THE TESTIMONY OF PHYSICAL REMAINS: A STUDY OF DESERT HOMESTEADS

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ABSTRACT

The evaluation and preservation of historic cultural resources requires the development of historic contexts. To date, over 450 historic homesteads have been recorded on Edwards Air Force Base, California. However, discussions of these resources have, for the most part, been limited to descriptions of the archaeological remains and not incorporated into a larger regional context. Tetra Tech is currently investigating a sample of ten of these desert homesteads to evaluate them for eligibility for listing in the National Register of Historic Places (NRHP) as a non-contiguous district. Previous national and regional studies on homesteads were researched and a theoretical orientation, specific to the Antelope Valley, was developed along with pertinent hypotheses and testing implications. The archival research, detailed site documentation, a GIS/d-Base-compatible mapping automation program, geophysical methods, and test excavations were some of the techniques utilized for this study.

Introduction

Between 1994 and 1996, a cultural resources survey and site evaluation was conducted on 10 historic period desert homesteads, located within the present day boundaries of Edwards Air Force Base (AFB), California, for eligibility for the National Register of Historic Places (Figure 1). A discontiguous district was recommended as a management tool (Guerrero *et al.* 1996). There was to date no similar district within the region that was exclusively tailored to desert homesteads. The project provided an opportunity to help develop methods and a theoretical orientation for the area, as well as to define criteria for the evaluation of these and other homesteads that may be evaluated later on. This paper will focus on some of the various methods implemented for this project.

Initial Sample Selection

The factors used in selecting the homesteads were intended to provide a cross-section of sites that would be representative of the homesteads at Edwards AFB. The criteria were based on a combination of existing archaeological information and previous archival research. The variables considered included the presence and diversity of intact archaeological remains; the presence of intact architectural features; the density and diversity of the artifact assemblage; the probability of subsurface deposits; a range of temporal variability in occupation(s); various types of claims for land in the public domain (timber cultures, desert land entries, and homesteads; railroad grant lands purchased by settlers; and school grant lands or lieu selections); gender of claimants; variation in identity of ethnic groups (as could be determined by claimants' names and previously collected artifacts); a range of geographical locations across the base; and homesteads associated with Elmer Karpe's 1938 appraisal of land to be acquired by the military for the Muroc Bombing and Gunnery Range.

In consultation with the Base Historic Preservation Officer (BHPO), the following 10 homesteads were selected: CA-LAN-1408H, CA-LAN-1473H, CA-LAN-1492H, CA-LAN-1557H, CA-LAN-1800H, CA-KER-1819H, CA-KER-1892/H, CA-LAN-2092H, CA-KER-2199H, and CA-KER-2371H.

Research Contexts

Research contexts and testable hypotheses were established and specific research problems

defined. Research contexts provide information on local and regional events, patterns, and persons representative or important in the general area. They also identify relevant historic themes and research domains and provide the database against which the importance of various types of cultural resources are evaluated.

The adaptive strategies employed by individuals or groups is typically influenced by a number of factors. Different adaptive strategies are normally tried and tested to determine which one will bring the greatest chance of success, or even survival. With each decision that is made, a certain strategy develops that is expected to prevent the person making the decision from failing in their endeavors.

In a study of homesteads in central Nevada, Panelli (1984) employed a "flexibility model" to develop a set of expectations about the adaptive strategies employed by the homesteaders. This model focused on the opportunistic decision-making potential of individuals as it relates to the success or survival of the homestead. The flexibility model allows for alternative choices that were invented or tried by an individual and then tested through selective processes. The success of a given strategy would be reflected through the success or survival of the homestead. Under the flexibility model, environment has been used to mean the social, political, economic, and ideological environment, as well as the natural environment.

