

AN ARCHAEOLOGICAL SURVEY ALONG THE COLORADO RIVER

IN IMPERIAL COUNTY, CALIFORNIA

Michael P. Sampson
California Department of Parks and Recreation
Southern Region Headquarters
San Diego

ABSTRACT

An archaeological site reconnaissance was conducted within Picacho State Recreation Area (SRA), a park that borders the Colorado River. No archaeological work had been previously conducted within Picacho SRA. A total of 23 prehistoric and three historic sites were recorded at this time. Several additional prehistoric sites were observed and plotted on a map, and will be recorded at a later date. Fifteen prehistoric sites are defined as occupation areas which show remains of aboriginal shelters and scatters of artifacts. Other types of aboriginal sites include stone-tool manufacturing areas and trail segments. The remains of the Picacho townsite and mill were in part recorded at this time. Artifacts found within the project area consist almost exclusively of stone cores and flakes; one fragmentary projectile point was observed. The present fieldwork demonstrates that Picacho SRA contains rich prehistoric and historic cultural remains.

INTRODUCTION

The following report discusses the results of an archaeological site reconnaissance in Picacho State Recreation Area (SRA). This unit of the California State Park System, with 6,759 acres of land, is situated in the extreme southeastern corner of California about 25 miles north of Yuma, Arizona. Picacho SRA lies along eight miles of the Colorado River (Figure 1).

The Colorado River is the dominant geographic feature in Picacho SRA; throughout human history here, the river must have served as the "magnet" for people to visit. Today, the Colorado River exhibits an impressive width which apparently results in part from two downstream dams. Picacho SRA has several large backwater areas (referred to as "lakes" locally) where points of land tend to hold sections of river. These locations show an extraordinary amount of riparian vegetation growth, and are attractive to numerous species of birds. The "lakes" are also

good places to catch fish. In aboriginal times, too, the presence of such "lakes" and smaller sloughs along the rapidly flowing Colorado River would have served as prime food-gathering areas.

Picacho SRA is characterized by a rugged terrain of volcanic hills and flat terraces which exhibit a striking diversity of colors, including greens, purple, orange, red, grays, brown, and shades of white. The flat terraces and narrower ridge lines so characteristic here trend in a direction perpendicular to the Colorado River. The terraces and ridge lines are bordered by sandy washes of varying size. Within Picacho SRA, there are at least seven major washes or drainage systems which ultimately lead down to the river. Each could have served as a convenient corridor for human passage; the two roads leading into the park follow Little Picacho Wash (Picacho Road) and Gavilan Wash (Indian Pass Road).

Any terrace or ridge line with appreciable width exhibits a surface of desert pavement. The dominant rock type within the desert pavement varies from one location in the park to another. Igneous rocks, particularly rhyolites, are most prevalent. Some locations show a diversity of stone on desert pavement surfaces which can include rhyolites, chalcedony, and quartzite. Exposures of milky quartz occur infrequently. The rock composition of the desert pavement surfaces was important to aboriginal residents of Picacho, given the variable knapping qualities of the stone present here. The rocks on the terraces in Picacho SRA exhibit differential accumulations of desert varnish (or rock varnish). Desert or rock varnish has been defined as "a thin coating of manganese and iron oxides and hydroxides, clay minerals, and trace elements that accrete on rock surfaces" (Dorn 1983:49).

Vegetation in Picacho SRA consists of a riparian community along the Colorado River and a creosote bush scrub community beyond the river banks. Dense patches of non-native salt cedar or tamarisk (Tamarix chinensis, T. ramosissima) presently dominate the river-side lands, though sizable thickets of mesquite (Prosopis glandulosa and P. pubescens), small stands of willow (Salix gooddingii), and various species of emergent aquatic plants (Typha sp., Scirpus sp., Phragmites communis) are also present. Historic photographs along the Colorado River indicate that native riparian plants were formerly more diverse and abundant than today. Beyond the river, the terraces and ridge lines show a sparse growth of low shrubs. Creosote bush (Larrea tridentata) is the most prevalent plant type in the project area and beyond. Often, widely scattered beavertail cactus (Opuntia basilaris) and ocotillo (Fouquieria splendens) occur on terraces and hillsides to complement the creosote bush. Brittlebush (Encelia farinosa), cholla (Opuntia spp.), and a few unidentified low grasses have been noted at a few locations. Blue palo verde (Cercidium floridum) and desert ironwood (Olneya tesota) trees are common in the larger washes.

The present project sought to reexamine previously documented sites and record the known significant historic properties of the park. While working under constraints of a small budget and crew, certain areas of Picacho SRA deemed likely to yield evidence of new archaeological sites were studied closely. Such work could provide a broader knowledge of the numbers, types, and locations of cultural remains present within the park. This information can be utilized to protect archaeological sites and to interpret past cultures for park visitors.

BACKGROUND RESEARCH

An archaeological records search performed for Picacho SRA by Imperial Valley College Museum in El Centro demonstrated that no systematic archaeological investigations have occurred within the park. The following archaeological sites were previously documented in Picacho SRA: CA-IMP-163, 188, 1671-1679, 1689, 1690, 3328/H. Most are segments of aboriginal trails or historic wagon roads, two represent the remains of aboriginal camps, and one is a mine shaft. All sites are incompletely documented by current professional standards. Sites CA-IMP-163 and 188 were recorded in the field. The other 12 sites were documented on the basis of observations contained in the 1879 field notes of W. Benson, a surveyor for the U.S. General Land Office. Apparently, they were not field checked.

Local lore, existing folksy local histories, and extant physical remains, indicate that a major gold-processing mill and associated town (called Picacho) formerly stood at the eastern end of the park. No detailed historical research or analysis of the structural remains has been conducted here. The Picacho townsite and mills date from the 1870s to 1910s. The Picacho Mine, situated on the north flanks of Picacho Peak, lies a few miles south of the river-side mill site and beyond State Park boundaries. The ruins of the mill sites, the Picacho town jail, the Picacho town cemetery, and a segment of railroad grade leading to the mill site are the known remaining features of the town of Picacho and its mills.

METHODOLOGY

The present fieldwork at Picacho SRA consisted of an archaeological site reconnaissance (on-foot) employing standard professional site recordation techniques. The fieldwork was conducted on March 24-30 and May 11-14, 1987 by the author, an archaeologist in the Department's Southern Region Headquarters, and Gregory Seymour, an archaeologist hired on a temporary basis for this project. The author again worked at Picacho SRA on January 25 and 26, 1988.

Given the small crew and large area to cover, fieldwork was concentrated on areas deemed most likely to yield archaeological remains. In a desert environment such as Picacho SRA, lands

elevated above major washes and flat terraces adjacent to the river were considered locations certain to contain prehistoric archaeological sites. Rock outcrops bearing lithic raw materials suitable for stone-tool making, e.g., quartz, quartzite, chalcedony, etc., would be locations likely to exhibit evidence of aboriginal quarrying and knapping activities. Known historic-period sites would be examined and recorded to the extent possible.

Prior to beginning the fieldwork, a survey of Picacho SRA was conducted in a single-engine airplane. Viewing the park from a small, low-flying airplane provided maximum coverage in a brief period of time. Using topographic maps for the park, locations with good promise of yielding archaeological evidence were pinpointed for later examination on the ground. This method proved to be useful in finding sites; every area checked thus far contains several sites (see below).

