deposits were reported. The significance of these sites is approximately the same as those in the above category.

4. Sites with midden deposits: These sites usually contain denser amounts of material on their surfaces than those of the two categories above, however the main differentiating characteristic is the presence of midden deposits. Nevertheless, none of these sites contains the substantial midden deposits found in many of the excavated midden sites. These sites are described as being a bit rarer in frequency, thus enhancing their significance.

5. Historic non-Indian sites: The title of this significance level was changed from Anglo Sites to present a more accurate description. These sites are simply described as having historic debris on them. It is not noted whether they may be in combination with possible prehistoric sites.

6. Sites with seemingly unique characteristics: This category includes sites with relatively distinctive

characteristics. These sites tend to be of higher significance than any of the above because of their uniqueness. However, it should be pointed out that their uniqueness may possibly be the result of sampling error in that the site recorders may have happened upon unique finds on these sites more or less by chance.

With regard to the six categories presented above, their relative significance may be taken to be roughly in the order presented, starting with the lowest and proceeding to the highest (Glassow 1976: 146). These levels of significance must be considered tentative without a comprehensive program of subsurface testing upon which current values of significance can be made.

The cultural resources of the range improvement project are presented below as they may fit within Glassow's unexcavated site evaluations:

<u>Site</u>	<u>Evaluation</u>	<u>Recommendation</u>	<u>Site</u>	<u>Evaluation</u>	<u>Recommendation</u>
603	4	Continue	1008	5	Avoid
625	1	Continue	1009	2	Continue
722	2	Continue	1011	2	Continue
962	2	Avoid	1019	5	Continue
978	2	Avoid	1111	4	Avoid
1007	5	Avoid	1020	5	Avoid

The evaluations as they are presented do not necessarily influence the recommendations. The recommendations are based primarily on the amount of disturbance, the type of impact and the nature of the site. For instance CA-SBa-603, a site rated a four on the evaluative scale, has nonetheless been given a recommendation to proceed. The recommendation

is based on the minimal nature of the impacts and the amount of previous disturbance.

Aside from the consideration of possible impacts through implementation of the Range Improvement Program as presently designed, the sites were independently evaluated according to the criteria for nomination to the National Register of Historic Places, on the basis of data presently available. It must be emphasized that the tests were minimal and project-oriented; that no artifacts were recovered which are temporally or culturally diagnostic; that there is no referential framework for either absolute or relative dating; and no historical overview against which to assess the importance or uniqueness of the historical sites.

CA-SBa-602. The site is located in the mountains above the coastal plain, on a small ridge with a spring in the center. It is surrounded by mixed chaparral, suggesting a site function related to the gathering and processing of seeds, notably purple sage. The excellent vantage point may also have afforded some benefit in hunting. The depth and density of the midden indicates prolonged or repeated use. The three cores further suggest that the site was utilized long enough that new tools became necessary, or that a particular resource was continuously exploited. This may represent a temporary or seasonal camp related to one of the larger, more permanent sites on the coastal plain. It may contain data necessary to address such research questions as regional subsistence

patterns, settlement system, seasonality, inter-site variability, chronology, function, and environmental adaptation. It is regarded as eligible for the National Register of Historic Places.

CA-SBa-978. The principal topographic features of the site are the spring and surrounding drainages on a gentle west-facing slope in the bottom of Jolloru Canyon. Mixed chaparral and grasses compose the dominant vegetation communities. The artifacts relate to both the manufacture of tools and resource extraction or processing. The cores and tertiary flakes illustrate the former, and secondary flakes combined with ecological factors support the case for food processing. The shell density is higher than at the other sites inspected, suggesting a connection or trade with a coastal village. The presence of burned shell is evidence of food prepared on the site, perhaps while engaging in other processing activities. The depth of the deposit to 94 cm might be interpreted as evidence for prolonged occupation, but lack of a developed, dark midden suggests instead, repeated episodes of short utilization. Although probably rated a Category 2 on Glassow's scheme (light scatter), the depth of the site and potential to contribute to the research domains outlined above contribute to our evaluation that this site is significant and eligible to the National Register, until or unless comparable sites in this micro-environment are adequately investigated, dated and interpreted.

