

A 2,000 YEAR OLD MILLING TOOL KIT FROM SDI-10148 SAN DIEGO, CALIFORNIA

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ABSTRACT

This study provides the results of an archaeological monitoring and subsequent data recovery program for a portion of prehistoric site SDI-10148 as part of the East Mission Gorge Pump Station and Force Main project. The initial phase of this study included monitoring of excavation for the pump station and two ponds located west of the pump station. Monitoring identified six fire hearths, a stone bowl, numerous manos, and five complete metates. Upon completion of the monitoring program, the site determination of significance for that portion of SDI-10148 on City of San Diego property was changed by the City of San Diego from not significant/not important to significant/important under City of San Diego and CEQA guidelines. A data recovery program was designed to mitigate additional subsurface impacts to the site using a City approved research design and excavation of up to a 15% sample (hand and mechanical excavation). Results of this program identified a sparse subsurface deposit in the southern and eastern portions of the study area and an intact living floor in the northeast portion of the study area. Two radiocarbon dates of 1590±80 years BP and 2250±80 years BP were obtained from soil samples obtained below hearth features in the "living floor". An analysis of the primarily quartzite debitage and flaked lithic tools recovered from the living floor feature was completed by Lithic Analysts. This study identified the majority of artifacts as tools and debitage resulting from manufacture and use of groundstone resharpening tools. Completion of the data recovery program identified a preceramic site, occupied ca. 800 to 2250 years ago, where activities focused on grinding and processing of food materials. The results of this study are unique in that a milling station processing camp of a rarely documented time period has been identified with a groundstone resharpening tool kit.

INTRODUCTION

Gallegos & Associates completed a multi-phased archaeological monitoring and data recovery program for a portion of prehistoric site SDI-10148 as part of the East Mission Gorge Pump Station and Force Main project for the City of San Diego Clean Water Program. Phase I of the two phased program provided monitoring of excavation for the pump station and two holding ponds west of the pump station. Phase II included the data recovery program for portions of site SDI-10148. This study was conducted in accordance with the California Environmental Quality Act (CEQA) and City of San Diego Guidelines.

The study area is located on City of San Diego property, adjacent to the western boundary of the City of Santee (Figure 1). Site SDI-10148 is located adjacent to the San Diego River and north of East Mission Gorge Road. The study area is bound on the south by East Mission Gorge Road, on the north by the San Diego River, on the east by the City of Santee (undeveloped land), and on the west by undeveloped land. The current topography is level, receding slightly toward the San Diego River.

The site is located within the San Diego River floodplain, with site soils consisting of river alluvial deposits (Pryde 1976). Vegetation includes introduced grasses on the flat areas and

