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Technical Report EL-93-6
April 1993

**US Army Corps
of Engineers**
Waterways Experiment
Station

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Environmental Impact Research Program

Use of Signs as a Protective Measure for Cultural Resource Sites

by *Paul R. Nickens*
Environmental Laboratory

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by Paul R. Nickens

Environmental Laboratory

U.S. Army Corps of Engineers
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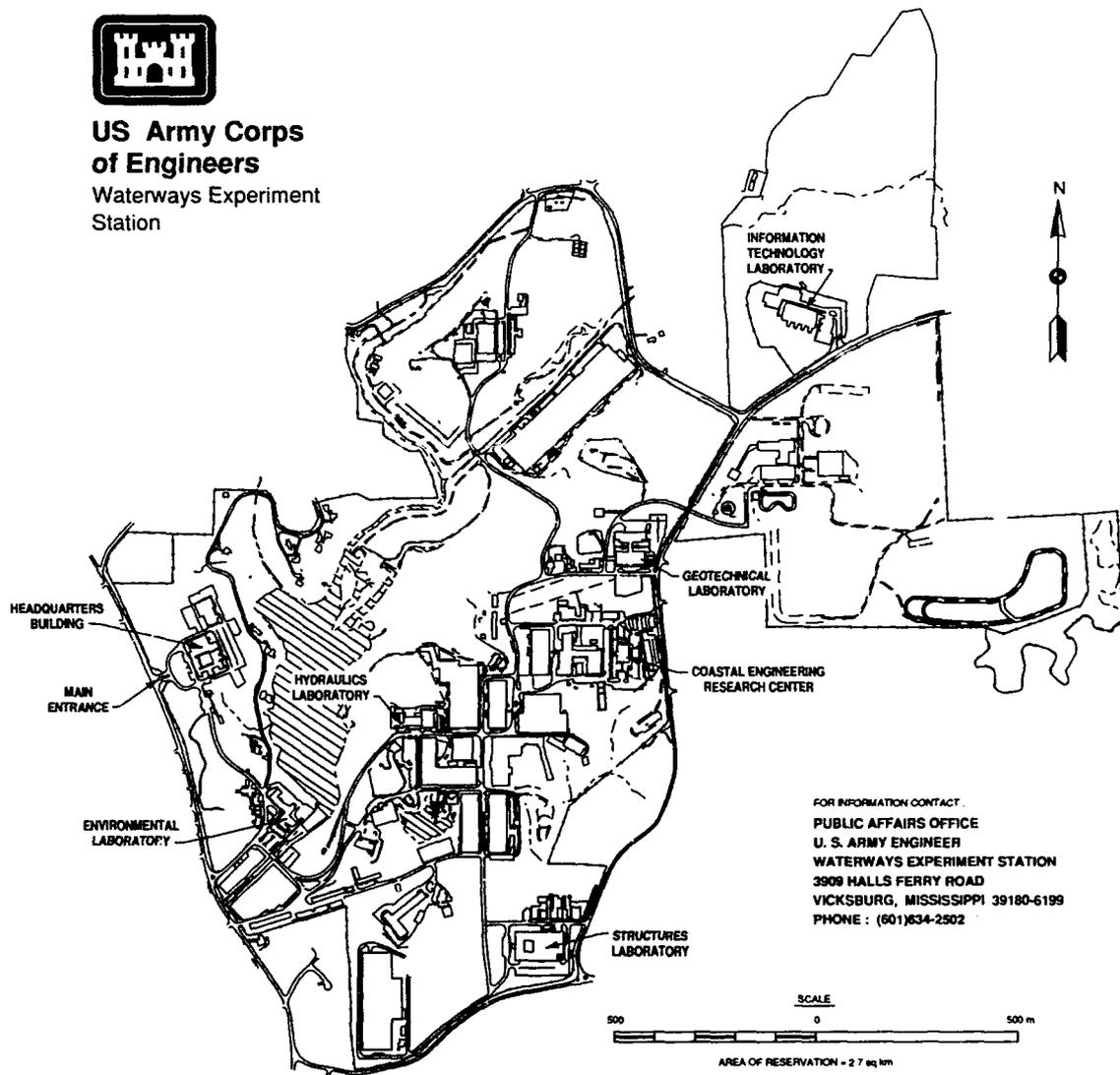
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Waterways Experiment
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Preface

This study was conducted under Work Unit 32357 of the Environmental Impact Research Program (EIRP). The EIRP is sponsored by Headquarters, U.S. Army Corps of Engineers (HQUSACE), and is assigned to the U.S. Army Engineer Waterways Experiment Station (WES) under the purview of the Environmental Laboratory (EL). Technical monitors were Dr. John Bushman, Mr. David P. Buelow, and Mr. Dave Mathis, HQUSACE. Dr. Roger T. Saucier, EL, WES, was the EIRP Program Manager.

The report was prepared by Dr. Paul R. Nickens, Resource Analysis Group (RAG), Environmental Systems Division (ESD), EL. The work was performed under the general supervision of Mr. H. Roger Hamilton, Chief, RAG, Mr. J. Lewis Decell, Acting Chief, ESD, and Dr. John Harrison, Director, EL.

A large part of the data accumulation for this work involved distribution of a nationwide questionnaire. Help in compiling and analyzing these data was provided by Mr. Richard Stallings, University of Mississippi, and Mr. Marc Kodack, National Park Service (NPS), Southeast Regional Office (SERO). Mr. Kodack was under a detailed assignment at WES to analyze the questionnaire data. During this assignment, his salary was funded by the NPS, Archeological Assistance Division (AAD). Acknowledgment for arranging this assistance is extended to Dr. Francis P. McManamon, Chief, AAD, Mr. Richard C. Waldbauer, AAD, and Mr. John Ehrenhard, Chief, Inter-agency Archeological Services Division, SERO.

Acknowledgment is also due to the more than 500 individuals in several Federal and state agencies who submitted responses to the nationwide survey. Of this number, many not only responded to the prepared questions, but also took time to elaborate on past and ongoing efforts and offer thoughts regarding the issues involved. Three of the respondents deserve special mention for their contributions: Mr. Peter Pilles and Mr. Robert York, both of the U.S. Department of Agriculture, Forest Service, and Mr. Anthony Lutonsky, Bureau of Land Management. Mr. Richard Brook, Bureau of Land Management, Washington Office, made available unpublished results of a previous field survey on the subject under analysis in this report.

Technical reviews of the report were performed by the following individuals: Mr. Paul Rubenstein, HQUSACE; Dr. Roger T. Saucier and Mr. Chris White, WES; Drs. James H. Gramann and Christopher C. Mathewson, Texas A&M University; and Dr. Francis P. McManamon, Dr. Ruthann Knudson, and Mr. Richard C. Waldbauer, NPS.

At the time of publication of this report, Director of WES was Dr. Robert W. Whalin. Commander was COL Leonard G. Hassell, EN.

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Conversion Factors, Non-SI to SI Units of Measurement

Non-SI units of measurement used in this report can be converted to SI units as follows:

Multiply	By	To Obtain
feet	0.3048	meters
inches	0.0254	meters
yards	0.9144	meters

Introduction

Background

The U.S. Army Corps of Engineers (CE) is committed to implementing the provisions of several historic preservation Federal laws. In part, these laws call for protection of significant cultural resources in conjunction with CE Civil Works planning studies and during construction, operations, and maintenance activities at Civil Works projects. The principal Federal laws in this regard are the National Historic Preservation Act of 1966, as amended, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, as amended, and the Native American Graves Protection and Repatriation Act of 1990.

Several CE documents have translated Federal historic preservation statutes and policies into Corps policies. Engineer Pamphlet (EP) 1165-2-501 (U.S. Army Corps of Engineers 1988) provides a summary of the overall environmental policies, objectives, and guidelines for the Civil Works program, including planning, engineering and design, construction, operation and maintenance, and regulatory activities. Consideration of cultural resource protection is to be incorporated into each of these activities.