This study will focus on the adaptive strategies developed and utilized by the occupants of the 10 homesteads being examined. Given the extremes of the desert environment and the limited resources available to the homesteaders, flexibility in adaptive strategies was required. One successful adaptation is evident by one homesteader's ability to construct substantial structures and extensive irrigation. Present-day environmental conditions and data accumulated from the late nineteenth and early twentieth centuries indicate that homesteaders had to cope with a number of environmental extremes that were present year-round. Any of these environmental factors posed a risk to the success of a homestead. For example, a drought or extremely hot year affected the ranching or agricultural industry in the region. Economic disasters such as the Great Depression caused many businesses that employed local labor in the area to close. Such occurrences would have prevented some settlers from obtaining the necessary income to improve their homestead. By maintaining a conservative or low-risk adaptive strategy, homesteaders were able to reduce the risk of failure. Prosperity of the homesteads relied on successful adaptive strategies. Chances of success were increased through the use of conservative or low-risk adaptive strategies. Typically, several adaptive strategies were attempted simultaneously to ensure success. If one strategy failed, the homesteader had other means to support the homestead. This was most often achieved by diversifying the economic activities of the homestead. For example, if the main economic focus of the homestead was ranching, the homesteader may have supplemented the income through limited agriculture, or even taken a wage job in the local mines or for the railroads. Multiple and diversified economic activities increased the chances of success for the homesteader.

Historic desert economic practices reflect a flexible, multi-activity economy. The diversification of the homesteader's economic practices was essential for the success of that homestead. By maintaining this diversity, the homesteader was best equipped to deal with environmental changes. The economy and the environment played the primary roles in "forcing" the settler to adapt to a new survival strategy or run the risk of failure. In this context, environment is being used to include the social, political, economic, and ideological environment, as well as the natural environment.

Economic pursuits at desert homesteads changed through time in response to changes in environmental conditions and as local and regional economies were established. This premise is evidenced by combining archival and archaeological results to validate the following hypotheses:

- Occupants diversified their homesteading activities with numerous

economic endeavors which provided additional income and resulted in substantial and successful homesteads.

- Numerous economic activities provided nothing more than a marginal existence.

- Economic and technological adaptation that occurred on each homestead were influenced by the ethnicity of the occupants and the general composition of the household.

Methods

A variety of archival and archaeological information was required to address the above-stated hypotheses. Archival research focused on the following types of information: patent case files, serial files, name files, County Clerk records, enumerated census, the soundex, Elmer F. Karpe's 1938 appraisal, local newspapers, local histories, and school records. Archaeological investigations focused on the following information: architectural and archaeological features, and artifact assemblages observed from both the surface documentation and testing phase.

A combination of three methods were used to evaluate the 10 homesteads for this study: surface documentation, excavation, and geophysical techniques. The archaeological remains of the historic sites were reexamined and redocumented due to the human impacts and the changing geology of the area (i.e., sand dunes and alluvial deposits). The excavations determined the horizontal and vertical extent of certain features and deposits, as well as any data sets they contained. The geophysical investigation was used primarily to determine the physical integrity of deposits by identifying vertical and horizontal limits, as well as the presence and extent of subsurface deposits while reducing or eliminating ground disturbance.

Each site was mapped to scale utilizing a Pentax ETH-20F Electronic Theodolite with a metric stadia rod, compass, and metric tape. Features and point-provenienced artifacts were mapped in relation to the datum. A computer generated mapping automation program was written specifically for this type of data. The program allowed the map points to be plotted electronically and compiled the information about those points in a GIS/d-Base compatible format. This increased the efficiency and accuracy of the mapping process.

Site documentation included recordation of the areal extent of the homestead, information regarding artifact assemblages, and detailed recordation of all features. The architectural style of each feature was examined, along with structural techniques and materials used. Each feature and associated artifacts were recorded and examined for possible function.

Test excavations consisted of shovel test units (STUs), 1x1-meter surface scrape units (SSUs), auger test holes (ATHs), and probing. All units were oriented on true north coordinates.