The present fieldwork examined the following areas: (1) terraces along the Picacho Mills Historic Trail; (2) the Picacho Mills Site; (3) the campground and group camps; (4) the Picacho town cemetery; (5) a series of north-south trending ridge lines just south of the main campground (north and south of Inter-Park Road); (6) a series of flat terraces on a point of land adjoining Taylor Lake to the west (T.13 S/R.22 E. portions of Sections 14, 15, 22, and 23), mostly north of Inter-Park Road; (7) a series of high terraces overlooking the river at a spot on the Picacho SW 1965 topographic map designated "Bear Canyon Bluff", only a partial field check here; and (8) the first four ridge lines and terraces north of Gavilan Wash along the western park boundary.

Archaeological sites discovered at this time were documented on standard California State Archaeological Site Record forms. Most measurements of site area and site features have been made with three-meter or 30-meter tapes; feet and inches measures were used at the historic sites. All bearings used in site maps were taken with a Silva Ranger compass (calibrated for true north). The completed site records have been filed with the repository for Imperial County site records at Imperial Valley College Museum in El Centro. Copies of the site records are on file at Department of Parks and Recreation offices in Sacramento, San Diego, and Picacho SRA. The field notes and photographs for the project are on file at the Department's Southern Region Headquarters in San Diego. No artifacts were collected during this project.

FIELDWORK RESULTS

A total of 23 prehistoric and three historic sites were recorded during the present fieldwork in Picacho SRA (Figures 2, 3, and 4). Several additional prehistoric sites were observed but not recorded due to time constraints. Each of the latter sites have been plotted on the appropriate USGS topographic map,

with a brief note on observed cultural features. These sites can be relocated at a later date.

Of the 23 prehistoric sites recorded, 15 sites have been classified as "camps". The defining characteristics of a camp site for this project are the presence of at least one cleared circle and artifacts (all of which proved to be flaked-stone). These sites are hypothesized to be the remains of aboriginal occupation localities; "cleared circles" are assumed to be shelter remains. Camps often exhibit evidence of a variety of other cultural features, including knapping locations, trails, etc. Six sites are defined as "knapping stations", where evidence of past human use is restricted to stone-tool manufacturing activities. Typically, knapping stations contain numerous flakes of local stone and, often, cores and one or more hammerstones. Two sites have one or two rock cairns as their most salient feature; each also show a scatter of flakes. The rock cairns may have functioned as trail markers (cf., Rogers 1966:49-52; von Werlhof 1988:59).

Three historic sites were recorded during the present fieldwork, the Picacho townsite jail, the Picacho Cemetery, and the remains of the "Lower Mill" at the Picacho Mill Site. Fully recording all of the structural remains at the Mill Site is much beyond the scope of the present survey work, due to its large size and complexity. Much of the former townsite is reportedly inundated by the Colorado River, and thus unavailable for conventional archaeological study.

During the 1987 fieldwork, attempts were made to relocate most of the previously documented archaeological sites in the park in order to update their status. None of the sites that had been recorded on the basis of the 1879 surveyor notes could be found (i.e., CA-IMP-1671-1689, 1690, 3328/H, and 3329/H). In most cases, the site locations as plotted by Imperial Valley College Museum now lie under the Colorado River. Only two of the 1879 sites appear to be off of the river, but evidence for them was not found at this time.

The location of site CA-IMP-188 as plotted by Imperial Valley College Museum was field checked. This location is a narrow, flat, east-west trending terrace situated between two minor washes north of Gavilan Wash. Site CA-IMP-188 seems to be situated directly upon the western State Park boundary. Here, we found one cleared circle measuring 2.80 meters in diameter; no artifacts or other cultural features were noted. The 1976 site record for CA-IMP-188 reports the presence of "trails, petroglyphs, house circles" as well as "tools" and "sherds"; these site features were not found during the present fieldwork.

The next terrace north reportedly contains site CA-IMP-189, which lies just west of park lands. Though reported to exhibit cleared circles, knapping stations, a trail, and petroglyphs, no

site resembling the description could be relocated. Two sites with cleared circles and artifacts were discovered on this same terrace, though appreciably west of the stated location of site CA-IMP-189. These two sites occur on Bureau of Land Management property. Their locations were plotted, but time limitations did not permit us to record them.

Site CA-IMP-163, which lies on the next major terrace north, was not visited at this time. This location, however, should yield considerable cultural remains given what has already been found in the area.

An area of Picacho SRA pinpointed from the airplane as likely to yield cultural remains was a point of land which adjoins Taylor Lake to the west, and sits at a big bend in the river. This locale, which we termed "Taylor Lake Peninsula", consists of a series of elevated, flat terraces covered in desert pavement that are bordered by narrow, steep-sided sandy washes. Typically, the dominant stone in the desert pavement surfaces are rhyolites, intermixed with lesser numbers of chalcedony and quartzite. An exposure of milky quartz is present in a wash toward the northern end of the "peninsula". Twelve prehistoric sites have been recorded here to date, including seven camps, three knapping stations, one quarry area, and one trail marker. The above 12 sites occur on the north side of Inter-Park Road; two other sites were found adjacent to and south of the road. One is a small camp, the other has two rock cairns and lithic debris.

Site CA-IMP-5860 is an aboriginal camp with associated discrete knapping locations, trails, one rock cairn, and two pebble mounds situated upon an expansive, flat terrace. The remains of living areas are evidenced by the six cleared circles, one rock-lined, present here. The cleared circles range in size from 2.1 m by 2.00 m up to 4 m by 2.35 m. Flake scatters occur adjacent to four of the six cleared circles (an apparent association). Eight discrete knapping locations were observed around the site; lithic materials included rhyolite, chalcedony, quartzite, and milky quartz. Numerous isolated finds of quartzite and chalcedony cobbles with one to two flakes removed occur throughout. In many cases, the flake scars and the battered edges of hammerstones exhibit appreciable desert varnish, which suggests some antiquity (cf. Dorn 1983:53). A brown chalcedony projectile point fragment (mid-section) was found at a spot 6 m northeast of Feature 1, the rock cairn. The point, manufactured from a thin flake with minimal pressure flaking, resembles the "Elko-Eared" point type. This was the only projectile point (fragmentary or whole) found during the present work in Picacho SRA.

Site CA-IMP-5861 consists simply of an aboriginal rock cairn along a trail, a probable trail marker or "trail shrine", and an associated scatter of quartz flakes; one rhyolite flake was

found within the cairn. The cairn, measuring 110 by 25 cm, is comprised of numerous roundish to sub-angular igneous stones. The trail here follows the top of a narrow east-west trending ridge line, and originates at site CA-IMP-5860.

Site CA-IMP-5862 is a small knapping station situated on a narrow bench halfway downslope between the river and the top of the terrace (where CA-SDi-5860 is situated). Artifacts observed here include numerous flakes of chert and quartz and one large rhyolite core. We assume that this site is associated with the camp at CA-IMP-5860.

Site CA-IMP-5863, situated upon the same steep slope as CA-SDi-5862 though further east, is another small aboriginal knapping station. One broken quartzite cobble, one large rhyolite flake, and one small chalcedony hammerstone/core are the only finds.