Two CE documents deal specifically with cultural resources: (a) Engineer Regulation (ER) 1105-2-100 (U.S. Army Corps of Engineers 1990), which provides guidance for consideration of historic preservation in Civil Works planning studies and (b) ER 1130-2-438 (U.S. Army Corps of Engineers 1987), which establishes a Historic Preservation Program for CE construction, operation, and maintenance projects. Among other functions, these ERs provide working definitions of cultural resources (also designated "Historic Properties"), which include both prehistoric and historic entities with specified significance and historic preservation activities, one of the most important of which is protection of the resource. Although general policies regarding consideration of cultural resource protection have been formulated, more specific guidance is often needed to implement these policies via effective and efficient site protection strategies.

The nationwide need for adequate cultural resource protection has long been a pressing challenge for all Federal agencies with land or project

management and resource protection responsibilities, since a wide variety of natural and human activities combine to result in permanent loss of cultural sites and data (Nickens 1991). In recent years, the overall problem of cultural resource loss attributed to human intervention, especially that related to inadvertent actions or deliberate looting and vandalism, has received widespread interagency attention (e.g., U.S. Congress, Office of Technology Assessment (1986); U.S. General Accounting Office (1987); and Society for American Archaeology (1990)).

As a result of this increased awareness, several site protection strategies have been implemented or have been identified as being potentially useful to help control the alarming loss of irreplaceable resources. One such strategy may be designated under the general category of "site intervention," which can involve techniques such as fencing, control of access, anti-intrusion devices, site camouflage, and signing. Other site protection strategies include such things as public involvement, public education and interpretation, regulatory controls, and law enforcement and other legal controls. Little information is available pertaining to the precise conditions under which one or more of these strategies will provide protection for a cultural resource site. Moreover, a general lack of guidelines exists that provide criteria that Federal land managers can apply to select the appropriate strategy(ies) in a given case.

Since 1984, the Environmental Laboratory at the U.S. Army Engineer Waterways Experiment Station (WES) has conducted a large-scale research program entitled "Field Preservation of Cultural Sites" in an attempt to identify and evaluate suitable alternative technologies and strategies for archaeological site protection and preservation. One of the tasks of this research effort was to examine issues related to the use of signs for protecting important cultural properties from adverse effects attributed to acts of vandalism and other inadvertent activities.

The use of signs to protect cultural resources in the United States is nearly as old as the preservation concern for archaeological sites itself. Rothman (1989:74-89) notes that in the first decade following the enactment of the Antiquities Act of 1906 (Public Law 59-209; 16 U.S.C. 469-469c), rapid creation of 35 national monuments by the Departments of Agriculture, Interior, and War resulted in what he termed "warning sign preservation." In that situation, the resources intended for protection, many of which were highly significant archaeological sites or regions in the Southwest, were only protected by signs placed on their boundaries by representatives of the Government Land Office. These signs indicated that the resources belonged to the Federal government and that it was against the law to disturb them. However, the signs did not deter vandals and pothunters, who seemed oblivious to the signs. Nor did it immediately discourage many so-called professional archaeologists, who were little more than officially sanctioned collectors.

Since the early 1900s, protective signs have been placed on or adjacent to cultural sites to aid in site preservation. In recent years, some debate, more

often than not quite informal, has questioned the practice of placing signs to protect resources through modification of visitor behavior. At the basic level, the controversy revolves around the question of whether or not to erect a sign that may serve to call attention to the fact that a fragile resource is located nearby. On the other side of this argument are those who note that violators of the cultural resource protection laws are fully capable of locating such sites on their own. Signs indicating the importance of the resource and the penalties for adversely impacting it may deter individuals who were not fully aware of the seriousness of their depreciative actions. Additionally, the point has been made that obtaining a conviction under the provisions of cultural resource protection laws (such as ARPA) may be easier if the accused looted a site that had been marked by a sign with an appropriate warning message.

Other relevant issues center on questions about signs such as the following: best type of message, appearance, sign location for maximum effectiveness, number necessary, cost, maintenance, and vandalism to the signs. At a more theoretical level, considering the role of various motives leading to damaging behaviors and effective strategies for proper communication with the offending individuals or groups is important. An examination of these and other associated topics is the focus of this study.

Purposes and Objectives

Despite the long history of using signs to protect cultural sites and the debate concerning the effectiveness (or lack of it) of signing, literature on the subject virtually does not exist. Moreover, agency written guidelines available for use by cultural resource managers or specialists seeking information on proper signing of archeological sites do not exist. The norm is for an agency to simply provide one or more standard signs for use at all types of resources and in all regions.

The purpose of this study was to conduct an analysis of the pros and cons of placing interpretive and/or warning signs at or near cultural resource sites and to provide guidance for CE personnel and others in land-managing agencies involved in the signing of such resources. Two primary objectives were formulated to provide a framework from which guidelines could be developed: (a) evaluation of extant literature on past or ongoing signing projects, including both those of cultural resources and other resource protective efforts where circumstances may be similar (e.g., protection of relatively small areas for wildlife or endangered plant species) and (b) conduct of a nationwide survey of CE Field Operating Activities and other Federal and state agencies to collect data on the extent and effectiveness of current cultural resource signing efforts. The survey was also designed to assess attitudes and opinions of cultural resource managers and specialists towards various aspects of signing cultural resources.

Organization of the Report

This report describes the background, methodology, and results of the work activities undertaken to meet the defined purpose and objectives. Chapter 2 includes a brief discussion of the general problem of vandalism and looting impacts to cultural sites, followed by a summary of some pertinent literature on depreciative behavior research. Chapter 3 reviews literature relevant to the use of signs or messages to modify behavior in a resource protection mode. Chapter 4 discusses the methodology utilized in distributing the nationwide survey instrument and the procedures employed to analyze and evaluate the resultant data. The results of the nationwide survey are summarized in Chapter 5, supported by the appendices. Finally, Chapter 6 offers suggested guidelines for effective protective signing of cultural sites at CE projects and on other agency-managed lands based on the literature search and the questionnaire data.

2 Discussion of the Problem

Vandalism and Depreciative Behavior at Cultural Sites

Damage and/or loss of cultural resource sites and the attendant data by vandals or looters is one of the most destructive of various impacts that combine to bring about irreversible loss of these resources. Recently, considerable attention has been devoted to find ways to control and prevent these deleterious acts (e.g., Ehrenhard 1990; Smith and Ehrenhard 1991; Landers 1991; Society for American Archaeology 1990; and articles in Tainter and Hamre (1988)). The body of literature on general acts of vandalism to property is voluminous and continues to increase. Reviewing all that is known about vandalism and depreciative behaviors is not necessary, but a brief outline of some of the salient considerations will be useful as a background for later discussions.

In general, the social and physical aspects of vandalism activities are exceedingly complex and difficult to understand and control or prevent. "Vandalism" has been used as a label for a broad range of deviant behaviors, ranging from incidental and seemingly trivial incidents to actual criminal activity. Knopf and Dustin (1992) emphasizes that there is a difference between "depreciative behavior" and "vandalism." The difference is intent. Depreciative behaviors include any acts that detract from the social or physical environment. Most commonly, such acts are unintended negative impacts. Vandalism is more of a willful and intentional act of damage to the environment. Understanding intent is critical in preventing both forms of behavior, since different treatments are needed in each situation.

Knopf and Dustin (1992) also reviewed the abundant body of literature on the motives for vandalism behavior and identified five broad concepts. These concepts provide a conceptual framework in which to view vandalism and other depreciative acts. Keeping these points in mind when designing preventative strategies for deviant behaviors is critical. These broad concepts are as follows:

- a. The propensity to vandalize is more widely distributed throughout society than commonly thought. No socioeconomic or ethnic group is immune to vandalism tendencies.
- b. Motives for vandalism are largely goal directed, neither meaningless nor senseless.
- c. Motives for vandalism are complex and diverse. This significant concept is discussed more fully below.
- d. Different people engaging in the same kinds of vandalism can be searching for different kinds of psychological results.
- e. Vandalism is generally directed more toward public property than private property. This concept is particularly relevant to this study.

Following the research findings of others, Knopf and Dustin posit that the attraction to public property appears to be associated with several factors: (a) diffusion of ownership and the consequent diffusion of guilt since clear owners cannot be identified; (b) a lower probability of being apprehended; (c) the obvious symbol as a societal or cultural good--a symbol against which statements can be made; (d) a sense that vandalism of public property is expected, even built in the budget; and (e) belief that "someone else" will have to bear the costs of restitution rather than an immediately recognizable party.