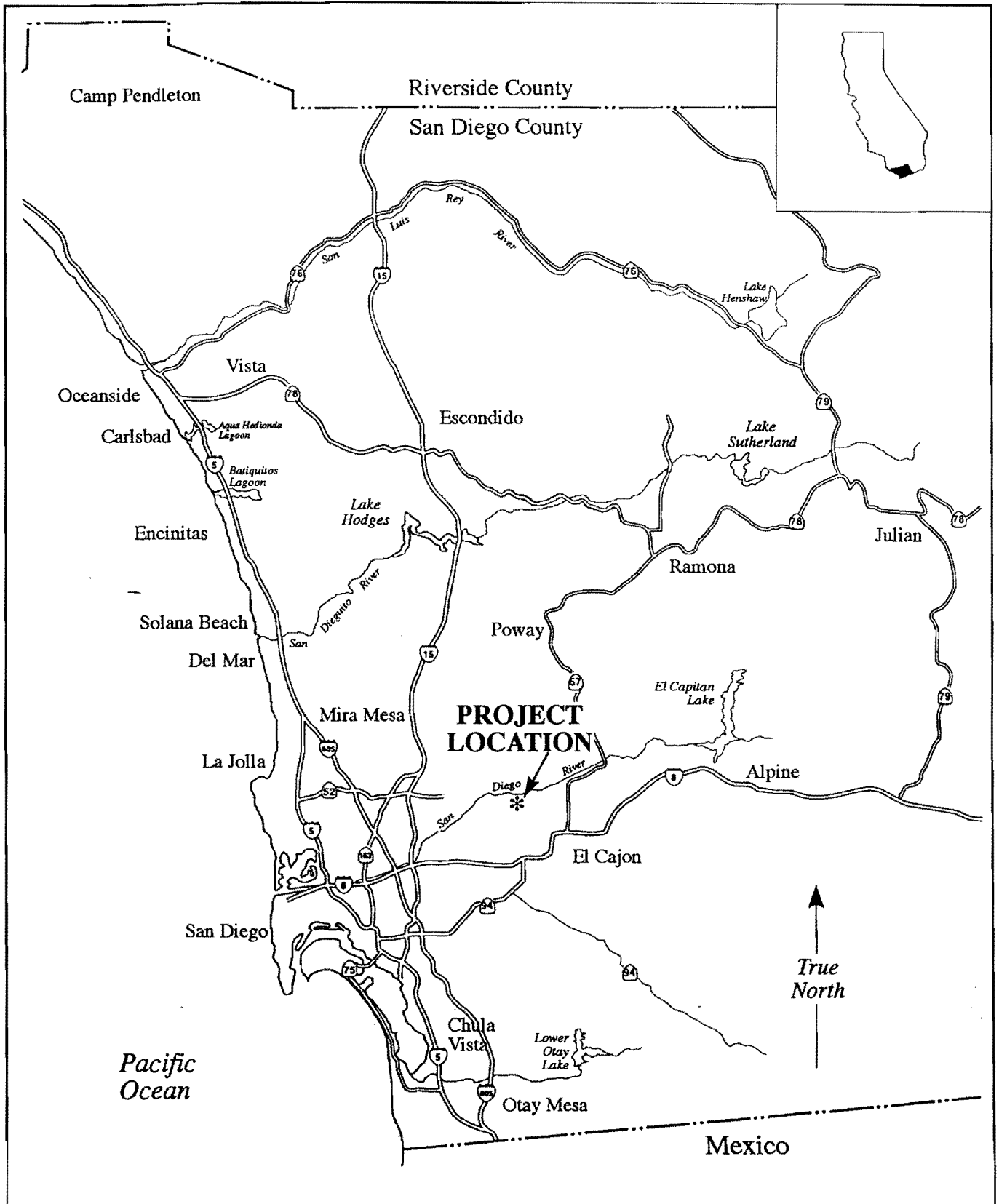


Figure 1. Map showing regional location of project.

riparian habitat along the river channel (Munz 1974). The riparian habitat has been reduced by modern development and river channeling. The portion of site SDI-10148 located within the study area has not been plowed for agriculture; however, the portion of the site adjacent and east of the City of San Diego boundary appears to have been plowed. Aerial photographs from ca. 1928 show what appears to be terracing for this portion of the site (Tax Factor, Inc. 1929).

SITE BACKGROUND

Site SDI-10148 is near the Mission San Diego de Alcalá, the oldest historical settlement in Southern California. The mission was initially established on Presidio Hill and relocated to its current location in 1774. The Mission Dam and flume system were built nearby in the early 1800s. Site SDI-10148 is one of a number of occupation/specialized use areas associated with the large village settlement SDM-W-200, recorded ca. 1920 by Malcolm Rogers. This large village, located northwest of SDI-10148, may have been the ethnographically recorded village of *El Corral* (Trafzer and Carrico 1992). *El Corral* and its outlying camps and activity areas were situated along a major Native American trail that extended from the coast, through present day Mission Valley, past Mission San Diego de Alcalá, roughly following present day Mission Gorge Road to *El Corral*.