Site CA-IMP-5864 is an aboriginal camp with two rock-lined cleared circles and several knapping localities. It is situated upon a narrow, east-west trending ridge downslope from CA-IMP-5860. Artifacts observed on-site include quartzite cobble hammers, cobbles of quartzite, chalcedony and rhyolite exhibiting multiple flake removals (cores), and scatters of flakes found over the entire site. The stone occurs naturally within the desert pavement surface on-site.

Site CA-IMP-5865, an aboriginal knapping station, lies downslope and east of CA-IMP-5864 upon a short, narrow bench above two washes. Lithic debitage of quartzite, milky quartz, chert, and chalcedony are distributed over the entire bench, which measures 25 m (east-west) by 8 m (north-south). Quartzite cobbles with some flakes removed and one quartzite hammer are also present. The site apparently represents an isolated location utilized by an aboriginal toolmaker to exploit certain usable cobbles. It is assumed that flakes were removed to an encampment located elsewhere.

Site CA-IMP-5866, with two rock-lined cleared circles and a scatter of lithic debitage, represents the remains of an aboriginal camp. It is located on a low, flat terrace bounded by two washes; USGS Benchmark 207 is 7 m east/southeast. One cleared circle measures 4 m by 3.9 m; the other measures 3.6 m by 3.3 m. A 70 cm by 70 cm rock concentration adjoins one cleared circle and may be the remains of a hearth. Cores of rhyolite and flakes of rhyolite and milky quartz comprise the artifact inventory here. One distinct knapping location was noted 17.3 m north of the cleared circles.

Site CA-IMP-5895, situated upon a wide, flat terrace at the northwestern end of Taylor Lake Peninsula, is the remains of an aboriginal camp. Cultural remains documented here include six cleared circles (one is partially rock-lined), one distinct

knapping locus, and abundant, though widely distributed, flaked-stone artifacts. The cleared circles range in size from 2.1 m by 1.4 m up to 5.5 m by 4.4 m. Feature 7, a knapping location measuring 3.2 m by 2.4 m, exhibits an interesting concentration of cores and flakes of rhyolite, quartzite, and chalcedony along with one well-used quartzite cobble hammer. Such features represent excellent evidence of aboriginal stone-tool technology rarely observed in an archaeological context in California. Throughout the 52 m by 24.9 m terrace, abundant flaked-stone artifacts are present including hammerstones of quartzite, rhyolite cores, chalcedony cobbles with one to two flake removals, and flakes of rhyolite, chalcedony, quartzite, and milky quartz. All but the quartz occurs naturally within the desert pavement surface of the site.

Site CA-IMP-5896, on a flat terrace east of and similar in elevation to CA-IMP-5895, is another aboriginal encampment. The site has four cleared circles, ranging in size from 2.75 m by 2.6 m up to 4.1 m by 4 m. Other features are one elevated cobble/pebble mound, one rock pile with flakes, and one rock concentration. The function of these features remains unclear, though the rock pile (Feature 4) may be the remains of a hearth or cairn. Cores and flakes of chalcedony, chert, quartz, quartzite, and rhyolite are present, as well as one unifacially flaked rhyolite core tool (undetermined function). All but the quartz occurs in the desert pavement on CA-IMP-5896; quartz exposures are nearby to the south.

Site CA-IMP-5899, an aboriginal camp, is situated upon a wide (92 m by 47 m), flat terrace at an elevation comparable to CA-IMP-5895 and CA-IMP-5896. The site overlooks Taylor Lake. Cultural remains documented at CA-IMP-5899 are eight cleared circles, one possible rock-lined cleared circle, three low mounds of pebbles and small cobbles, and flakes and cores of chalcedony, rhyolite, and quartz. The cleared circles range in size from 7.2 m by 6.6 m down to 1.5 m by 1.4 m. The cleared circles of CA-IMP-5899 date from different time periods, as evidenced by a differential accumulation of desert varnish on rocks comprising the berm of each "circle". In those cleared circles presumed to be earlier in time, the cleared surfaces have begun to deflate; pebbles with appreciable desert varnish are present. One cleared circle (Feature 4), hypothesized to be the most recent, overlaps onto the berms of three other "circles" (Features 3, 7, and 8). One pebble mound (Feature 11) consists of rocks with pronounced accumulations of desert varnish. The other two pebble mounds (Features 1 and 12), which show much less desert varnish, appear to be later in time. Knapping on-site was confined to lithic materials available within the desert pavement surface or in outcrops located downslope to the west.

Site CA-IMP-5897, located on a small (24.5 m by 19.4 m), flat terrace, is a relatively simple aboriginal camp showing one cleared circle, one rock concentration, and abundant lithic debitage. Site CA-IMP-5897 lies adjacent to the northeast edge of CA-IMP-5860. The cleared circle measures 3.74 m by 3.5 m. A concentration of rhyolite cobbles measuring 1.7 m by 1.3 m located on-site has been interpreted as a possible hearth (desert varnish covers evidence of charring and cracking from exposure to fire). The site's artifact content includes cobbles of chalcedony, rhyolite, and quartzite with one to two flake removals, a scatter of chalcedony, rhyolite, quartzite and quartz flakes, and rhyolite cores.

Site CA-IMP-5900, located in a low wash south and west of CA-IMP-5899 and north of CA-IMP-5897, is a series of milky quartz knapping loci. It is here that milky quartz nodules occur in natural exposures. Each knapping locus exhibits a quartz nodule with multiple flake scars and associated debitage. This site represents the apparent source of the milky quartz found on sites in Taylor Lake Peninsula. One large nodule of petrified wood showing multiple flake scars was also noted.

Site CA-IMP-5901, located south of and adjacent to Inter-Park Road, lies upon a flat north-south trending terrace just opposite CA-IMP-5860. Cultural remains noted here are two rock cairns, a trail and trail segment, and a scatter of rhyolite flakes. A conspicuous trail follows the top of the narrow terrace and continues downslope or north toward Taylor Lake Peninsula; this trail is now well-worn from modern-day use by feral burros. The two cairns, lying 114 m apart on an orientation northeast-southwest, are positioned near the trail but not on it. One cairn measures 2.05 m by 2 m and contains 43 rhyolite boulders and cobbles; the other measures 2 m by 1.3 m and contains 36 rhyolite boulders and cobbles. A faint trail segment leads up to the southern rock cairn from the longer, more conspicuous north-south trail. The cairns may serve as markers of some form for the north-south trending trail. A scatter of rhyolite flakes are found downslope and north of the northernmost cairn at a distance of 54 m. The flakes may not be associated with the trail and rock cairns.

Site CA-IMP-5902, a small aboriginal camp, is located on a low terrace above and south of Inter-Park Road and south of USGS Benchmark 207. The site has two faint cleared circles, one rock cairn and a scatter of rhyolite flakes. The function of the rock cairn is unclear since no apparent trail occurs on-site.

Just west of Taylor Lake Peninsula is a series of high, flat terraces along the Colorado River designated as "Bear Canyon Bluff" on the Picacho SW 1965 USGS topographic map. This was another locale pinpointed from the air as likely to hold archaeological sites. During the present fieldwork, Bear Canyon

Bluff received only a cursory reconnaissance in which one site was fully recorded and two other large, complex camp sites were examined briefly. The latter two sites were plotted for recordation at a later date. Further archaeological reconnaissance work is warranted in the Bear Canyon Bluff area.