Concerning the third concept listed above and to indicate the breadth and complexity of the problem, a list of types of vandalism and depreciative behaviors was compiled by Christiansen (1983):

- a. Category 1: Inexplicable vandalism.
 - (1) Wanton vandalism.
 - (2) Psychotic vandalism.
 - (3) Inebriate vandalism.
- b. Category 2: Deliberate vandalism.
 - (1) Vandalism due to anger or frustration.
 - (2) Vindictive vandalism.
 - (3) Malicious vandalism.
 - (4) Vandalism for gain.
 - (a) Predatory vandalism.

- (b) Instrumental vandalism.
- (c) Acquisitive vandalism.
- (5) Directed vandalism.
- (6) Expedient vandalism.
- (7) Tactical vandalism.
- c. Category 3: Incidental vandalism.
 - (1) Play vandalism.
 - (2) Inquisitive vandalism.
 - (3) Imitative vandalism.
 - (4) Boredom vandalism.
 - (5) Negligent vandalism.
- d. Category 4: Institutionalized vandalism.
 - (1) Licensed vandalism.
 - (2) Vandalism as ritual.
 - (3) Sanctioned vandalism.

While some of these types of behavior do not occur on all public projects, examples of such activities can be found that fall into a surprisingly large number of categories. For example, Williams (1978) conducted a survey of cultural resources vandalism incidents as reported by resource managers at Federal and state agency recreation areas in several states in the Rocky Mountain West. Williams listed the following reported activities (arranged in decreasing order by reported absolute frequency):

- a. Excavation (digging, pothunting, and use of heavy machinery).
- b. Carving, scratching, chipping, and general defacement.
- c. Surface collection of artifacts (especially lithic artifacts).
- d. Removing, shooting at, painting, chalking, and making casts and tracings of rock art.
- e. Theft of artifacts from structures.

- f.* Stripping weathered boards or other timbers.
- g.* Removing part or all of a structure or causing structural damage.
- h.* Dismantling; general destruction of structure (but apparently no removal).
- i.* Arson.
- j.* Climbing or walking on resources.
- k.* Building new roads over and using modern vehicles on historic roads; off-road recreational use.
- l.* Rearrangement of or relocating of resources.
- m.* Breaking of artifacts, objects, and windows.
- n.* Knocking structures over.
- o.* Use as firewood.
- p.* Throwing rocks into excavated ruin.
- q.* Handling and touching.

A wide variety of behaviors have to be addressed to prevent loss of significant cultural resources. Unfortunately, a majority of these behaviors can be defined as being willful vandalism, meaning that they are among the most damaging to the resources themselves and often very difficult to control.

One of the primary factors requiring review is crime prevention. Federal and state laws and regulations exist that can be used as a basis for arrest and prosecution of illegal activities aimed towards cultural resources. In addition, several other perspectives need to be examined. These include topics such as the following: (a) understanding cultural resources looting and vandalism behavior; (b) assessment of public attitudes towards looting and vandalism; (c) identification of artifact trafficking networks; (d) determination of site risk factors; (e) information on the actual extent and distribution of such activities; (f) improved cultural resources protection training; and (g) implementation of successful site protection programs.

Generally speaking, two approaches can be utilized by managers for resource protection: direct and indirect. Direct approaches attempt to manage behavior through strict enforcement of rules (e.g., patrols, limiting access, barriers, and regulatory controls or prosecution of violators) that essentially regulate visitor or land user actions. Direct controls are often costly but necessary to protect resources from willful or deliberate depreciative behavior such as that of the commercial looter or the malicious vandal.

Indirect approaches, however, are aimed at influencing and changing behavior voluntarily rather than forcing adherence to rules (Gramann, Christensen, and Vander Stoep 1988). A widely used indirect approach is an interpretive and educational program designed to increase public involvement or awareness in resource protection. Generally, broad-based educational or interpretive efforts are oriented at promoting long-term changes in public values toward a particular resource. Other more localized indirect management strategies can be implemented to effect immediate changes of behavior of visitors in direct contact with the resource itself. The role that effective signs can play in resource protection falls more into this category, although signs certainly have value in more generalized educational/interpretive programs. To ensure that the protective strategy works in this case, presenting the proper message and message format to the target audience(s) is vital.

Depreciative Behavior Research

General

Motivations and behaviors leading to problems in cultural site protection are diverse. They range from the professional or commercial looter whose profit motive greatly outweighs concern for the well-being of the resource to wanton or malicious acts that defy explanation. Between these two extremes are many activities that, on a case by case basis, cause less damage but combine over time to result in extreme loss of the resource base. Included are various casual actions by those who simply do not fully realize the detrimental effects of their impacting activities.

Given this diversity of motivations, no single resource protection strategy exists that can or will prevent all forms of depreciative behavior and vandalism. The best that managers can expect is to minimize or reduce such activities to the best of their abilities and resources. To be able to target resource protection strategies to match the intended audience for optimal success is important.

Few studies are available that profile individuals and groups who perpetrate various types of cultural resource vandalism, and little synthesized data on national or regional public attitudes towards cultural resources and associated protection issues exist. Recent investigations of depreciative behavior and vandalism associated with protection of natural resources in recreation areas managed by various agencies can be used to highlight issues related to cultural resource protection from visitor-induced damage. Much of the conceptual basis of this research can be directly applied to similar problems with cultural resource protection, particularly for providing a framework in which to examine the use of signs in a resource protection mode. Much of the following discussion is derived from the extensive work undertaken by James Gramann of Texas A&M University and his colleagues. They have examined causes of depreciative behavior and vandalism in outdoor recreational areas, as well as management procedures for reducing the detrimental effects of such behavior

(cf., Gramann and Vander Stoep (1986), (1987); Gramann, Christensen, Vander Stoep (1988); Gramann, Stewart, and Kim (1989); and Kim, Gramann, and Sell (1991)).

Prosocial behavior theory and depreciative behavior

Several attempts have been made to classify or categorize both causes and effects of cultural resources vandalism. To design and implement an effective resource protection program, considering both causes and effects is necessary. However, exclusive treatment of effects as a reaction to the problem will not necessarily end the behavior leading to vandalism acts. Instead, the causes of the vandalism need to be identified and analyzed. To address this need, Gramann and his associates have produced a conceptual framework grounded in social psychology. Specifically, they employ prosocial behavior theory to produce a theoretical foundation for recommending appropriate indirect resource protection techniques in parks, forests, reservoirs, and similar resource areas (see especially Gramann and Vander Stoep (1987)). This paradigm lends itself well to the topics under discussion and deserves brief review.

The theoretical basis for this framework lies in understanding prosocial behavior and its relationship to resource protection. Gramann (1990:3-4) succinctly defines prosocial behavior in the following manner:

... voluntary helping behavior that is not motivated by the expectation of material rewards, or the fear of probable punishment for not helping. Obeying protective regulations can be a form of prosocial behavior in that such actions are unlikely to return material rewards or, in unsupervised areas, be associated with high probabilities of punishment if regulations are ignored. In general, psychological research on prosocial behavior shows that helping actions can be induced by making people aware of the negative consequences for others (or resources) of not helping, and by increasing people's feelings of *responsibility* to assist in specific situations. The latter is another way of stating that prosocial behavior may be promoted by reducing people's ability to *deny* that they have a reasonable responsibility to help.

In the past, prosocial behavior has been used to explain why people do or do not help others who are in need. In their comprehensive treatment of prosocial behavior and natural resource protection, Gramann and Vander Stoep (1987) offers a convincing argument that this theory and its related issues can be extended to encompass human-resource relationships as well.

Based on a review of prosocial behavior theory, along with examining past research on depreciative behavior in outdoor recreation areas, Gramann and Vander Stoep (1987) defined six major causes of depreciative behavior as they relate to resource protection. The first of these is the "unintentional" violation of protective rules. In this instance, recreationalists (such as younger visitors

or infrequent visitors to an area) may damage cultural or natural resources simply because they are unaware that specific protective regulations exist, or they are unfamiliar with expected behavior in an area.