A total of 21 STUs, 25 ATHs, 2 SSUs, and 2 probes were excavated on the 10 homesteads. The exact placement of STUs was based on the information provided during the surface redocumentation, and augering and probing results. Priority was given to areas with varied artifact concentrations and features that had the potential to contain artifact assemblages.

Geophysical techniques utilized for this study included two methods: electromagnetic (EM) induction and ground penetrating radar (GPR). The presence/absence of subsurface features and concentrations, the integrity of intact subsurface deposits, and the integrity of vandalized deposits were addressed with EM/GPR. The two sites chosen to perform geophysical testing contain sparse archaeological remains where archival information and types of remains present indicate a long-term occupation(s) on the land. EM/GPR can reveal the presence and extent of subsurface features or deposits. Equivalent testing with excavation units or hand probes would be very time consuming and could only be performed in random or sample units. Geophysical investigations (EM) were

conducted on 2 of the 10 project homesteads (EAFB 707 and EAFB 766). Ground penetrating radar was performed on only one of the two selected homesteads (EAFB 707) due to the EM results. To facilitate geophysical examinations, large survey grids with 2.5 meter intervals were delineated and marked with stakes on the portion of each site to be tested. A survey grid measuring 100 meters north/south (N/S) by 60 meters east/west (E/W) on EAFB 707 and a survey grid measuring 75 meters N/S by 100 meters E/W on EAFB 766 were tested.

Geophysical Results

EAFB 707 is located on the northern edge of Rosamond Dry Lake. This site consists of three features and two concentrations (Figure 2). Features 1 and 2 are stone structure remnants set into a rock outcrop, while Feature 3 is an "L" shaped graded area of the hillside. Household debris was noted in both concentrations.

On EAFB 707, the geophysical survey area measured 100 meters N/S by 60 meters E/W and encompassed Concentrations 1 and 2, and Feature 3. The EM-induction data was used to identify and delineate buried accumulations of conductive and/or metallic materials. The use of the GPR unit could then be determined by the EM-31.

The effect of instrument orientation will generally be to emphasize linear features oriented in the same direction. The corresponding corrected in-phase data revealed no new deposits. The effects of a road in the northern portion of the survey area and a buried utility cable in the southern portion of the survey area are both visible as features trending east-northeast to west-southwest. Other local variations in the apparent conductivity correlate with surface debris. Variations in the in-phase response appear to be related to metal debris at the surface. With the exception of Old Rosamond Boulevard, the area north of a line from approximately (0,40) to (60,50) is associated with high conductivity which may be indicative of the geology of the area (Figure 2).

GPR data acquired along traverse lines 11 and 12 located what may be a buried foundation wall in the vicinity of (19,24) (Feature 3). This feature is visible in both 500-MHZ and 300-MHZ data. The GPR also indicated that Concentration 1 appeared to have no subsurface depth beyond a few centimeters. Concentration 2 was shown to be a highly disturbed concentration with no greater subsurface deposits.

Eight units were placed on this site to determine research potential. They consisted of one STU, two SSUs, and five ATHs. The placement of these units was based upon corresponding EM/GPR results. Two concentrations and one feature were tested to determine the extent of subsurface deposits. A total of five ATHs were excavated within a 2.5 meter area adjacent to Feature 3, a small irregularly shaped terrace cut into the base of the hill, to validate GPR findings of a possible foundation.

It was found that Feature 3 did not have a foundation at the specified location as indicated by the EM/GPR results. GPR did, however, help to delineate the irregularly shaped terrace (Feature 3).

EAFB 766 is located south of Rogers Dry Lake. On site vegetation is predominantly creosote bush scrub. The site consists of four features and one concentration (Figure 3). Features include a concrete foundation, a pile of creosote branches, and two depressions. Artifacts associated with the household functional category are sparse throughout the site.