CA-SBa-625. Midway up the west slope of Tranquillon Mountain and east of Ladrones Canyon, the site is located on an artificial terrace with a spring which may be either natural or artificial. Although presently much disturbed, the vegetation was probably typical of a mixed chaparral with abundant purple sage. The relationship between fresh water, plant food communities, an excellent vantage point, and close proximity to the coastal plain below suggests a multi-functional purpose of the site, and the few artifacts observed tend to support an extractive/processing role. However, the severe disturbance precluded any determination of cultural depth or indication of seasonality. The site does not retain scientific integrity, and the physical characteristics appear to duplicate the cultural resources of CA-SBa-625. It does not appear to be eligible for the National Register.

CA-SBa-1111. The site is situated on a coastal strip which rises to the north on the lower slope of Vina Peak, part of the Punta de la Concepcion area of the Santa Ynez Mountains. Local vegetation now consists primarily of introduced grasses and some coastal sage. It would probably be rated as Category 4 on Glassow's format on the basis of density and depth. The bedrock chert outcrops, cores, complete and broken chert nodules, and secondary flakes indicate quarry activities. The abundance of unutilized secondary chert flakes and absence of tertiary flakes suggest that the preliminary stage of tool manufacturing may be another specialized function of the site.

Particularly if such data are not replicated elsewhere, the cultural resources may be important in studies of aboriginal technology, site form and function, participation in regional exchange networks, and environmental adaptation. The site is regarded as eligible for the National Register.

CA-SBa-722. The setting is a gentle to moderate slope on the south side of Shuman Canyon, enhanced by a spring. Vegetation on site is dominated by a mixed chaparral community, while the downslope to the north is representative of a wetland plant association. The large number of secondary flakes suggests that site activities were related to the processing of plant and animal foods, and the wetlands below would have augmented the plant and animal food resources. Because the location effectively straddles the ecotone and is supplied with water, it is perhaps surprising that there is not more evidence of use. The lack of artifact diversity and depth suggests only casual use, or loss of surface indicators. A considerable portion of the site has been disturbed, and on the basis of this investigation, it does not now appear eligible for nomination to the National Register.

CA-SBa-962. Stabilized sand dunes comprise the southern half of this site, near the mouth of Shuman Canyon. It is presently covered with modern vegetation, including iceplant and introduced grasses. To the degree that the sample was not affected by dune coverage and disturbance, the relative paucity of

artifacts suggests only intermittent use of the vicinity, although the location at the mouth of a canyon would seem to constitute a strategic value for hunting. The low artifact density would lead to a low value among Glassow's categories, although the location suggests that site data could be important in studies of settlement patterns, function, environmental exploitation, and subsistence. Pending further information about whether the locational attributes are replicated in other sites which may contain more material evidence, this site is tentatively deemed not eligible for the National Register.

CA-SBa-1020. The setting of the site is an interface between a terrace on the north bank of San Antonio Creek and the slope of an adjacent hill. Vegetation of the terrace is now introduced grasses with a eucalyptus grove on the northern edge, while the hillside contains a mixed chaparral community. The artifacts, too, illustrate a mixture of prehistoric and historical materials, both obscured below a thick mat of duff. Aboriginal artifacts are relatively sparse; if they were not actually slopewash from CA-SBa-1019, which is located above this site, then CA-SBa-1020 was not used intensively. Compared to the other sites within this investigation, the historical artifacts do indicate an occupation site. Although no individual article could be dated absolutely, the sun-colored amethyst glass suggests use in the early 1900s, and the plates, crockery and glassware point to a domestic deposit.

The eucalyptus trees do not appear to represent a boundary or windbreak, but rather a grove planted around a residence. Lacking historical research, the site would be within Glassow's Category 5, and eligible for the National Register.

CA-SBa-1019. Although the site was not among those identified as being within the potential impact zone, reconnaissance established that the remains extended beyond the boundaries originally recorded and may be affected by the proposed project. The site occupies a prominent hill which slopes gently southward to San Antonio Creek. The evidence is most dense on a large flat area on the hilltop. The upper slopes are dominated by a mixed chaparral, while the lower reaches of the site contain introduced grasses and eucalyptus trees. The prehistoric artifacts include a diversity of tool types and concentrations of artifacts. The depth and density of the deposit on the upper slopes, in the absence of a dark soil midden, suggests that there was heavy temporary usage, perhaps seasonal, rather than a continuous, prolonged occupation. Site function may be related to the exploitation of Barka Slough to the east of the site. The Slough and San Antonio Creek would have afforded abundant plant and animal resources which may explain site function within a regional settlement pattern. Historical materials are also present, appearing to represent a period prior to 1910. The site is assessed as significant in both the aboriginal and historical aspects.

