SURFACE SURVEY FOR THE SUBSURFACE SITE

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ABSTRACT

Beneath today's landscape lie archaeological sites obscured from view by diverse natural and cultural activities. We are all aware of the possibility of such subsurface sites, yet inventories focus on and databases consist mostly of sites visible on the surface. To reduce the skew towards the surface site, the issue of subsurface sites needs to be more actively addressed. Identifying subsurface locations begins with the surface survey. Review of archaeological, soils, historical, and geological literature; development of erosional and depositional models; and use of specific field strategies all contribute to improving the subsurface archaeological record. Subsequent to survey, test excavations and construction monitoring, based on the literature review and field results, can be more reliably and efficiently implemented.

Introduction

Archaeological site inventories focus on, and databases consist mostly of, sites visible on the surface. Beneath today's landscape, however, lie archaeological sites that have been obscured from view by diverse natural and cultural activities. The identification of such sites is becoming increasingly significant in our interpretations of the past (e.g., see Stafford 1995). As such, there is a concomitant increase in the importance of identifying subsurface sites.

At first glance, the concept of looking for subsurface sites on the surface may appear odd. Surface survey, however, is where most archaeological field investigations begin. This is where one can address what Michael B. Schiffer refers to as "The Geoarchaeological Mandate:"

> From the standpoint of survey design, the archaeologist needs to know where deposition and erosion . . . have occurred during the human occupation of the region. Obviously, detailed information on these processes may be lacking, but a first approximation should be helpful in survey design. Early stages of the survey can in fact test predictions based on the geoarchaeological model (1987:256-257).

At the survey stage one obtains background information that indicates subsurface site locations. The survey field data can be used to refine the model of subsurface site locations to facilitate addressing the identification and management, protection, or mitigation of such sites. We can actively address subsurface sites rather than have them appear under vague discovery contingencies or appear as an "unanticipated discovery."

Visibility

Our basic concern is visibility, which refers to the extent that a site has been buried or covered by soil aggradation and vegetation since its last occupation (see Schiffer 1987:236). How can we increase focus on those locations at which sites are visible? Innovative techniques are not being proposed: the literature search, systematic field survey, review of cut banks for site indicators--these are all commonly used. It may be of value, however, to reiterate the obvious, the common, in order to focus on a specific issue.

The Santa Rosa Wastewater Project Survey

In 1995 in southwestern Sonoma County, California, as part of the environmental studies for the City of Santa Rosa Subregional Long-Term Wastewater Project, we surveyed five proposed reservoir sites comprising approximately 1,700 acres and conducted a sensitivity study of several thousand additional acres.

The windy and foggy environment of the area, with its low, rolling, almost bald hills, would appear to have had only minimal land use prehistorically. At first glance, the presence of only a few sites in the area appears to support this concept. Was what appeared to be minimal prehistoric occupation due to a marginal environment lacking attractive resources?

Historically, southwestern Sonoma County has been logged, extensively cultivated for potatoes, and today is used for grazing dairy cattle. These processes can cause a great deal of erosion resulting in subsequent deposition of sediments. Was there a lack of identified sites due to the sediments obscuring them from view?

The most significant previous survey in the area indicated that sites could be found at the usual locations along creeks (Jordan 1990). This survey, however, gave us a hint of what we were to find during our surveys. Two of the seven prehistoric sites Jordan found were subsurface: one was identified in rodent backdirt and a stream bank, the other in a stream bank.

For the reservoir studies, we intensively surveyed several small watersheds, which were candidate locations for reservoirs. During the survey we regularly encountered prehistoric materials in the creeks, but we could find no surface sites. We suspected that the materials found in the creek beds were eroding from subsurface sites. In one of the valleys, near the community of Bloomfield, the only evidence of prehistoric activity was found in rodent backdirt and during subsurface geological testing. At another proposed reservoir location, near the town of Two Rock, two subsurface prehistoric sites were identified in stream banks. This latter area is a unique sheltered valley with a profusion of Douglas fir, hazelnut, oaks, and buckeyes which may indicate that the resource base was substantially different at one time.