On EAFB 766, the geophysical survey area measured 75 meters N/S by 100 meters E/W and encompassed the entire site. The EM-induction data was used to identify and delineate buried accumulations of conductive and/or metallic materials as well as possible disturbed areas beneath the surface which would be indicated by varying conductivity. The use of the GPR unit could then be determined by the EM-31.

The corrected in-phase data show little major difference between the N/S and E/W data sets (Figure 3). The major features visible in both

maps appear to be primarily associated with gullies and more subtle drainage features which traverse the site from northwest to southeast. Three of these gullies dominate the landscape. The southwestern and central gullies are associated with low conductivity which may be indicative of lithology. Northeast of the central gully, the terrain conductivity is consistently higher, and the northeastern gully is associated with high conductivity which may be due to increased moisture content in the soil. A creosote pile (Feature 3) at approximately (48,38) is the site of a subtle conductivity low which is partially obscured by the regional conductivity variations. It is not clear whether this local conductivity decrease is due to the presence of the creosote scrub bush or an underlying feature.

The in-phase response will be sensitive to the presence of metal. Accumulations of metallic debris are indicated primarily within the drainages, in agreement with visual observation of surface debris. Additional debris may have been buried over time within these drainages.

The EM indicated no subsurface disturbances or deposits other than Feature 2 (privy) and the artifacts that were in various drainages determined to be displaced from the main concentration. As a result, ground penetrating radar was determined not to be warranted at this site based on the absence of any anomalies encountered by the EM and by the redocumentation of the site. Five units were excavated consisting of two STUs, three ATHs and one probe. STU 1 was placed in Feature 2 to test the depth of an area believed to be the location of a privy. STU 2 was placed in the main concentration. The assemblages contained within a feature or concentration can provide information on household composition and on the occupation(s) of the homestead. This type of information is essential for determining the research potential of a site. Three ATHs were placed in Feature 1, the main dwelling, in an attempt to determine whether there was a floor to this feature and to locate any intact subsurface features. Probing, utilizing a steel section of rebar, was used to test Feature 3 for a possible foundation or collapsed structure. The feature was found to consist solely of the pile of branches and can best be explained as being part of the roof of either the privy or the main dwelling.

Standard methods were utilized for this evaluation. Like all methods, they must be used in a way so as to extrapolate impartial data when considering the potential eligibility of a site. In a time when the needs of a client must be balanced with the good of the resource, it is important to utilize the most efficient methods of determining the existence and research potential of cultural resources.

Conclusions

The methods that this project utilized allowed for a thorough non-intrusive evaluation of 10 homesteads which provided information for the subsequent NRHP nomination of 5 of the project homesteads as a discontiguous district. This district will consist of homesteads that contain invaluable information. Although not every homestead will be part of the district by using the criteria of type of land acquisition, a consistent form of evaluation may be used. Through the formation of this district, homesteads, as a resource, will be maintained for further study of recent homesteading within this western frontier.