Site CA-IMP-5904, situated upon a narrow, north-south trending ridge line, is a small knapping station with rhyolite and milky quartz debitage. The artifact content of CA-IMP-5904 includes one rhyolite core with associated flakes and one roundish milky quartz core with numerous associated flakes. Both rock types occur here naturally.

The other two sites observed at this locale, provisionally designated "BCB 2" and "BCB 3", are herein defined as large aboriginal camps. Site "BCB 2" has several cleared circles, many distinct knapping loci, at least one rock cairn, and trails. Some of the flaked-stone artifacts on "BCB-2" show a pronounced degree of desert varnish. Site "BCB 3", though smaller in area than "BCB 2", also has cleared circles, knapping loci, and a trail.

Some of the ridge lines directly behind (south) of the main campground at Picacho SRA were examined, given their proximity to many park-visitor facilities. During the present fieldwork, three prehistoric sites were recorded in this area. Other sites were observed but only plotted on maps for future study due to time limitations. The lands immediately south and west of the campground are characterized by narrow north-south trending ridge lines, separated by steep-sided sandy washes. The desert pavement surfaces here are dominated by igneous stone, and contain little material suitable for stone-tool making. Sites in this area show much less artifactual material than sites on Taylor Lake Peninsula.

Site CA-IMP-5867, located on an elevated ridge line just southwest of the park maintenance yard, is an interesting aboriginal camp containing 12 cleared circles, a trail, and scattered lithic debitage. The "cleared circles" actually exhibit a variety of shapes, some which do not occur on other sites in the park (e.g., "L" shaped and pear shaped). Only five cleared circles on CA-IMP-5867 are circular. All of the cleared circles range in size from 2 m by 1.7 m up to 6.4 m by 3.25 m. The trail runs the entire length (north-south) of the ridge line, and has a 30-cm wide tread. Flakes of rhyolite and milky quartz were observed; the rhyolite flakes show appreciable desert varnish. A rhyolite flake concentration, 23 in number, was noted at the north edge of one cleared circle (Feature 10). This knapping locus represents the reduction of one nodule. Proximity to the river and its resources must have been more critical to the aboriginal occupants of CA-IMP-5867 than tool-manufacturing needs.

Site CA-IMP-5868, the remains of a small aboriginal camp, lies upon a narrow, north-south trending ridge line located just south and upslope of CA-IMP-5867. There is a rock-lined cleared circle on-site which measures 2.1 m by 2 m. The rock outline is two courses high, which is not a common characteristic for cleared circles found in the park. Evidence for the knapping of rhyolite and basalt is indicated by the numerous flakes and cores present here. These two rock types naturally occur on-site. A trail follows this same ridge line until near the cleared circle, at which point it moves off to the west while continuing toward the river. A 2.4 m by 1.4 m rock cairn, consisting of 30 igneous boulders and cobbles, has a conspicuous presence at the upslope end of the ridge line. The cairn lies 90 cm west of the trail, and adjacent to where the trail veers off the ridge. The cairn may have served as a trail marker. The rock cairn shares no apparent association with the cleared circle and flaking debris other than environs.

Site CA-IMP-5869 is an aboriginal camp containing three rock-lined cleared circles situated on two separate, flat benches that face east and a sparse scatter of rhyolite flakes. The cleared circles have the following measurements: on the northern bench, 2.6 m by 2.2 m and 4.1 m by 3 m (Feature 1); on the southern bench, 3.8 m by 3.6 m (Feature 2). One 35 by 22 by 9 cm rhyolite boulder with dense desert varnish, part of a "circle" at Feature 1, exhibits an incised figure or petroglyph. The incised figure (17.5 cm by 3.5 cm) itself shows an appreciable accumulation of desert varnish, which suggests some antiquity. The figure roughly resembles a lizard in outline. Jay von Werlhof (personal communication, 1987) noted to the author that it is rare for the region to have a petroglyph stone incorporated into the outline of a cleared circle. Some of the rocks comprising the outline on Feature 2 have been displaced in modern times to build a mining claim marker; evidence of prospecting was noted on an adjacent terrace.

Gavilan Wash is a major drainage system in the northwestern end of Picacho SRA which ultimately empties into the Colorado River. The route of Gavilan Wash could have served as an excellent corridor for human travel to the river (cf., von Werlhof 1988:Figure 1). Directly north of the wash on and around the western park boundary lie a series of high, east-west trending, flat terraces. The terraces are characterized by desert pavement surfaces containing primarily rhyolite boulders and cobbles with dense accumulations of desert varnish. Some prehistoric sites had been previously recorded in the area (refer to "Background Research" section). Four new sites were recorded in the process of reexamining the known sites.

Site CA-IMP-5870, a small knapping station, lies upon the second ridge line north of Gavilan Wash near the western park boundary. With little area on this narrow ridge top, the site has a sparse scatter of 15-20 rhyolite flakes and two core fragments.

Site CA-IMP-5903, a small camp, is located on the first terrace above the south/southeast side of Gavilan Wash next to the Park boundary. The site contains a 2.9 by 2.7 m rock-lined cleared circle and an associated scatter of rhyolite, quartz, and chalcedony flakes. Numerous flakes lie in and around the cleared circle. Rhyolite boulders and cobbles with dense desert varnish were used to outline the "circle". The cleared surface within has begun to deflate, and pebbles are now visible. Some flake scars show pronounced desert varnish. These latter two site characteristics suggest age (see "Discussion Section").

Site CA-IMP-5893, a small camp, is situated upon the fourth terrace north of Gavilan Wash at the western State Park boundary. The site has a rock-lined cleared circle measuring 3.04 m by 2.5 m; the outline consists of 57 rhyolite cobbles (all with dense desert varnish). A small number of chert and rhyolite flakes lie near the cleared circle. Many more flakes lie 22 m west of the cleared circle. Petroglyphs occur on a 52 cm by 44 cm tabular shaped rhyolite boulder which lies 38 m east of the cleared circle. The pecked motifs are abstract in form and exhibit an appreciable degree of desert varnish. The cleared circle at CA-IMP-5893 is the first one observed in the park that lies upon a slope within a ravine (rather than on a flat surface). G. Seymour (personal communication, 1987) has seen many cleared circles in central Baja California that occur on similar sloped locations. This position may provide more protection from the wind. See also observations by Begole (1976:2).

Site CA-IMP-5894, is an impressive site because of the complex construction used on many of the cleared circles. Located on a wide, flat terrace east of CA-IMP-5893, this site has 13 rock-lined cleared circles which range in size from 3 m by 2.8 m up to 5.4 m by 4.7 m. Nine of the cleared circles (Features 5-9, 11-13, and 16) form a cluster; Features 5-9 are contiguous. Four of the latter cleared circles (Features 6-9) have large rhyolite cobbles stacked up around their perimeters, thus surrounding them in a sizable wall of stone. Such substantial walls would make good wind breaks. The winds do blow hard on this terrace. Other cultural remains documented on the site include three pebble mounds (two are rock-lined), at least three discrete knapping loci, and scattered flakes and cores of rhyolite. The three distinct knapping locations each involve the reduction of a single milky quartz nodule. An appreciable degree of antiquity is suggested for CA-IMP-5894, because all of the boulders used to outline the features show pronounced desert varnish. Four cleared circles (Features 2, 4, 9, and 12) have recently excavated holes in the middle of the cleared surfaces. The holes were made by either prospectors or "pothunters". No cultural deposits lie under the desert pavement.