A second type of violation is defined as a "releaser-cue" violation. This occurs when the depreciative actions of others, or the traces of these actions, release normal inhibitions against particular behavior. In the case of cultural resource protection, Gramann (1990:4) observes the following: "Collecting artifacts at a site that obviously has been disturbed by previous diggers is one example. The physical cue presented by evident ground disturbance may suggest such activity, if not legal, at least may be tolerated or go undetected by authorities. Even more extreme, in the case of visitors unfamiliar with regulations, the cue may be interpreted as an indication that digging sites is a legally permitted behavior."

A third category includes adverse impacts to resources resulting from "uninformed" violations. These include actions that are undertaken without awareness of their damaging consequences. Some visitors may collect seemingly nondescript and plentiful artifacts or otherwise damage cultural sites because they are simply uninformed about the negative impact to the historic and archaeological record of such activities.

The fourth type of damage designated by Gramann and Vander Stoep are "responsibility-denial" violations. In this instance, visitors may be aware that a prohibitive regulation exists and even support it in principle. They may believe that obeying it in a particular situation is an unreasonable or impossible constraint on their behavior. For example, regulations against artifact collecting at a lake project in which operational functions of the project itself cause damage (e.g., shoreline erosion of intact cultural deposits) may be viewed by visitors and local residents as an unreasonable restriction. Also, the argument can be and has been advanced that collection of exposed and eroding artifacts at least protects the items from impending loss stemming from the land manager's own actions. In this case, a psychological context is created in which violators are able to more easily deny that they have a reasonable responsibility to comply with protective regulations (Gramann 1990).

A fifth type of resource impact can result from "status-confirming" violations in which infractions are triggered by social pressure from important reference groups. In this instance, if one member of a group violates a regulation, peer or social pressure may cause others to conform to reinforce their status as accepted group members.

The final type of destruction described by Gramann and Vander Stoep incorporates a variety of "willful" violations. Willful violators are fully aware that their activities do not conform to regulation, but they persist because they are pursuing goals that are in fundamental conflict with resource protection. Illegal commercial excavation of archaeological sites to accumulate artifacts for sale is one example, as is the serious artifact collector who covets his/her private collection to the point of refusing to accept public ownership of

materials. The basic difference between willful violators and the other types of violators in the Gramann-Vander Stoep scheme is similar to the distinction commonly drawn between the "hard-core" and "casual" artifact collector in the cultural resource management literature (Gramann 1990).

Reduction of resource damage from depreciative behavior

Following the paradigm presented by Gramann and Vander Stoep (1987), some examples of indirect management approaches to reducing depreciative behavior are described below together with their application to the different types of rule violations defined previously. A certain amount of synergism between approaches designed for one type of violator and the other types of violations should be noted. In other words, approaches aimed at one target audience may well have some effect on other types of violations, and, indeed, a combination of approaches is often the superior management strategy for satisfactory protection of the resource.

Unintentional violations. Unintentional violations occur because visitors are simply unaware of the protective regulations for the resource. Thus, the most successful strategy for reducing such damage is effective communication of the rules. The key here is to increase knowledge of rules among the target population least likely to have this knowledge, utilizing the most appropriate form(s) of communication. It is critical that the "target population" include those who are committing infractions, as distinguished from those members of the general population who simply have no knowledge of the rules.

Releasor-cue violations. The critical element in the management strategy to reduce or eliminate this type of depreciative behavior is simply removing the cues that prompt the infractions. In the case of cultural resource protection, this may involve removing graffiti from rock art sites or site rehabilitation at looted sites (e.g., filling in potholes or camouflaging the site to remove temptation). Additionally, the use of educational messages that indicate such examples of past violations are not to be taken as a signal for depreciative behavior. Here again, effective signing is among those strategies that could be used for this purpose.

Uninformed violations. Since uninformed violations occur when people are not aware of the effects of their actions, the obvious solution is a public education and awareness effort aimed at making people conscious of the negative consequences of their acts for others and for the resource. In many cases, depreciative acts may be reduced considerably by devising effective "awareness-of-consequences" messages, which can embody either a "moral appeal" or a "fear appeal," or a combination of the two persuasive formats. Moral appeals highlight the potential for harm to others or the resource, while fear appeals describe potential harm to the proponent who engages in a particular activity. Here, descriptive sign messages are necessary that incorporate both the potential for injurious consequences to a fragile and irreplaceable historical and archeological record and the legal ramifications associated with

violation of Federal cultural resource protection laws and/or agency regulations.

Responsibility-denial violations. The most effective management strategy for preventing this type of rule violation is to increase visitors' feelings of personal responsibility to help in resource protection. Many successful public involvement programs (e.g., site adoption or involvement of citizens in archeological investigations) have been implemented throughout the country by various agencies and entities. Programs such as these serve to provide reasonable alternatives to depreciative behavior by incorporating laymen in the cultural resource protection process.

Another management strategy that may also have some applicability here is the "deflection to an acceptable alternative" approach (i.e., sacrifice sites or areas). In essence, this is another form of providing a reasonable alternative to a normally prohibited action. However, this strategy may be more palatable for certain natural resources, such as a log to carve on or a rock for graffiti, than actual historic and archeological resources. However, there have been cases where cultural resources have been treated in this manner to protect more significant or better preserved examples, such as allowing visitation at one resource while closing access to a similar one. Often impacts from visitation must be mitigated, leading to site stabilization and maintenance considerations. Some prehistoric architectural sites in the West have become virtual concrete replications of their former pristine state through this process. Similarly, sites that have completely lost their contextual integrity because of either natural or human-induced causes are often treated as "sacrifices" since they are not managed in a resource protection mode. In these instances, signs could profitably be used in roles to explain why such resources are being managed in the way they are and why it is imperative that more pristine sites be protected from depreciative behavior and vandalism.

Status-confirming violations. Protection of resources from violations of this type requires strategies designed to change group behavior, since individuals face what is often powerful peer pressure to conform to group values. Again, public participation programs such as site adoption efforts may promote group identification with protective patterns rather than destructive ones. As Gramann and Vander Stoep (1987) observed, simply communicating rules or awareness-of-consequences messages will probably not work in this case, but combining communication messages with group-oriented programs may reduce depreciative behavior noticeably.

Gramann and Vander Stoep (1986) addressed this type of violation at Shiloh National Military Park in southwestern Tennessee, where damage to the park's monuments, statues, and cannons was partially attributed to inappropriate behavior of the large number of organized youth groups that hike through the park each year. During a 12-weekend experiment, youth groups were given three different formats of a personally delivered message designed to reduce the depreciative behavior prior to their hikes. Monitoring of the groups' subsequent activities during the hikes indicated that the

messages greatly reduced violations, sometimes completely. The most effective message was found to be a simple, short awareness-of-consequence appeal, outlining how certain behaviors damaged the cultural resources. Also successful to a lesser extent was the same message coupled with either a group participation treatment (observing and noting vandalism on a form during the activity) or incorporation of a group incentive award (e.g., a certificate).

In another study, Gramann and his associates (Gramann, Stewart, and Kim 1989) measured visitors' opinions of the effectiveness of existing indirect techniques used by the National Park Service to reduce depreciative behavior causing damage to geological formations at Carlsbad Caverns National Park in southeastern New Mexico. These techniques included an interpretive talk containing an awareness-of-consequences message and deflection to an acceptable alternative--in this case, allowing visitors to touch replicas of the formations. This analysis indicated that, in the opinion of visitors, both of these techniques were effective in reducing depreciative behavior.

Willful violations. Indirect management resource protection strategies will have little immediate influence on deliberate acts of depreciative behavior. These perpetrators almost always have well-defined goals that do not include public resource protection, thereby requiring direct management techniques to address the problem. However, it would seem that, over time, successes with indirect strategies will have a spillover effect on willful violations, particularly as public opinion sways toward the need for protection of a rapidly disappearing resource base.

Knopf and Dustin (1992) suggests that even when forced-compliance mechanisms are necessary, a hierarchy of treatments can be employed with direct intervention through law enforcement and punishment being used as a final option. They argue, based on a review of criminology and sociology literature, that some productive avenues for establishing compliance with desired norms of behavior include the following: (a) instilling moral obligation, (b) promoting identification with groups possessing more desired norms, and (c) promoting reward opportunities before resorting to punishment.