CA-SBa-1011. The site is located on a flat plain immediately north of San Antonio Creek. Although described by Spanne in 1972 as a light density flake scatter with some evidence of Mytilus and Tegula, no materials were observed on the surface during this investigation, and only very sparse remains in the subsurface testing. The site may be an extension of CA-SBa-1009. The research value based on this investigation is considered low, and the site does not appear to meet the criteria for significance as defined for the National Register.

CA-SBa-1009. Comparable in both location and content to CA-SBa-1011, the site is on a flat alluvial terrace north of San Antonio Creek, and it had been described by Spanne as a light density flake scatter. It may have been a temporary food processing camp related to the resources of the stream and the wetlands of Barka Slough, but the extremely low density of either surface or subsurface remains reduces the potential to yield significant information. Based on limited testing, the site does not meet the criteria for nomination to the National Register, although Spanne has pointed out the possibility of a buried deposit.

CA-SBa-1008. Artifacts representing both aboriginal and historical periods are found on a flat alluvial plain immediately west and north of San Antonio Creek. Remains of the prehistoric component are non-diagnostic of chronology, cultural affinity or function, but the early use of the site may have

been related to exploitation of the wetlands area. The numerous historical materials suggest a residential deposit by persons unknown at this time. The presence of roof tile is presumptive evidence of a structure. Pending documentation, the research value of the site is considered high, and we would concur with Glassow's Category 5 for unexcavated historical sites.

CA-SBa-1007. Located across San Antonio Creek from CA-SBa-1008, both the prehistoric and historical remains at this site may be related to those on the other bank. Subsurface prehistoric artifacts are less dense at CA-SBa-1007, suggesting functional, cultural or temporal differential; investigation of both sites would answer many questions about settlement pattern and inter-site variability. The historical artifacts are functional items related to farming or ranching; the east side of the creek may have constituted the work activity area for a homestead at CA-SBa-1008. Both components thus contain the potential to yield data addressing many of the same research questions, and the value of both this site and CA-SBa-1008 is enhanced by their proximity and apparent relationship. Both sites are eligible for nomination to the National Register of Historic Places.

VI. SUMMARY

The purpose of this study is to present an evaluation of the nature of impact upon cultural resources by the Range Improvement Project: 1981.

Presented is a description of each site, how each site will be affected by the proposed project, the archeological investigations conducted within the site, evaluations of impact upon the cultural resources, and recommendations for the management of the cultural resources. Each site is comprehensively evaluated within the limitation of the project. The cultural resources are then placed within Glassow's scale for the evaluation of unexcavated sites. Recommendations are made with regard to the nature of the site (as it is presently known), previous disturbance, and the nature and type of impact.

The evaluation of the sites according to the criteria for eligibility to the National Register of Historic Places has focused upon their potential to yield important information to address the series of general and specific research questions which has already been formulated by other investigators (Glassow 1976). The assessments were made on the basis of the available data, recognizing that the field tests were in all cases minimal and project-oriented. On the basis of the findings reported here, the following sites are believed to be eligible for nomination: CA-SBa-603, 978, 1007, 1008, 1019, 1020, and 1111. For loss of integrity or low research potential,

the following are not at this time assessed as Register candidates: CA-SBa-625, 722, 962, 1009, and 1011. These assessments are based upon the scientific criteria and do not reflect the concern which the Native American community may have for the specific sites or places.

None of the prehistoric deposits yielded artifacts which could be considered temporally sensitive, e.g., projectile points or beads, or indicators of site function or activities, other than lithic reduction and shellfish collection. The environmental settings for various sites do imply utilization of the sage plant association and the mixed resources of wetlands, and the availability of water is a repeated factor in site placement. The sites could not be dated either absolutely or relatively on the basis of the evidence gathered. Of the historical remains, there was only the presence of sun colored amethyst glass to suggest occupation prior to about 1910, but a distinction may be drawn between residential and economic activity areas.

Recommendations have been offered for means to avoid or minimize adverse impacts upon all the sites by reason of the Range Improvement Project. A final recommendation would be the preparation of an historical overview of Vandenberg Air Force Base so that the demonstrated historical sites could be more accurately assessed for their significance within a documentary framework and a posed set of research domains.

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