East from the village of *El Corral*, at the approximate location of Lakeside, the trail turned northeast through Ramona (the village of *Pamo/Canapui*), Ballena (village of *Epegam*), Santa Ysabel (village of *Elcuanam*), and across the mountains to Agua Caliente (village of *Jocopin*) in the desert (Figures 1-3). An eagle rookery and a pictograph site were reported in the vicinity of SDI-10148, as well as a sun solstice observatory on Cowles Mountain (Fern Southcott, personal communication, 1993). These three types of sites had great significance to the religious practices of Kumeyaay Native Americans.

During the Spanish and Mexican Periods, present day Santee was known as Rancho de San Luis, and the surrounding area including Padre Dam was known as Valle de San Luis (Engelhardt 1920; Southcott, personal communication, 1993). Almost 500 Native Americans from this area were baptized during a three month period, preceding the November 4, 1775, destruction of Mission San Diego. Most of these baptisms took place at a village located northeast of the mission in the Valle de San Luis (Killea 1978). This village is probably *El Corral*. One of the Native Americans baptized during this time period was Chief Cuanil (or Luis) of the Rancheria de la Santa Cruz in the Valle de San Luis. Chief Cuanil was one of the leaders of the attack against the mission in 1775.

Early researchers believed that the project area fell within the territory of the Yuman-speaking Ipai (Northern Diegueño) (Heizer 1978; Heizer and Whipple 1971; Kroeber 1925). Recent research, based on archaeological, ethnographic, ethnohistoric, and historic records, suggests that the San Diego River Valley was the boundary between the Northern Diegueño (Ipai) and the Southern Diegueño/Kumeyaay (Tipai) territories (Hedges 1975), therefore, site SDI-10148 is within Southern Diegueño/ Kumeyaay (Tipai) territory.

PHASE I MONITORING PROGRAM

Previous testing had determined that the site was not eligible for the National Register or important under CEQA (Corum and White 1986); however, the City of San Diego required monitoring during excavation for construction and Gallegos & Associates completed this work. Prior to construction excavation, pumps were placed to lower the level of groundwater. During drilling for pump placement, a large sandstone bowl containing burned bone, was recovered (Figure 2). The bone was identified by Rose Tyson, San Diego Museum of Man, as not human and several fragments were submitted to Beta Analytic for radiocarbon analysis. Beta Analytic forwarded the bone fragments to a laboratory in Zurich, Switz-