Knopf and Dustin also note that if direct coercion methods must be used, they must be judged as legitimate and effective, or they may create even greater reactionary levels of vandalism. These authors observe (following McGuire (1969)) that five conditions must be met before vandals will be influenced by direct control treatment. First, it must be clear to vandals which behaviors are subject to punishment and which are not. Second, the punishment must be severe enough to make the attractiveness of compliance overshadow the attractiveness of noncompliance. Third, potential vandals must perceive that administrators of a coercive control program can indeed impose the punishments. Fourth, potential vandals must perceive that program administrators do care about conformity with rules and regulations and care enough to use punishments consistently to bring about compliance. Fifth, potential vandals must believe that the administrators are able to observe them if they commit the prohibited behavior.

Summary

Acts of vandalism and other depreciative behaviors create serious impacts to fragile cultural resource sites found on Federal lands across the country. In most cases, managers have little information on the group(s) generating the detrimental activities, and there has been almost no attempt to acquire empirical data on the associated motives. Research involving such things as beliefs, attitudes, intentions, and behaviors involves intricate theoretical and methodological approaches, particularly when attempting to predict and modify both individual and group social behaviors. The goal here has not been to provide a comprehensive review of all such research, but rather to provide a relevant context in which to address issues related to the use of signs in protecting cultural resource sites.

As briefly outlined above, prosocial behavior theory appears to meet this need, especially as it has been applied to assessing depreciative behavior and vandalism and identifying strategies to reduce such acts. When confronted with vandalism of archaeological or historical sites on CE property, achieving a working understanding of the types of violations taking place is necessary. In all likelihood, several motivating factors are involved. The paradigm espoused by Gramann and his colleagues provides a suitable framework in which to establish this critical baseline information. Without such data, it is difficult to effectively incorporate use of signs into a resource protection program and to be able to evaluate their effectiveness. Importantly, this framework also provides an indication of the types of messages that will need to be conveyed to the different target audiences responsible for the violations.

3 Signs and Sign Messages

Introduction

In Chapter 2, a setting was presented for viewing cultural resource protection problems resulting from depreciative behavior and vandalism. One of the strategies for reducing various forms of antisocial behavior directed toward these resources is reaching violators with messages stressing both regulatory and preservation-oriented needs. Informing and educating past and/or potential violators that their activities are illegal and detrimental to the archaeological and historical record is necessary. At the same time, it is imperative that the public understand the importance of the resource and be aware of its endangered state. Consequently, the messages that need to be imparted overlap between purely regulatory and educational or interpretive functions. When examining such messages from a cultural resource protection perspective, clearly separating the need to convey rules and associated penalties and the necessity to explain why the rules are important is often difficult, given the nature and sensitivity of the resource requiring protection.

In this chapter of the report, the role that signs and sign messages play in resource protection will be reviewed. First the potential of persuasive communication to reduce impacts to resources, including cultural sites, is presented, followed by a survey of relevant literature that discusses the use of signs to modify behavior in a resource protection context. The literature review covers the use of signs to protect cultural resources and other sensitive resources, vandalism of signs, and general guidelines available for implementing protective sign programs.

Persuasive Communication

Before looking specifically at signs and sign messages in a resource protection mode, briefly examining persuasive communication is useful, as it provides a basic framework for later discussion. In the discipline of social psychology, an extensive body of literature on persuasive communication theory and its application to various applied fields exists. In some of these fields, particularly those that include either natural or cultural resource

management, the solution suggested to a management problem, including resource vandalism, is communication or education (e.g., Society for American Archaeology (1990) and various articles in Smith and Ehrenhard (1991)). In that persuasive communication involves the use of different kinds of media and messages to influence attitudes and behavior (Ajzen and Fishbein 1980), cultural resource managers need to examine this literature and its relevance to preventing loss of important cultural resources, particularly in the realm of effectively communicating resource protection concerns.

Considerable research has been published that examines persuasive communication at both theoretical and applied levels. Of particular interest are recent endeavors looking at applications related to resource management. Much of this attention has been directed at reducing impacts to natural resources and resolving visitor conflicts at public recreation areas (e.g., various articles in Manfredi (1992)); however, many of the approaches and findings seem equally applicable to cultural resource protection vandalism problems.

Some of the basic concepts of persuasive communication are relevant to the discussion of signs and sign messages. These concepts encompass the topics of the persuasion context and conceptual routes to persuasion. To understand the persuasion context, Ajzen (1992) observes that several aspects of communication exist that need to be considered, including source, receiver, channel, message, and situational factors. When designing an effective communication program, being concerned with the characteristics of both the communicator and the receiver or audience is needed, as well as being concerned with the means used to communicate the message and the message features. Understanding the situational variables in which the communication is effected is also important.

Concerning conceptual routes to persuasion, persuasive communication researchers categorize such routes into three approaches: (a) applied behavior analysis, (b) the central route to persuasion, and (c) the peripheral route to persuasion (for a concise review of these terms, see Roggenbuck (1992)). In very general terms, the first route involves a focus on overt behavior rather than changing beliefs, attitudes, values, or intentions. The goal is to either increase the frequency of desired behavior or decrease the frequency of undesired behavior by the use of behavior prompts, manipulation of the environment, or rewards and punishments.

The central route to persuasion is a popular approach to attitude and behavior change. In this instance, the receiver is given a carefully crafted message, assuming that the message will be accepted as making good sense, and the recipient will act accordingly. A further assumption of this approach is that the learned behavior can be expected to recur in the future, because the beliefs and attitudes that create the behavior have been internalized.

The final route, the peripheral one, contrasts with the central route in that it is characterized by a minimal or complete absence of attention by the

recipient to the content of the message, by little thought about the message content, and by little integration of the issue-relevant arguments into the recipient's belief and value system. Basically, this route recognizes that some recipients may not respond to persuasive messages for a variety of reasons, and thus the message has only short-term value for resource protection. In this case, often the source of the message assumes the most importance. Put another way, the message is not of consequence but rather who says it that counts--for example, a recognized expert or authority or even a well-known celebrity.

The concepts associated with persuasive communication can be used with the prosocial behavior approach to understanding apparent motives for depreciative acts as discussed in Chapter 2. Following Roggenbuck's (1992) analysis, the ensuing typology can be constructed for depreciative acts and the potential of persuasion for reducing each type of violation.

Type of behavior (Gramann and Vander Stoep 1987)	Example	Persuasion's potential degree of effectiveness
Unintentional	Lean against ancient walls Camp on archeological site	High
Releasor-cue	Collecting artifacts at a previously disturbed site Adding graffiti to rock art panel	Low
Uninformed	Collecting artifacts Touching rock art	Very high
Responsibility- denial	Agency is not protecting sites from erosion, so it is OK to collect artifacts being lost	Moderate
Status- conforming	Social or peer pressure to perform depreciative acts	None
Willful violations	Pothunting archeological sites for personal or financial gain	Low

Since unintentional and uninformed behaviors result from ignorance of laws or rules or lack of awareness of the potential negative consequences, effective persuasive messages for reducing these types of behaviors should be high to very high. With the releasor-cue violation, persuasion can only work indirectly by reducing the frequency of occurrence of the original violation. As long as the releasor-cue is present, persuasive messages will likely have

little overall effect. Since responsibility-denial violations occur when visitors generally believe an action is wrong but do not assume moral responsibility in specific situations, persuasive messages might have a moderate success rate, because violators are not inherently hostile. The use of persuasive messages to reduce violations of the willful or status-conforming types are likely to have a low or no success rate, since the violators have strong personal goals in mind. Here, the applied behavior analysis route will achieve greater success by punishing inappropriate behavior.

Persuasive communication and sign messages: an example

To demonstrate that a linkage can be made between persuasive communication approaches and mitigation of depreciative behaviors, a hypothetical example first provided by Dustin (1985) and later expanded upon by Christensen and Dustin (1986) can be examined. In that example, the authors rely heavily on a framework of sequential stages of moral development first developed by psychologist Lawrence Kohlberg in the mid 1970s. While Kohlberg originally outlined six stages of human moral development that individuals pass through, Dustin (1985) found that these stages nicely equate to people's moral choices that must be made in recreational should and should not situations. These stages and examples of actual sign messages that correspond to the stages are briefly described below; readers interested in a fuller discussion of these ideas are referred to the original articles.