Notes

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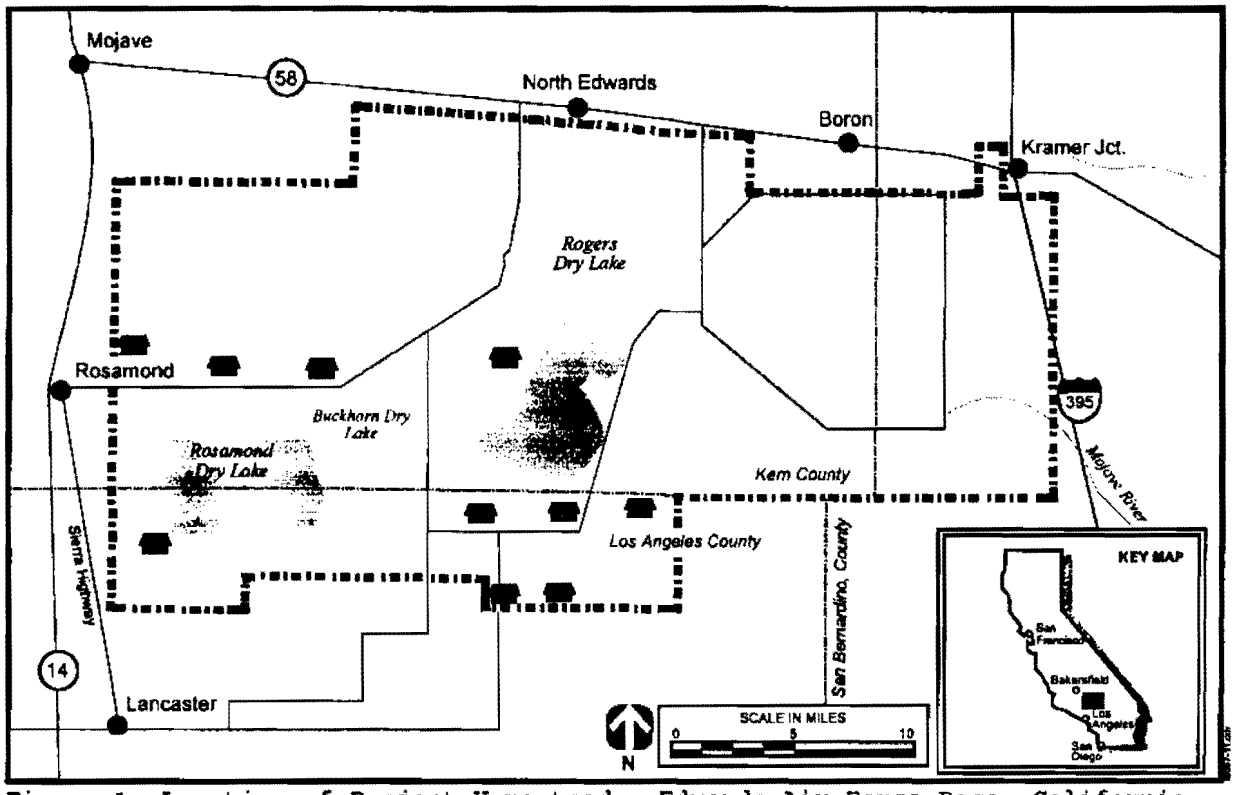