The final area of Picacho SRA reconnoitered during the present fieldwork involves cultural remains associated with the Picacho Mill and townsite. All are near park headquarters or along the park's Picacho Mills Historic Trail at the eastern end of Picacho SRA. The park headquarters is located on Little Picacho Wash close to the Colorado River. The latter trail traverses the northern flanks of a massive hill, and overlooks a large backwater area of the river. The Picacho Mills Historic Trail passes over some rugged terrain, and only in one place crosses a flat terrace with desert pavement. The one prehistoric site recorded in this section of the park lies on the above terrace.

Site CA-IMP-5871/H contains two cleared circles (one rock-lined), six knapping loci, two aboriginal trail segments, and two historic rock cairns (probable mining claim markers). It can be defined as an aboriginal camp. The rock-lined cleared circle measures 3.5 m in diameter; the other cleared circle is 2.7 m in diameter. Numerous flakes of rhyolite and milky quartz and rhyolite cores were observed on-site, mainly in distinct locations around the terrace. Two solder-top tin cans were noted on-site, too. The aboriginal trail segments lead up to the cleared circles.

The Picacho Townsite Jail (Site CA-IMP-5898H) is one terrace west of the prehistoric site and just downslope from the Mill Trail. It consists of a cavern dug into a northwest-facing hillside of pinkish colored rhyolites. The opening to the cavern measures 5.4 ft tall and 4.7 ft wide; swinging doors made of metal bars formerly hung on the opening. One side remains in place today. These remaining metal bars are 4.4 ft tall and 1.8 ft wide. The bars were constructed of 1/2 inch and 3/4 inch galvanized pipe. The interior of the jail measures 12.5 ft deep, 8.3 ft wide, and 5.9 ft in height. The jail was probably excavated out of a small crack or opening in the hillside. Pick marks are visible on the west interior wall. The east wall of the jail interior is natural bedrock.

The Picacho Townsite Cemetery, moved from its original location, now lies at the southern periphery of the main campground for Picacho SRA near Campsites 48 and 49. The cemetery, bounded by a 4-foot high white picket fence, measures 134.3 ft east-west and 93.4 ft north-south (maximum width). The western fence line of the cemetery is only 72.9 ft wide, since the southwestern section of the south fence line lies on an angle. A 13-foot wide swinging gate is positioned along the north fence line. A total of 88 grave plots were counted in the cemetery. Most graves are marked with simple metal placards fastened to a short wooden cross. None of these gravemarkers provide names of the deceased. Eight plots have elaborate stone monuments with names and statistics engraved on the stone face. The gravestones indicate that these eight individuals were born in the late 1800s and died about 20-27 years ago.

While the entire Mill Site was much too complex for the present field crew to document, notes were made on the "Lower Mill" ruins (constructed ca. 1870s) and many photographs taken throughout. The Lower Mill was built of large, dressed rhyolite blocks; some are more finely cut than others. The finely dressed stone blocks have been utilized around doorways and apertures. The building had a rectangular floor plan, with total dimensions of 83 ft east-west by 42 ft north-south. The Lower Mill has three major rooms and one small-sized room at the southeast end. The maximum wall height of the ruins is 23 ft which was taken near the southeast corner. Gold ore apparently could be fed into the mill from a wooden chamber centered at the south wall. Two doorways and four apertures face northward which is adjacent to the river. The location of the Lower Mill at a low elevation near the Colorado River would have facilitated the loading of processed gold ore for transportation downstream.

The structural remains of the "Upper Mill" are impressive, though only pads, partial stone walls, wood trestle supports, and fragmentary artifacts presently exist here. This mill was reportedly built in the beginning of the 1900s, and processed millions of dollars worth of gold ore (cf., Odens 1973:22).

DISCUSSION

The relatively small area reconnoitered in Picacho SRA at this time yielded evidence of numerous prehistoric sites, of which 23 have been formally recorded. Fifteen of the 23 sites have been classified as aboriginal "camps" when at least one cleared circle and some artifacts were observed. Additional sites with cleared circles and other cultural remains were noted during the present fieldwork, but not recorded. Many locations in Picacho SRA that had been pinpointed from the airplane as likely to hold sites could not be field checked at this time. Therefore, it is anticipated that innumerable prehistoric sites remain to be discovered in the park, as well as other localities along the Colorado River.

The characteristic landform which borders the Colorado River here are wide, flat, elevated terraces and narrower ridge lines, most which trend north-south (or perpendicular to the river). Our aboriginal predecessors found such localities suitable for setting up living areas. Exploitation of the rich river-side resources was apparently the critical consideration. Rogers (1966:39), Begole (1976:1-11), and Whalen (1976:29, 47) all report that camps with cleared circles occur on gravel terraces high above dry washes in their respective desert study areas.

During the present fieldwork, a total of 65 "cleared circles" were recorded at 15 sites, with 26 of them (40%) being rock lined. Circular shaped "cleared circles" number 58 (or 89.2%); the seven non-circular features were found at one site,

CA-IMP-5867. Whalen (1976:28-32), working in an area of Imperial County west and south of Picacho SRA, found cleared circles in a majority of the 188 sites he recorded. Whalen terms this feature a "cleared area". He found that 80% of the cleared circles were circular in shape; other forms include rectangular, oval, pear, and "joined" (Whalen 1976:28). Rogers (1966:45), who called these features "sleeping circles", argued that 90% of the cleared circles in this region were circular in shape; most of the remaining ones would be oval shaped. Begole (1976:4) refers to these same cultural features without perimeter rocks as "rimless swept circles" and rock-lined ones as "rock-outlined circles". These latter features are called "boulder-rimmed circles" by Tuohy (1984).

The aboriginal sites of Picacho SRA exhibit artifact assemblages characterized by their expedient nature. That is, stone specimens had been chosen "on the spot" for a specific purpose, show little or no modification, and then were abandoned after use (cf. Welch 1987:26, 32-33). The term "expedient" connotes that inherent properties of the rock type and intended use of the specimen are carefully considered during stone tool manufacture. Expedient tool use is well-adapted to the environmental conditions of the Colorado Desert.

The aboriginal occupants of Picacho SRA sites took advantage of the lithic raw materials available on the desert pavement surface in their routine toolmaking needs. The numerous examples of cobbles exhibiting one to two flake removals (mainly quartzite and chalcedony) bespeaks a careful effort to find stones with specific knapping qualities. A study of knapping loci on sites in Fort Irwin indicates that much of the debitage represents testing the flaking qualities of available stone (Skinner and Ainsworth 1983:6-7). These sites lay on desert pavement surfaces, too. Welch (1987:26) observed abundant examples of this practice on quartzite cobbles at CA-IMP-4966, a lithic quarry site near Picacho SRA. Welch calls such knapping "assay flaking".

The desired end products of the abundant examples of knapping found here were flakes of a particular shape and size. The ethnoarchaeological literature documents the importance of simple flake tools in the daily subsistence chores of modern-day hunter-gatherer peoples (e.g., White and Thomas 1972:278-279; Gould 1978:817; and others). The findings of Rogers (1939:6-21, 28, 36; 1958:8-17) from studies of lithic artifact assemblages in desert areas of Southern California and Arizona indicates that flakes are the most numerous artifact type. A majority of the tools found in Rogers' study area were casually made from unmodified flakes.