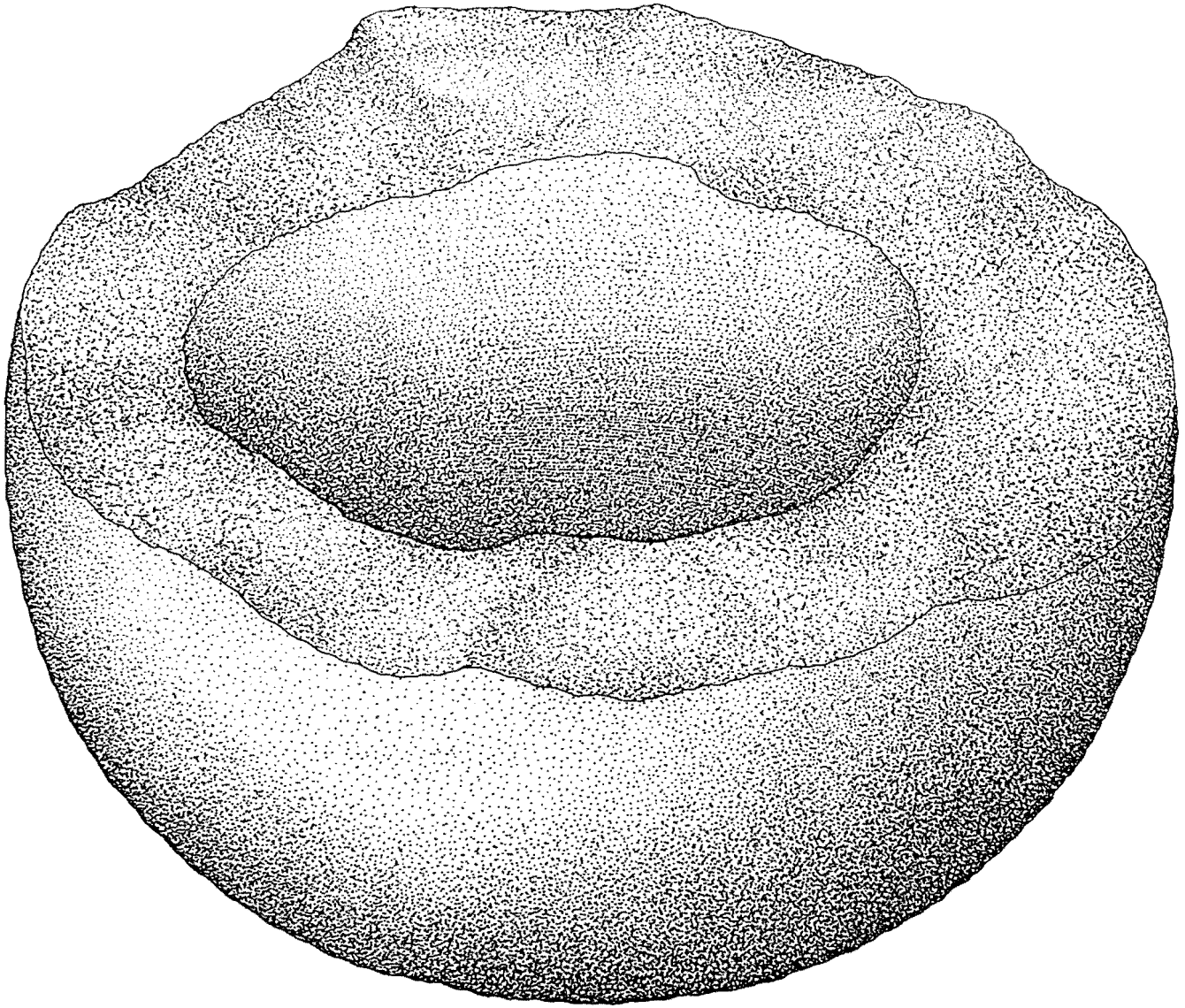


Figure 2. SDI-10148-53 stone bowl.
(approximately 90% actual size)