Stage 1. Stage 1 morality is governed solely by the fear of punishment. At this stage of moral development, the reasons of an agencies rules and regulations are beyond comprehension.

Sign Example:

Littering is Prohibited - \$50 Fine
or
No Trespassing - Violators Will be Prosecuted

Stage 2. Stage 2 morality is a step up from simple fear of punishment. Punishment is still a concern, but it is only one variable in a larger moral analysis. The concern here is maximizing pleasure while minimizing pain. The bottom line is "What's in it for me?" Here the sign message would communicate the personal cost and benefits that come with adherence to the proscribed rules.

Sign Example:

PACK YOUR TRASH BACK
Limited funds require that we either

1. Close the area, or
2. Keep it open and depend on YOU to "pick up" the area and haul your trash home!

PLEASE COOPERATE

Stage 3. Stage 3 morality is a leap upward in moral reasoning. Here, what others think is more important than egocentric concerns. Personal sacrifice for the good of the group is placed above one's own needs. Consequently, the message in this case must emphasize how one's own behavior will affect others.

Sign Example:

THANKS FOR HELPING ME SPREAD THE WORD
Give a hoot! Don't pollute.
Woodsy Owl

Stage 4. Stage 4 morality is a more abstract, general application of the previous stage's thinking. The emphasis is on the good of the larger society, e.g., the morality of duty and loyalty to country.

Sign Example:

America - Respect Your Heritage

Stage 5. Stage 5 morality shifts from the social perspective back to the individual perspective, but it is not the egocentric perspective that characterizes the first two stages. Here, the individual internalizes responsibility for the moral consequences of behavior based on thoughtful analysis of the personal and social dimensions associated with the issue at hand. In this situation, the message must describe both the impacts and consequences of the behavior and give enough information to allow the individual to make an educated choice.

Sign Example:

WELCOME
YOU ARE ABOUT TO ENTER A VERY SPECIAL PLACE
So that everyone may enjoy the unique beauty of this land,
please, remember that ... camping away
from lakes, other camps, and under cover
of trees increases the sense of solitude and protects fragile
shorelines and meadows.
Using a backpack stove conserves firewood and minimizes
soil damage.
Burying human waste and unsightly toilet paper in a hole about
8 in.¹ deep will help natural decomposition processes.
Washing yourself and dishes and cleaning fish away from
shorelines ensures that you and the next visitor will have
clean water.
Leaving all plants, shrubs, trees, and standing snags
undisturbed preserves a sense of naturalness free from
the scars of human activity.
ENJOY YOUR VISIT

Stage 6. Stage 6 is the culmination of human moral development, which is living one's life in a way that fosters self-respect. It is characterized by maturity and acceptance of responsibility for one's actions. Under this situation, an effective message must communicate how compliance with the behavioral proscription characterizes an ethically principled person.

Sign Example:

THERE WAS A TIME WHEN PEOPLE ONLY SHOT PICTURES
Over the past three decades, use of our Nation's forests has
surged dramatically.
But so has vandalism
Signs blasted apart. Trees, rocks and campsites defaced. Public
facilities destroyed.
What will it take to turn the tide against vandalism?
Simple determination.
A commitment to ourselves. And to our young people to help them
appreciate the forest for what it really is. A priceless and
unparalleled gift.
Vandalism. It's time to draw the line.

If it can in fact be demonstrated that visitors and recreationalists who are responsible for various forms of depreciative behaviors and vandalism do fall into these categories, being aware of the kinds of messages that will bring about desired behavioral changes would be very useful. However, it is

¹ A table of factors for converting non-SI units of measurement to SI (metric) units is presented on page viii.

possible that message appeals directed, both individually and collectively, to all levels of moral reasoning might reach these people in ways meaningful to them.

In his 1985 article, Dustin uses an example of a prehistoric Anasazi pueblo, located along the Colorado River at the bottom of the Grand Canyon, to demonstrate what form this kind of message might take. The ruin is fenced and has a simple sign warning visitors to not enter the fragile site. But there is nothing else to keep the curious from encroaching on the 800-year-old ruin. After assessing this moral dilemma in terms of Kohlberg's six stages of moral development, he offers the following six-part message that includes something for people at all levels of moral development:

**DO NOT GO BEYOND THIS SIGN
VIOLATORS WILL BE PROSECUTED**
You are standing before a gift of the ages.
It is a priceless reminder of our human heritage,
of our link to the past. This pueblo is fragile
and irreplaceable. Enjoy it from a distance so that
your children and your children's children can enjoy
this gift well. They and your ancestors, the Anasazi,
will be forever grateful for your concern for the future
and respect for the past.

Signs

One of the more common techniques used to communicate messages to others is the sign. As all are aware, signs serve many roles within society. In the case of a Federal agency like the CE, which has a responsibility to communicate clearly and professionally with the public it serves at nearly 500 projects and facilities across the country, the effective use of signs to guide, inform, and protect visitors and employees is critical to good project management. Protection of various natural and cultural resources is another area where effective signs and messages play an integral role in management functions.

Government agencies typically have two categories of signs: administrative signs and interpretive signs. Project identification, directional, recreation area, traffic, boundary, and regulatory signs are examples of administrative signs. Commonly, these kinds of signs are standardized in terms of various characteristics such as format, message, and placement (U.S. Army Corps of Engineers 1985). Interpretive signs, however, provide informative and educational information on the natural processes, historical events, or physical features of an area. By necessity, interpretive signs are more closely tied to the feature or situation being described and often require broader design and sign layout parameters than administrative signs.

Within the realm of interpretation as a management tool, several methods are available that can be used to satisfy different goals, including recreation benefits, resource protection, visitor protection, and law enforcement. Signs are but one type of nonpersonal or unattended technique that can be employed to meet these goals. When compared with other similar media (e.g., audio devices, interpretive publications, self-guided trails or auto tours, and exhibits), signs have a number of advantages and disadvantages (McIntosh 1982), many of which also apply to administrative signs.

Advantages

First, interpretive signs can be relatively inexpensive; often they can be designed, built, and installed by "in-house" personnel. Second, the operation and maintenance costs of signs are usually quite low provided that the signs are well designed and constructed. Third, signs are self-pacing, meaning that readers can go at their own speed and read only those in which they are interested. Fourth, signs are in place and provide information at all times. Fifth, nicely designed signs not only provide information, but can serve as captions or titles to the visitor's own slide program.

Disadvantages

First, a sign is passive and requires both time and mental effort on the part of the reader to receive the message. Second, interpretation using signs is a one-way communication. Visitors cannot ask questions to acquire additional information or clarification. Third, the sign may draw attention to a fragile or perishable resource that may be impacted through depreciative behavior on the part of visitors. Fourth, signs are vulnerable to damage and deterioration by weathering, decay, wildlife, and vandalism.

The Use of Signs in Resource Protection

To better understand the role that signs and messages have played in resource protection, a review of some of the relevant literature was undertaken. In general, this survey revealed that little available information dealing with the subject exists, especially as it relates to protection of cultural resources. Particularly lacking is follow-up information on the actual effectiveness of various protective sign programs. However, by examining the meager literature that is available, many bits of information can be gleaned that will help address the issue of preparing guidelines for successful signing efforts. The literature reviewed can be categorized into four broadly defined topical areas: (a) signs and cultural resources, (b) signs and other resources, (c) vandalism of signs, and (d) general guidelines for signs.

Signs and cultural resources

Despite the long history of placing signs to protect archaeological and historic properties, very few substantive data are available that indicate whether or not signs really work, much less which sign messages will function best in what situations or with which target audiences. It is interesting to note here at the outset that each of the studies summarized below involves a positive viewpoint on the question of whether or not the use of signs are effective in reducing impacts. Although the literature search is by no means exhaustive, published data indicating that signs do not work were not located. Also of interest was the fact that two small, but widely separated by geography, groupings of information were uncovered, one from the United States and the other from Australia. Five cases from the United States are summarized below, followed by the useful information from Australia. The first two examples from the United States incorporate the views of those for whom the sign messages are intended to reach, and the other three deal with limited follow-up information on specific sign programs.