Determining a time range for the prehistoric sites of Picacho SRA is presently a fruitless effort. The only time-sensitive artifact observed in the project area was the

projectile point fragment found at site CA-IMP-5860. In form, the specimen resembles an "Elko-Eared" type point, which roughly dates from approximately 1500 years before present back to about 4000 years before present. Dating sites on the basis of a single artifact is untenable, however. It has been argued, too, that point morphologies are not valid cultural time markers (Flenniken 1985; Flenniken and Raymond 1986).

It could be argued that the presence of appreciable desert varnish on archaeological specimens indicates some degree of antiquity. The work of Dorn and Oberlander (1981) and Dorn (1983:51-53) demonstrates that desert varnish ("rock varnish") accumulates in an irregular pattern based upon environmental factors and time. Thus, Dorn and Oberlander (1981:1247) argue that the use of the degree of desert varnish accumulation as a dating criterion for lithic artifact assemblages is "hazardous for archaeologists". Dorn (1983:53) does, however, state that "varnish accretion is a very slow process in arid environments, taking thousands of years to form a complete coat." Dorn's research indicates that a dense accumulation of desert varnish ("rock varnish") on artifacts does suggest a relatively long span of time, up to "thousands of years."

Rogers (1966:37-39) hypothesized that sites with cleared circles on terraces above washes such as found in the project area, when present on desert pavement surfaces with dense desert varnish, was indicative of the "San Dieguito I" cultural period. According to Rogers (1966:45), cleared circles do not appear in subsequent phases. Rogers (1966:39) further observed that "San Dieguito I" sites do not occur along modern watercourses, except for the terraces of the Colorado River and the lower Gila River.

The campsites thus far recorded in Picacho SRA were probably inhabited for brief periods at any one time. Similarly, aboriginal usage of sites in Picacho SRA may have spanned a relatively short number of years. The seemingly low number of artifacts and lack of accumulated cultural deposits (midden) suggest such ephemeral site usage. Anyone who has experimented with flintknapping knows that numerous flakes result from a single episode of cobble reduction. Thus, abundant lithic debitage reflects little cultural use of an archeological site. Indeed, any one site in Picacho SRA shows only one to few "knapping stations", each of which apparently represents a singular effort at stone-tool making.

Differential accumulations of desert or rock varnish upon cultural features suggests aboriginal occupations within the project area at vastly different periods of time. The differing accumulation of desert varnish noted between site features in Picacho SRA, however, may not necessarily result from major differences in age (cf., Dorn 1983:51, 53). Site CA-IMP-5899 on

Taylor Lake Peninsula has cleared circles which overlap providing other evidence for occupation at different time periods.

The archaeological sites at Picacho SRA largely show a high degree of integrity. The most immediate threats to archaeological sites (both prehistoric and historic) within Picacho SRA are the following: (1) impacts from feral burros on desert pavement surfaces, (2) natural erosional processes, and (3) non-native vegetation encroaching upon sites near and on the Colorado River. The most necessary and feasible site-protection techniques for Picacho SRA include a detailed recordation of the sites, a comprehensive program of feral burro removal, and the restoration and stabilization of the Picacho Mill ruins.

NOTES

Various people assisted the author in making this project successful. Gregory Seymour worked with the author in the field, and wrote up many of the site records after the fieldwork was completed. Ken Hall and Bill Cardinal of the Picacho SRA staff were generous with their assistance during our fieldwork. Karen Owen, State Park Ranger, helped us record a few sites on Taylor Lake Peninsula. Patricia A. Fleming, Word Processing Technician, Southern Region Headquarters, skillfully typed the manuscript.

REFERENCES CITED

- Begole, Robert S.
1976 A Continuing Archaeological Survey in the Anza-Borrego Desert State Park: 1975-76 Report. Pacific Coast Archaeological Society Quarterly 12:1-24.
- Dorn, Ronald I.
1983 Cation-Ratio Dating: A New Rock Varnish Age-Determination Technique. Quaternary Research 20:49-73.
- Dorn, Ronald I. and T. M. Oberlander
1981 The Microbial Origin of Desert Varnish. Science 213(4513):1245-1247.
- Flenniken, J. Jeffrey
1985 Stone Tool Reduction Techniques as Cultural Markers. In Stone Tool Analysis, edited by Mark G. Plew, James C. Woods, and Max G. Pavesic, pp. 265-276. University of New Mexico Press, Albuquerque.
- Flenniken, J. Jeffrey and Anan W. Raymond
1986 Morphological Projectile Point Typology: Replication Experimentation and Technological Analysis. American Antiquity 51:603-614.
- Gould, Richard A.
1978 The Anthropology of Human Residues. American Anthropologist 80:815-835.

- Odens, Peter
1973 Picacho. Privately printed.
- Rogers, Malcolm J.
1939 Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas. San Diego Museum Papers, No. 3 (1973 reprint, Ballena Press).

1958 San Dieguito Implements From the Terraces of the Rincon-Pantano and Rillito Drainage System. The Kiva 24:1-23.

1966 The Ancient Hunters -- Who Were They? In Ancient Hunters of the Far West, edited by Richard F. Pourade, pp. 21-108. The Union-Tribune Publishing Company, San Diego.
- Skinner, Elizabeth and Peter Ainsworth
1983 Analytic Techniques for a Desert Pavement Quarry/Workshop. Paper presented at the annual meetings of the Society for California Archaeology, San Diego.
- Tuohy, Donald R.
1984 On Sleeping Circles in Baja California...and Elsewhere. Pacific Coast Archaeological Society Quarterly 20:37-49.
- von Werlhof, Jay
1988 Trails in Eastern San Diego County and Imperial County: An Interim Report. Pacific Coast Archaeological Society Quarterly 24:51-75.
- Welch, Pat
1987 Prehistoric Quarries Along the Colorado: Lithic Analysis at Coyote Ridge, CA-IMP-4966, Imperial County. Report on file, Bureau of Land Management, El Centro.
- Whalen, Norman M.
1976 An Archaeological Survey in Southeastern Imperial County, California. Pacific Coast Archaeological Society Quarterly 12:25-50.
- White, Peter J. and D. H. Thomas
1972 What Mean These Stones? Ethnotaxonomic Models and Archaeological Interpretations in the New Guinea Highlands. In Models in Archaeology, edited by D. L. Clarke, pp. 275-308. Methuen Publishers, London.