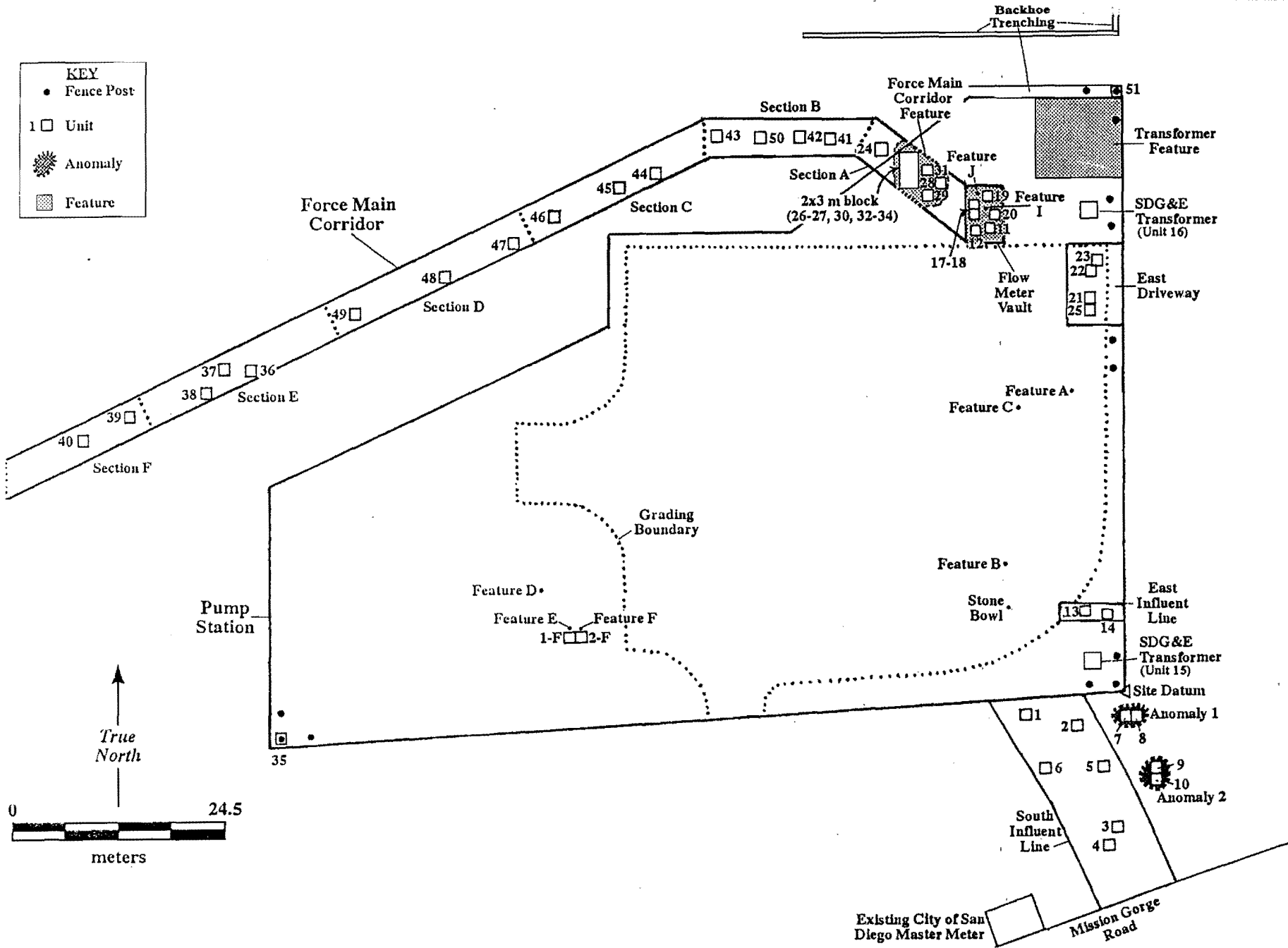


Figure 3. East Mission Gorge pump station and force main within prehistoric site SDI-10148.

erland, for accelerator processing which produced a date of 805±50 years BP. The bowl is round with the entire rim, apparently deliberately broken. The inner bowl surface is highly polished, and the exterior of the bowl is smooth and round by shaping. The bowl measures 28.6 cm in length, 29.6 cm in width, 14.0 cm in height, and weighs 13 kg. The symmetry and size of the bowl identify it as an unusual artifact for San Diego County.

CHANGE IN SITE STATUS

During the monitoring program a large number of manos, complete metates, and intact fire hearths were identified. Radiocarbon dates were obtained from three hearth feature soil samples (1130±80 BP, 1270±80 BP, and 1760±90 BP). Based on the identification of intact features and radiocarbon dates, as well as the recovery of a large number of artifacts during the monitoring program, the City of San Diego Planning Department changed the designation of SDI-10148 from not significant/not important to significant/important under City of San Diego and CEQA Guidelines. The change in site status to significant/important initiated several procedures. To protect the portion of SDI-10148 adjacent to an area proposed for direct impact, the site surface was covered with up to one meter of fill soil. Site areas disturbed by construction included the South Influent Line, East Influent Line, two San Diego Gas & Electric pads, a portion of the East Drive-way, the flow meter vault, the portion of the force main corridor within the pump station area, two fence post locations, and the northeast corner of the study area (Figure 3).

PHASE II DATA RECOVERY PROGRAM

The data recovery program included the use of ground penetrating radar and excavation of up to a 15% sample of each area to be impacted using hand excavated units and mechanical backhoe trenching. Given access limitations and time con-

straints, ground penetrating radar was used only for the southeast portion of the study area. Anomalies were marked with spray paint, stakes, and flagging. Two of the six anomalies were investigated using hand excavation of 1x2 m units. The results of this investigation were inconclusive, with large quantities of pea gravel mixed with decaying plant roots in the 40 to 60 cm level and sparse lithics and a mano scattered across the 60 to 70 cm level. The second anomaly produced few artifacts and historic debris to 40 cm with no feature.