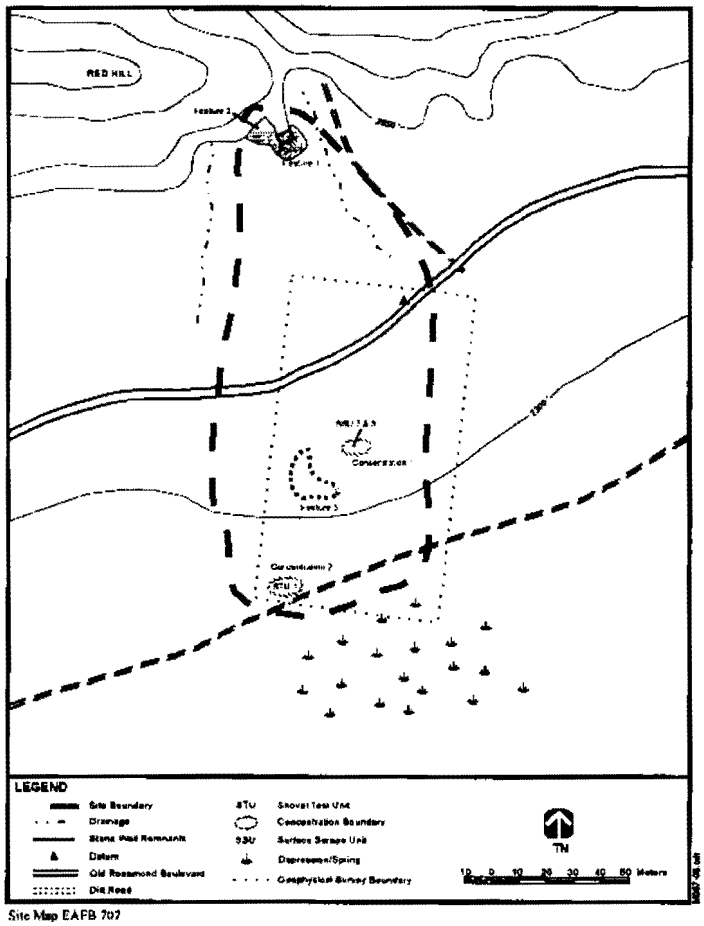
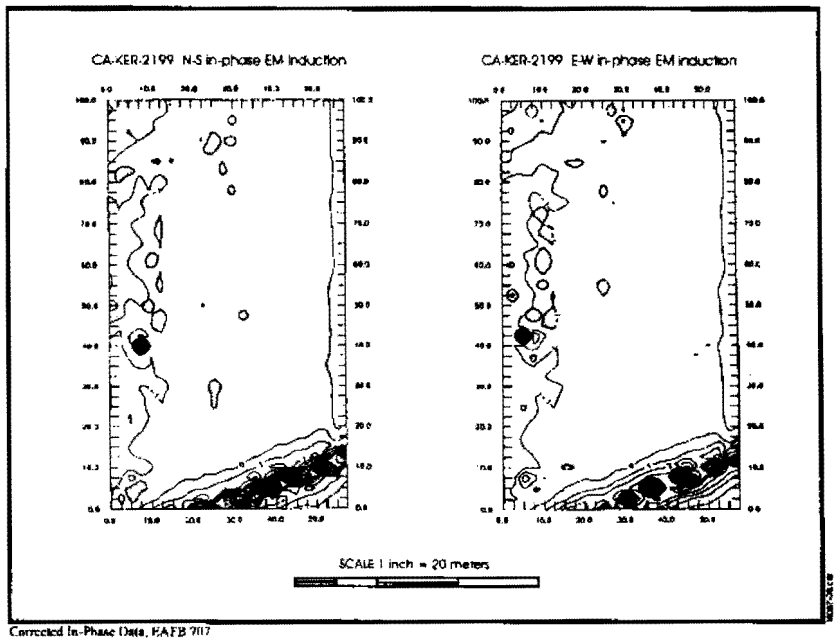