As part of a study commissioned by the Bureau of Land Management (BLM) to look at vandalism to prehistoric sites in southwestern Colorado, interviews were conducted with known relic collectors in the area (Nickens, Larralde, and Tucker 1981). The questionnaire, completed by 20 respondents, included three questions designed to gather information about the collector's perceptions of the use of signs as a protective measure. According to the responses, 85 percent had seen signs (Figure 1) indicating that collecting or digging of artifacts was illegal on public lands. Of these, 50 percent said that it had discouraged them in their activities, and only 25 percent indicated that the presence of the sign made them aware of ruins about which they had not known. The consensus from this small and geographically limited sample was that the posting of signs had promoted public awareness of the law and probably aided in its enforcement. The indication was that signs do not deter the serious local collector, but they will probably have some positive effect on new residents or visitors in the area.

At Wupatki National Monument, an area in northeastern Arizona containing a large prehistoric ruin with a nearby visitor center and several outlying archeological sites, a recent ethnographic field school studied visitor behavior patterns (Trotter 1989). Part of this study was to determine visitor reactions to and compliance with information and interpretive signs at the main ruin and at the remote sites where uniformed personnel presence is limited. One finding was that children tend to take signs quite literally. For example, when interviewed after he had jumped three walls and was climbing up into the middle of the ruin, one boy observed that he had strictly obeyed the sign that said "Please stay off the walls." He had carefully jumped the walls and not touched them. When asked to get off a wall, another child remarked that the sign that said to stay off the wall was in a different part of the ruin; she felt that the sign did not apply to this particular place, or a sign would be on every wall. Since the visitation pattern to this site includes a significant

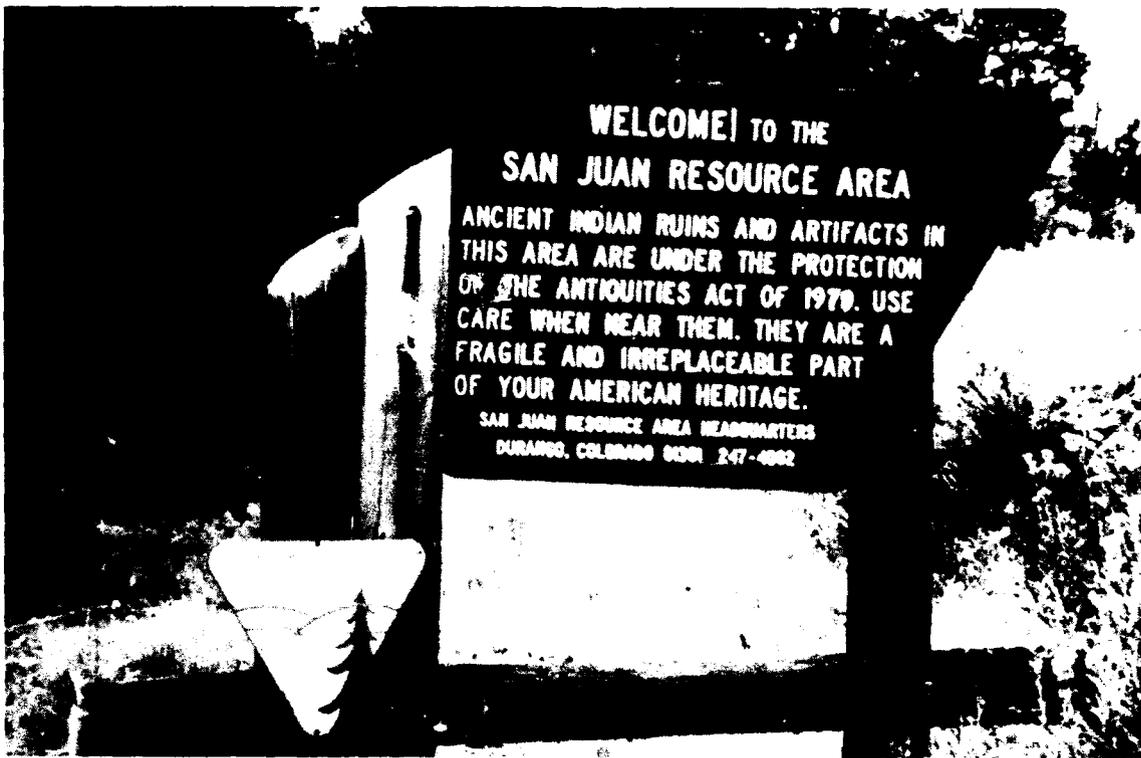


Figure 1. Sign along access road to BLM lands in southwestern Colorado

number of families with children, it is apparent that the simple sign message is easily misinterpreted or taken in a manipulative vein.

At the outlying Wupatki sites, visitor behavior has to be controlled by more passive social control mechanisms. Signs saying "Please stay off the Walls" and "Please do not pick up pottery" appear to work well, but they work best when associated with formal trails. Trails with numbered markers and a corresponding trail guide helped control visitor behavior better than signs. With regard to signs themselves, visitors showed a preference for smaller signs with short messages. Large interpretive signs were often ignored or actively disliked. Comments about them included a dislike of having to crowd around a sign with other groups and the difficulty of reading the sign's message in the sun's glare. When questioned, visitors indicated a preference for information dissemination via brochure rather than lengthy sign messages. The fact that the signs being negatively viewed in this case are purely interpretive in nature and not protective should be emphasized. Nonetheless, these results demonstrate a caveat for managers that too much information, regardless of the topic, may result in disregard for it.

During an evaluation of several archeological site protection measures at Fort Hood, Texas, where intensive military training exercises create significant impacts to resources, two of the strategies included the use of signs to mitigate the effects of the activities (Carlson and Briuer 1986). The signs,

however, did not include a standard protective message since they were incorporated into the training mission. In one strategy, bogus signs warning of some hazard such as mines, nuclear radiation, or chemical and biological contamination were combined with barriers of concertina wire (Figure 2) or brush to protect the boundaries of archaeological sites from tank maneuvers. In the other situation, signs simply stating "Off Limits" were placed on conventional barbed wire fences (Figure 3), and a letter was sent to all training indicating that these areas were to be avoided. Thus, in neither instance were personnel told that the signs actually protected archaeological resources. Prior to implementing the protective measures, the sites were mapped, and surface artifacts and features were recorded in detail.