FEATURE EXCAVATION

Hand excavated units identified a feature in the northeastern portion of the study area. Upon completion of unit excavation a backhoe was used to carefully remove soil and expose the living floor. A 100% exposure and recovery of the living floor was completed, exposing approximately 300 m². Radiocarbon dates were obtained from charcoal samples recovered below two hearths in the living floor, producing dates of 1590 and 2250 years BP. One obsidian sample, recovered from the feature, was identified as Obsidian Butte material with a 6.8 micron rim measurement. One pottery fragment was recovered from the site surface during an earlier testing program (Westec 1986); however, no pottery was recovered during this study.

The southern portion of the living floor was disturbed/destroyed by the original excavation for the pump station. The feature extends north, outside the project area, toward the San Diego River. This area, between the northern boundary of the study area and the river, had been slated for use as a biological mitigation area for the East Mission Gorge project. In order to determine the extent of the feature, two backhoe trenches were excavated perpendicular to each other. The trenches were excavated to subsurface sterile clay levels. Near the river the trench was shallow and sterile of cultural material. The deepest area, over 5 m deep and 4 m long north/south, was filled with small river gravel, thereby identifying an old

river channel. The trench gradually stepped up from this old river channel to approximately 1 m from the present surface, where the living floor feature was identified. The feature extended from this point, 3 m south to the intersection with Trench B. Excavation of the two trenches identified the living floor feature approximately 28 m east/west by 16 m north/south (448 sq. m) outside the northeast corner of the study area.

BIFACE ANALYSIS

A large biface and one biface fragment were recovered. These two artifacts are manufactured from translucent yellowish-white raw seam chert that has primary cortex on both flat sides. The biface is large, thin, with a concave base that has been shaped with short pressure flakes around the edge (Figure 4). This artifact measures 6.9 cm in length, 4.2 cm in width, 0.5 cm in thickness, and weighs 14.1 gm. No thinning has occurred on either the biface or the fragment. These artifacts are manufactured from material that is not locally available. Our research was unable to identify similar bifaces from sites within San Diego County. Studies by Cooley (1982), Glenn (1991), and others have identified similar bifaces manufactured of Monterey chert laminates. This type of large cherty-shale biface occurs near available lithic material in Palos Verdes Hills, Los Angeles County, and at Vandenberg Air Force Base in San Barbara County.

LITHIC ANALYSIS

The lithic collection recovered from the living floor consists of large rough quartzite flaked artifacts, metavolcanic hammerstones, and large chunky quartzite debitage. Many of the tools appear to be minimally worked or used. All of the tools (81) and debitage (446) recovered from the living floor were submitted to Flenniken et al. (1993) of Lithic Analysts for analysis. The living floor feature was on a sterile subsurface clay and was capped by sand deposited by San Diego River. This type of a capped living floor is rare in

San Diego County, and the opportunity to analyze lithic tools and debitage from an intact, single component feature represented a unique opportunity. Flenniken's lithic analysis included experimental simulations and ethnographic research.