Figure 1 Location of Project Homesteads, Edwards Air Force Base, California



Site Map EAFB 707



Corrected In-Phase Data, EAFB 707

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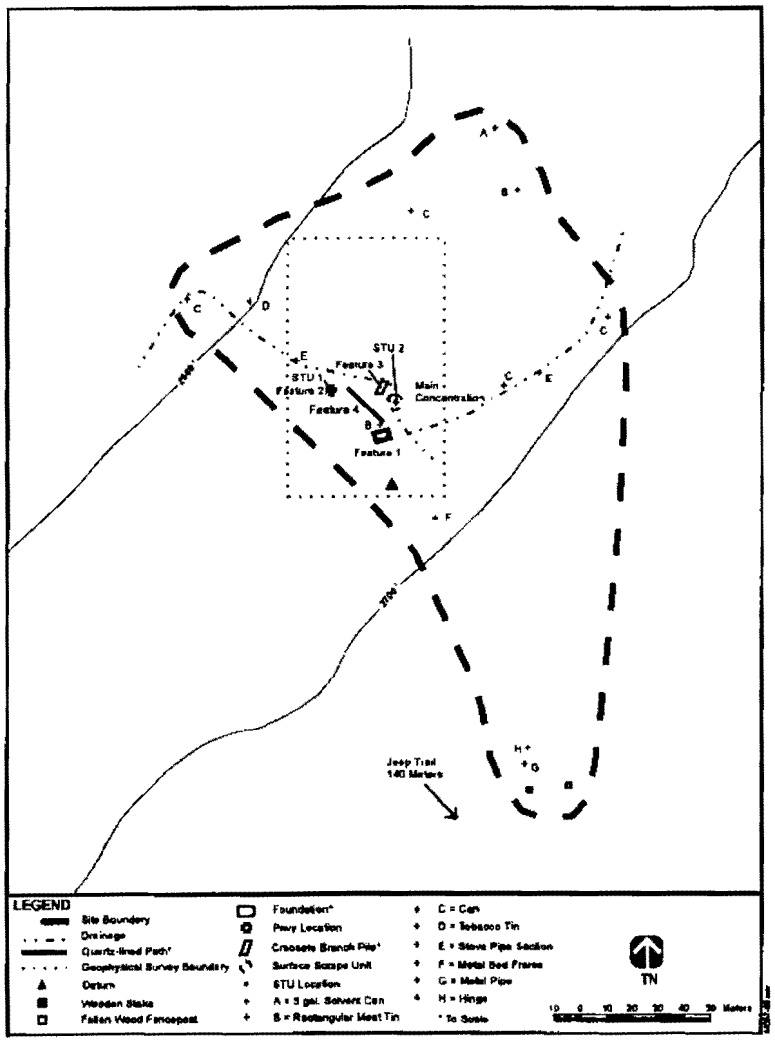
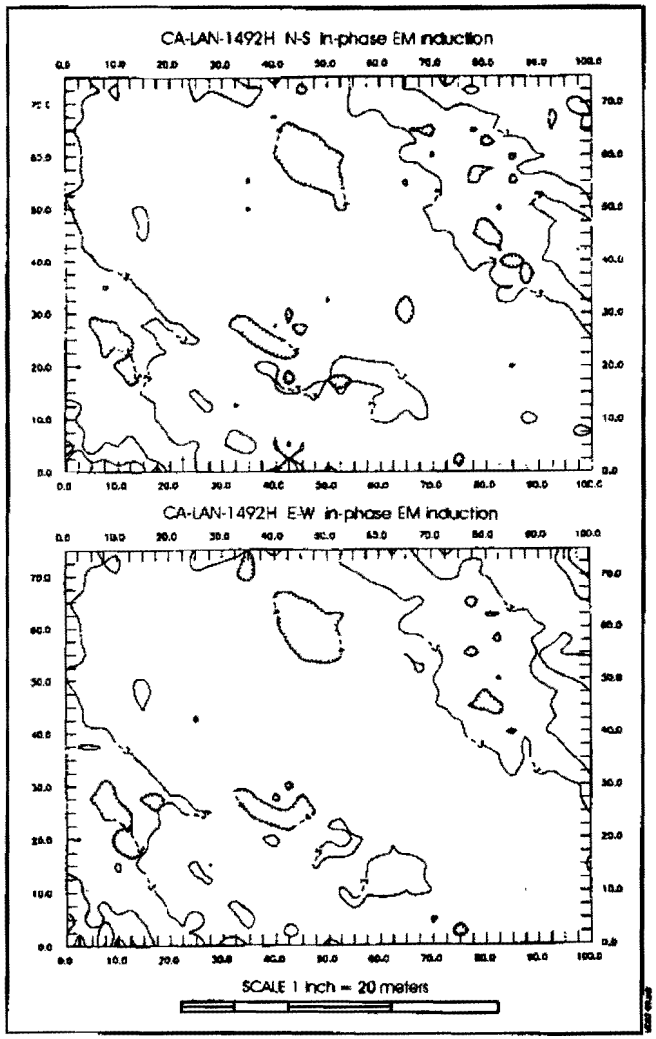
Figure 2 Site Map and Corrected In-Phase Data, EAFB 707 (CA-KER-2199H), Edwards AFB, California



Site Map EAFB 766



Corrected In-Phase Data, EAFB 766

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Figure 3 Site Map and Corrected In-Phase Data, EAFB 766 (CA-LAN-1492H), Edwards AFB, California