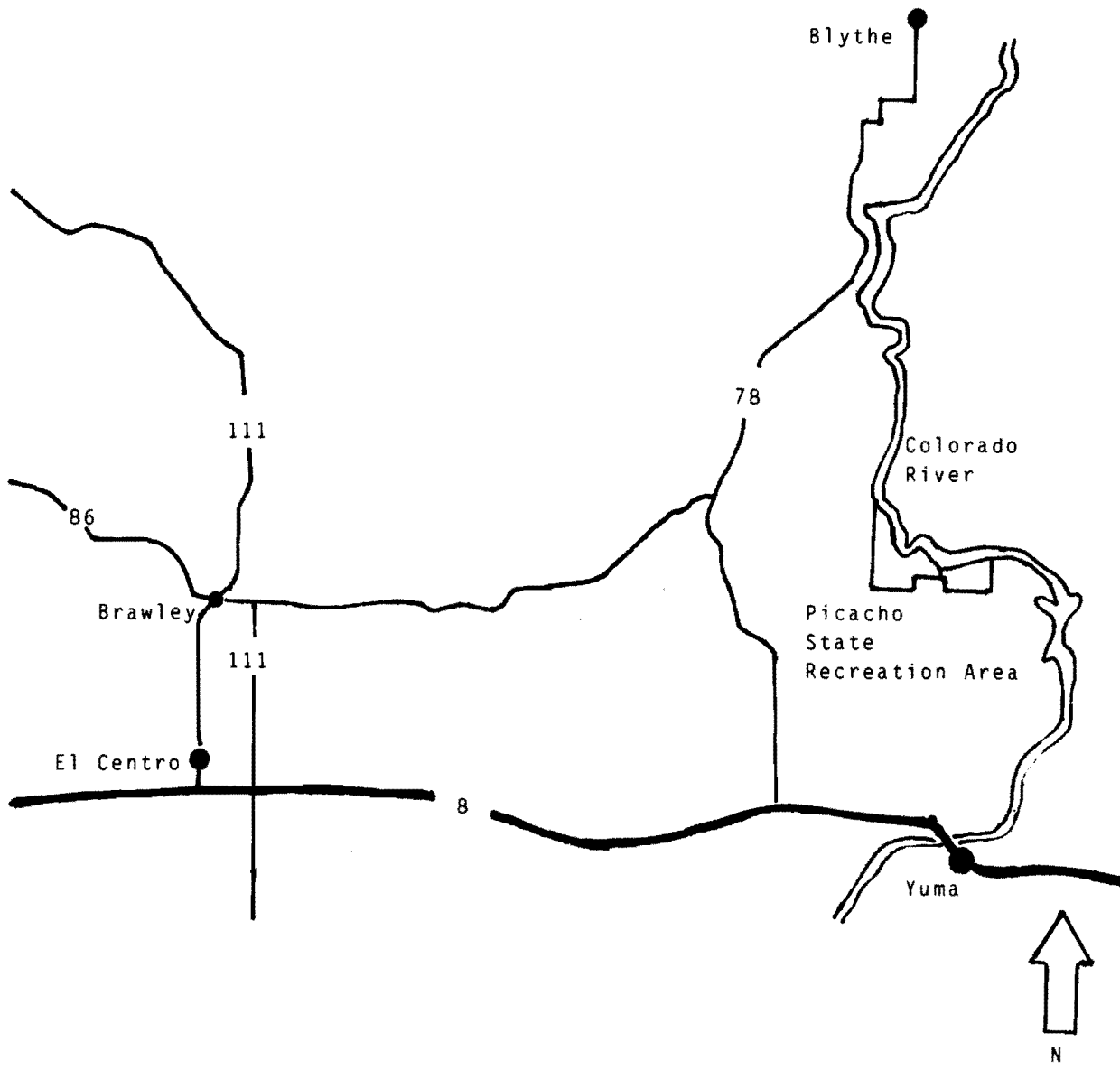


Figure 1. Location Map for Picacho State Recreation Area

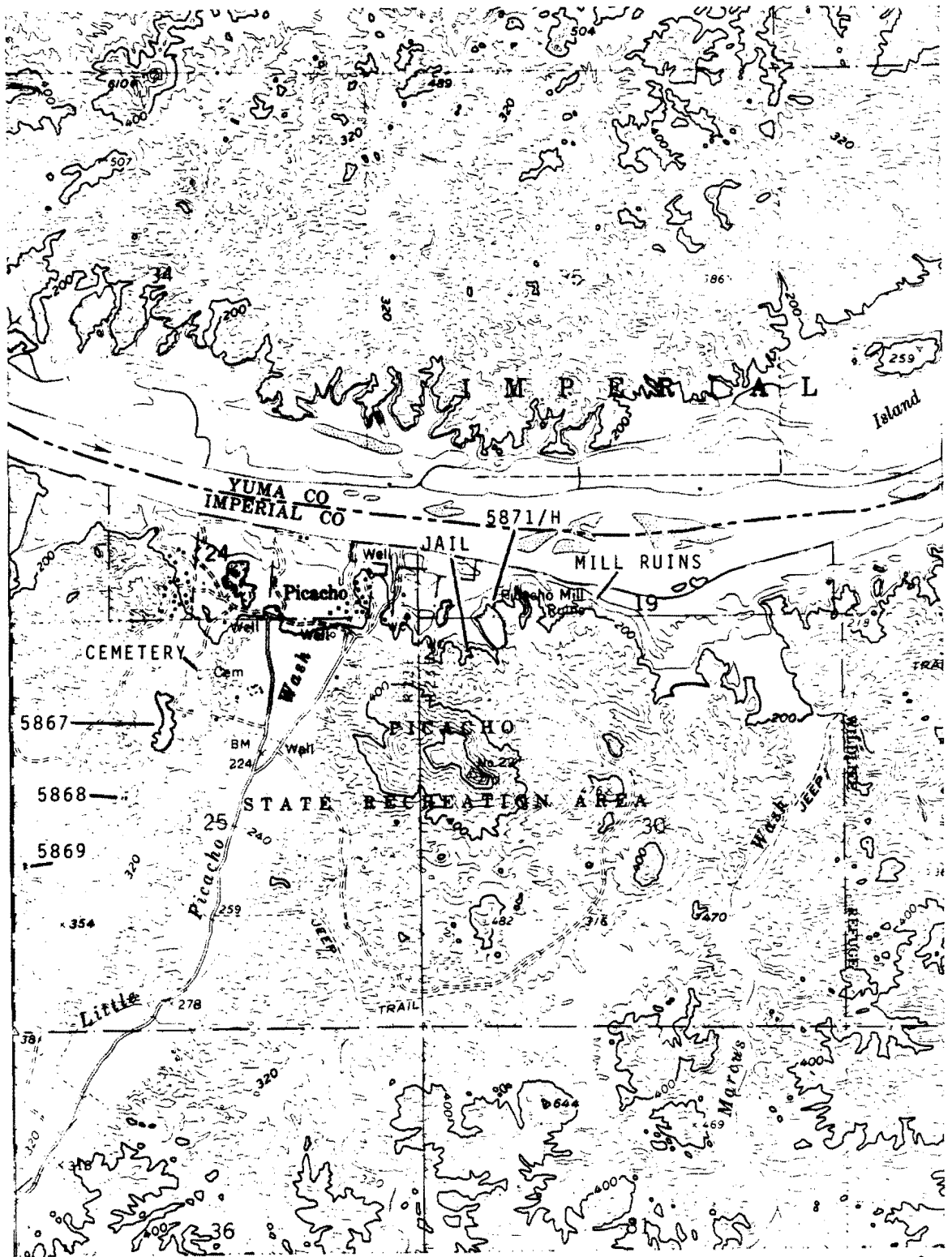


Figure 2. Archaeological Sites in the Project Area
 (from Picacho 7.5', 1964; scale= 1:24000)