As a result of our field studies we identified several new prehistoric and historical sites. These included three subsurface prehistoric sites, as well as isolates which may represent another prehistoric site. It appears that the sites and isolates were buried as a result of historical land use which eroded the uplands, with subsequent deposition of large amounts of sediments in the valley bottoms.

Background Research

One begins identifying the presence of subsurface sites through the standard background research process. By conducting a review of geological and soils literature, one can assess the possibility of subsurface landscapes before going in the field. By reviewing documents on such topics as erosional and depositional provinces, paleo-environmental reconstructions, and archaeological reports of buried sites, the archaeological surveyor can increase the likelihood of finding subsurface sites. If indicators of subsurface sites are not found during the survey, this information becomes important in survey reports in order to provide a reasoned explanation of the potential for subsurface deposits.

Also of great value is to have a geoarchaeologist as one of the survey team members. On the Santa Rosa Wastewater project, the survey areas were reviewed with the staff geoarchaeologist prior to entering the field. He showed us where we could expect erosion and where we could expect significant deposition, allowing us to effectively focus our energies by searching for subsurface indicators at those locations where they would be most likely to occur.

Historical information can also prove useful to indicate if major deposition has occurred. Valley Ford, a small western Sonoma County town dating to the 1860s, was once a port used

for shipping lumber and potatoes (Bell 1995). Sedimentation, however, of the Estero Americano, on which Valley Ford is situated, stopped the shipping and what was once a port is now a high and dry farming community. This was another indicator that the valleys of the area have become depositories for sediment, and within the past 130 years the landscape has been dramatically altered. These processes of sedimentation appear to be continuing to this day.

Field Procedures

Our field techniques are the ones usually used in surface survey. We are not suggesting such excavation as shovel tests, auger borings, or backhoe trenching, though these may be appropriate at a subsequent stage. During the survey one takes advantage of natural and cultural processes: carefully review creek banks and rodent hole backdirt, monitor subsurface geological and hydrologic studies, and take advantage of situations such as percolation test holes and road cuts.

Look for field indicators of heavy soil deposition. The buried fence posts found during the Wastewater survey are a classic example of how dramatic recent deposition can be. During a survey in Contra Costa County, one of the authors found cow bones buried beneath six feet of sediment. As with the literature search, such field indicators can be important information in the survey report when discussing the potential for subsurface deposits.

Another valuable source of information is landowners and residents. For example, the Cade Archaeological District, Wisconsin, contains many sites situated along the Bad Axe River, including buried deposits which have been identified primarily by the landowners (Boszhardt 1987). During the Santa Rosa Wastewater Project, conversation with a local landowner led to the knowledge that "after a good rain you can find arrowheads in the creek." Our surveyors found the source of the these "arrowheads," as well as a mini-mortar, a charmstone, and other artifacts washing out of a buried site upstream of the location mentioned by the landowner.

REFERENCES CITED

Bell, Tim
1995 Personal communication about the history of Valley Ford, Sonoma County. Professor, Department of Geography, Sonoma State University, Rohnert Park, California.

Boszhardt, Robert F.
1987 *National Register of Historic Places Registration Form: Cade Archeological District.* Mississippi Valley Archaeology Center. La Crosse, Wisconsin.

Jordan, Leigh
1990 *An Archaeological Study of the Proposed City of Santa Rosa Wastewater Project, Preferred Alternative Sonoma and Marin Counties, California.* Anthropological Studies Center, Sonoma State University Academic Foundation, Inc. Rohnert Park, California.

Schiffer, Michael B.
1987 *Formation Processes of the Archaeological Record.* University of New Mexico Press, Albuquerque.

Stafford, C. Russell
1995 Geoarchaeological Perspectives on Paleolandscapes and Regional Subsurface Archaeology. *Journal of Archaeological Method and Theory* 2(1):69-104.