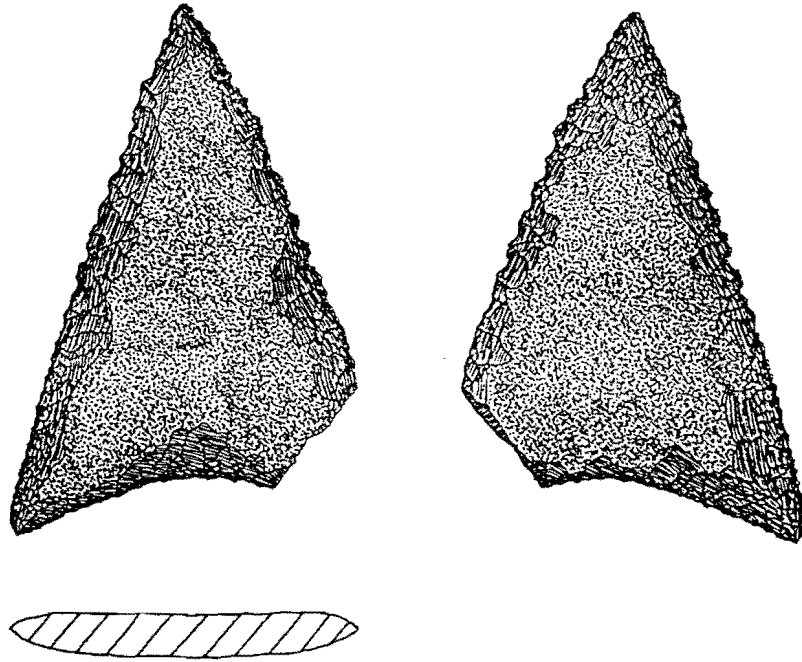
This analysis determined that 519 of the 527 artifacts were associated with production, use, and rejuvenation of battered tools that were, in turn, used to sharpen or resharpen surfaces of manos and metates. The remaining eight artifacts, of fine-grained materials, include one small core and seven flakes, and probably represent core reduction technology or trajectory. These artifacts were not considered in the analysis due to their small number and minor representation in the sample.

Three basic categories of identifying battered tools were used during this study: 1) Production Stage - those exhibiting characteristics indicative of manufacture but without evidence of subsequent use; 2) Rejuvenation Stage - rejuvenated/resharpened tools; and 3) Use Stage - artifacts exhibiting battered edges.

The majority of battered tools were identified as Use Stage with extensive edge damage on much of the surface topography and frequently with sharp edges. The study identified 56 complete tools and 1 incomplete Use Stage tool.

Rejuvenated or Resharpened Stage Tools generally do not have much margin damage attributable to use, although a small remnant of battered edge damage is present on at least one area. This sequence is supported by the presence of negative flake scars produced during rejuvenation/resharpening. This analysis identified one incomplete and 17 complete tools with evidence of rejuvenation.

Experimental tool replication was completed by Lithic Analysts using rounded quartzite cobbles obtained from Snake River gravels in southeastern Washington. The experiments demonstrate that the use-life stage classifications of debitage are not exclusive to the stages for which they are named. Overlapping of classifi-



Side 1

Side 2

Figure 4. SDI-10148-395 chert biface.

cations is characteristic of many technologies, but is exaggerated in expedient technologies where reduction is situational rather than regimented. The functional requirements of the tool are related to sharpness of the edge, size, and durability of the stone rather than any particular shape of flake scar pattern (Flenniken et al. 1993).

ETHNOGRAPHIC RESEARCH

Ethnographic research from the American Southwest documented that ground stone tools, mainly manos and metates, were manufactured, sharpened, and resharpened with battered tools identical to those recovered from SDI-10148 (Flenniken et al. 1993). Zuni and Hopi informants told researchers that metates were maintained by degrees of coarseness: rough, medium, and fine, and that this coarseness was controlled by pounding the surface of the metate and mano with a hammerstone. Metate resharpening was usually conducted every 5 days during times of hard use.

SUMMARY

The data recovery program completed at SDI-10148 identified a large living floor that dated between 1590 and 2250 years BP with the upper site stratum dating ca. 800 years BP. Lithic analysis indicates that the living floor was a specialized activity site where food processing was the primary activity and that the upper or later site occupation was also focused on processing food resources. In addition to milling plant seeds, maintenance of milling tools (i.e., manos and metates) through the use of local quartzite cobble based tools with a sharp edge was necessary. Recovery of obsidian from Obsidian Butte, chert, and serpentine indicates that trade and/or travel occurred both north along the coast and east to the desert. Site SDI-10148 is adjacent to a major Native American trade route and was probably associated with the large *El Corral* village complex located west of the project site.

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