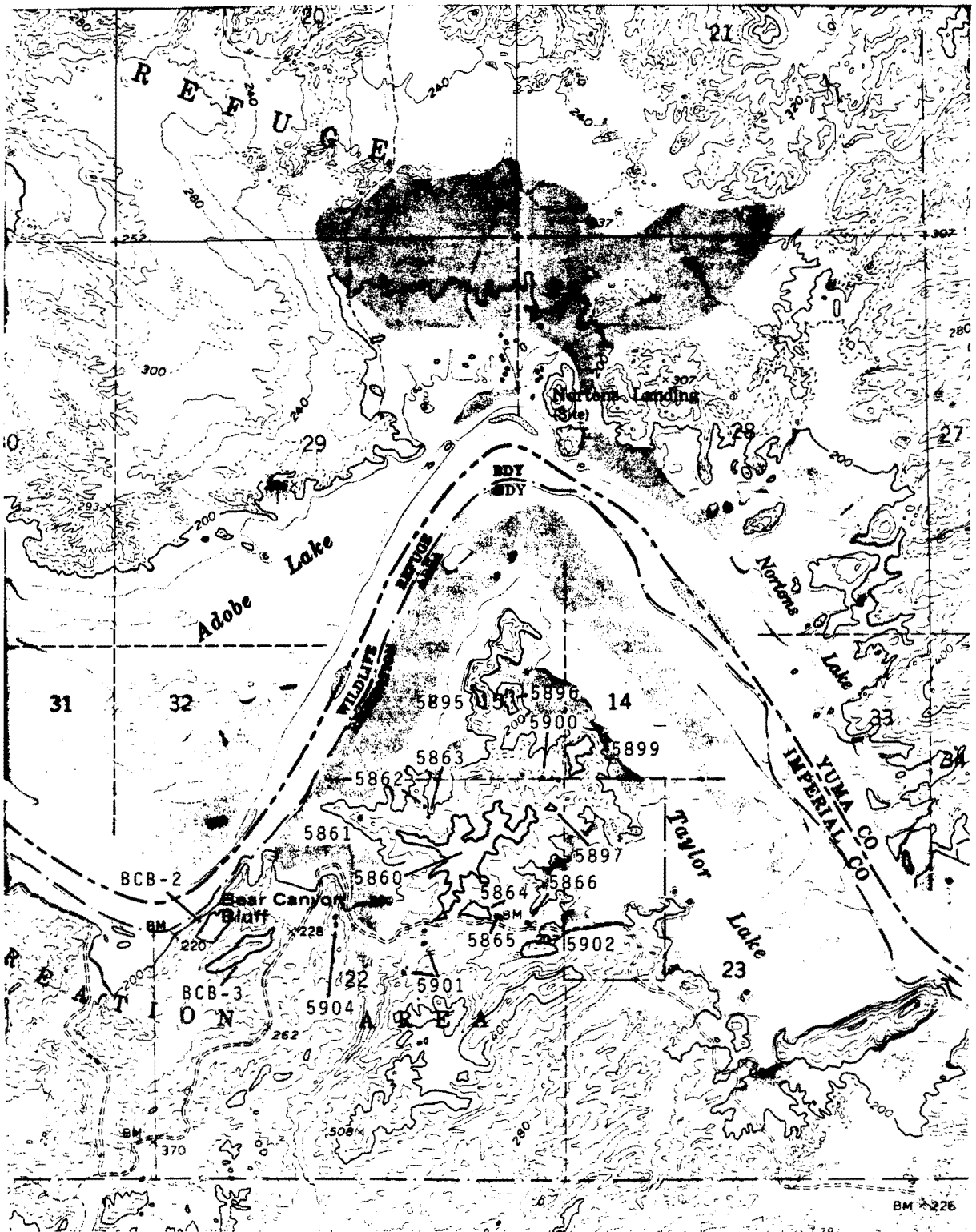


Figure 3. Archaeological Sites in the Project Area
 (from Picacho SW 7.5', 1965; scale= 1:24000)

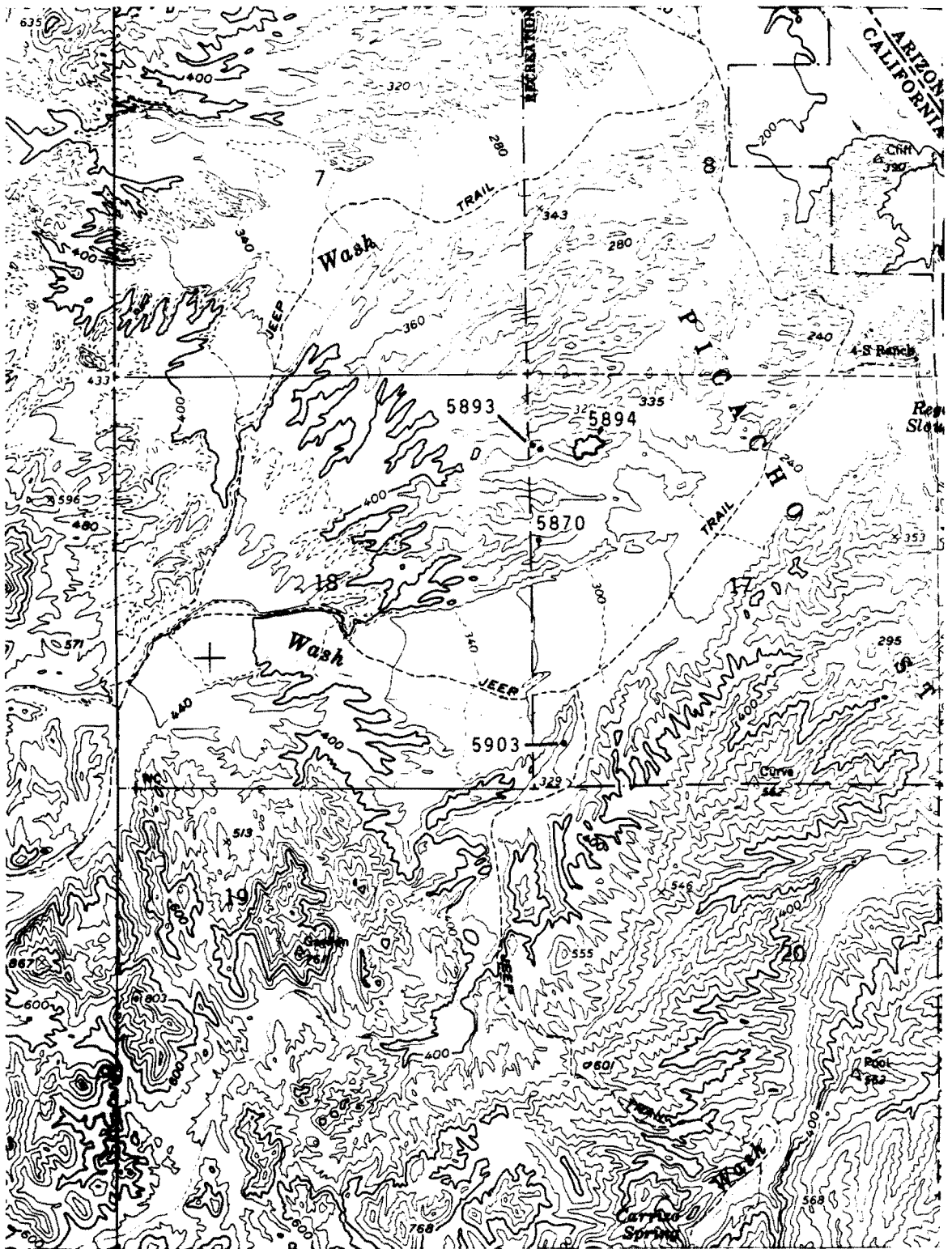


Figure 4. Archaeological Sites in the Project Area
 (from Picacho SW 7.5', 1965; scale= 1:24000)