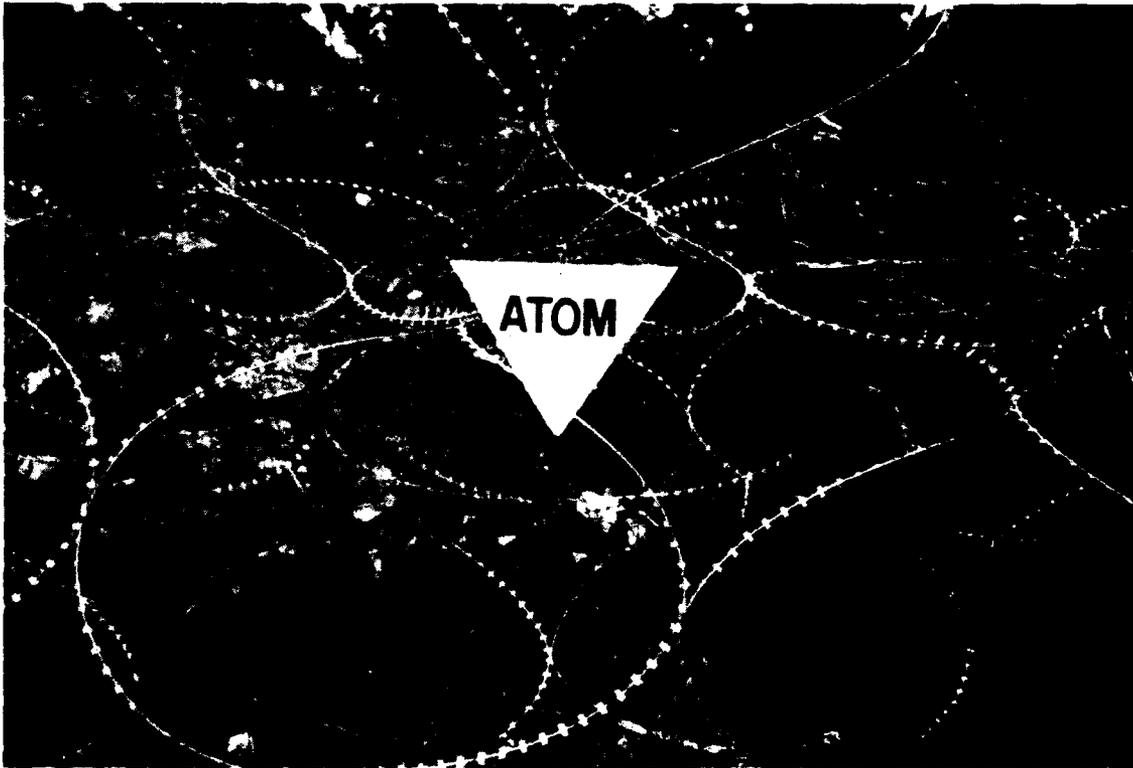


Figure 2. Bogus sign and concertina wire protecting an archaeological site at Fort Hood. This protection measure is designed to be used in conjunction with military training exercises

Revisitation of the protected sites 2 years later by monitoring field crews attempted to detect change in the condition of the sites and to evaluate the effectiveness of the various protection measures, including the signing efforts. At the time of the revisitation, the overall results were largely inconclusive, because of a small sample and brief period of elapsed time; however, some observations were possible. The measure involving the use of bogus signs to indicate hazardous conditions seemed effective; little evidence of vandalism or damage from military training activities was visible. Whether the signs or the additional protective barriers or the two features in combination were



Figure 3. Off-limits sign on conventional wire fence protecting an archaeological site at Fort Hood

responsible could not be determined. However, one observation was that the signs were routinely removed and required periodic replacement. The protected sites marked with the "Off Limits" sign were more likely to be damaged by these activities. The reasons for this pattern were not apparent. Obviously, these approaches directly served the needs of a military installation with particular kinds of training activities. However, cultural resource managers and specialists should be able to apply the same concept in other situations, such as restricting access to a significant archaeological site via signs indicating an alternative reason (e.g., a waterfowl nesting area with a conventional wire fence).

Another recent example of the use of signs in a protective situation against vandalism and looting of archeological sites is found in the U.S. Army Engineer District, Portland (Freed 1990). There, a program was initiated at several sites located around the shorelines of four lake projects that included placing warning signs of three types both on sites and in general locations such as access roads (Figure 4). Basically, the signs included a message that such activities were illegal, cited the appropriate Federal and state laws, listed the penalty, and stated that the sites were under surveillance. Along with the sign placement, the overall approach also included increased patrols and site monitoring, coordination with law enforcement agencies, development of a



Figure 4. Corps of Engineers, Portland District, resource protection sign placed along access road

standard operating procedure for field personnel encountering violators, and training for law enforcement and project personnel.

A total of 37 signs were placed in various locations between 1984 and 1989. As of 1990, the program appeared to be fairly successful, although the results are short-term. Only six of the signs had been vandalized (two pulled out of the ground, two stolen, one bent in half, and one destroyed by bullets). One of the vandalized signs had the following message scratched on it: "It is too late. I already got all the good stuff." Fortunately, this response was not true for the resource, and it at least indicates that the vandals are reading the signs.

Of the 13 areas or archaeological sites signed, illegal excavations had continued at five locations. Prior to the protective effort, all the locations had been experiencing heavy vandalism and looting. Only one of the five areas continued to suffer major impacts, while the remainder had experienced minor damage.

The final United States example comes from an archaeological property, known as the Anthony Shoals site, located in the Broad River Wildlife Management Area in southeastern Georgia (Jameson and Kodac 1991). The site is highly visible and can be approached by either land or water routes. Severe

looting had been occurring for years. In 1988, efforts were undertaken to curb the looting by blocking the access road, increasing monitoring of the site, and by posting standard cultural resource protective signs. Sporadic monitoring of the site over the next 2 years revealed that the vandalism activities had not entirely stopped, but the rate of destruction appeared to be less than in the previous years. Since the monitoring effort was minimal, and given the fact that the road barriers were illegally removed at some point, the signs would seem to be playing a significant role in the reduction of impacts. The authors observe, however, that for a signing program such as this to be most effective, it must be accompanied by more intensive monitoring and law enforcement efforts.

A point of significance for the three examples where some follow-up analysis has been conducted--Fort Hood, Portland District, and Anthony Shoals--is that monitoring can provide very useful data regarding the success of the efforts, even when it only covers a short period. Having little of this type of information available for use by resource specialists and managers is unfortunate.

The use of signs to aid in the protection of cultural resource properties in Australia also goes back a number of years. For example, by the early 1970s, signs had been erected at several dozen remote rock art sites in the western part of the country with the following message (Dix 1975):

ABORIGINAL SITE
The rock art in this area is
unique and irreplaceable.
Please help us preserve it for the future.
WESTERN AUSTRALIA MUSEUM

Early analysis of the effectiveness of these signs in reducing vandalism to these sites was encouraging but preliminary. The hope was that the signs would serve two purposes: give visitors an idea that some public authority was making an effort to protect the sites in the sense that the site is both known and visited by the authorities and redirect vandalism, such as shooting at the rock art or placing graffiti on it, away from the resource and toward the sign.

In the last decade, Australian researchers have made significant strides in the general area of cultural site protection and preservation. Some of this effort has been directed toward gaining an understanding of visitor behavior, including depreciative acts, and in devising ways to combat impacts that occur (see especially articles in Sullivan (1984), and Gale and Jacobs (1987)). Among the protective strategies that have been evaluated by follow-up analyses is the use of signs, both official warning and onsite interpretive signs (Gale 1984, Gale and Jacobs 1987:81-85, 91-92). Because this type of research has not been duplicated for cultural resources in the United States and because the results are particularly germane to our discussion, closely

examining the findings of this work is beneficial. It is summarized in a very useful volume written by Gale and Jacobs (1987).

Australia, not unlike comparable problems in the United States, has witnessed a significant increase in tourist interest in visiting aboriginal cultural sites. Much of this interest centers around the spectacular rock art panels created by the Australian Aborigine populations, although other archaeological and historical resources are targeted for visitation. Predictably, this pressure has led to highly damaging impacts, including such things as graffiti and vandalism, collecting, touching-up or abrading rock surfaces, wearing away of art surfaces by deliberate or accidental touching, dust accumulating on the art surfaces, and the creation of rapid changes in the humidity and temperature of the immediate microclimate. The Australian authorities have devised, evaluated, and implemented several direct and indirect visitor management strategies designed to protect these resources. Of particular interest to this discussion are the results of the sign posting.

Gale and Jacobs (1987) divides the discussion of the results of these studies into those that pertain to official or warning signs and those that are associated with interpretive signs. In the case of the former, the investigators believe that signs requesting that visitors refrain from certain activities, or warn of punishments for such behavior, can be very effective in modifying visitor behavior. This is true even when the signs are quite rudimentary. Gale and Jacobs cite an example in which a simple sign stating "Please do not touch the rock art, thank you" brought about a dramatic (ca. 60 percent) drop in the proportion of visitors deliberately touching the art. The sign did not include an official insignia nor did it warn of punishment for breaking the law. This same decline in the depreciative behavior occurred at other sites as well, often in a greater proportion than the example cited here. Interestingly, the field experiments at several sites indicated that children responded particularly well to the erection of signs requesting certain behaviors. The sign messages reduced the offenses by more than half of what originally was one of the high-risk groups for touching the rock art.

In other areas, overt official signs have also effectively modified visitor behavior. These signs, which include official insignia and standard colors and print, are used to ensure that visitors do not go into nonpublic areas (e.g., Aborigine sacred or burial areas), and that they do not behave in a depreciative manner at resources in those areas that are open to the public. The authors note that the warning of fines is also effective, because it suggests that there is someone policing the area. However, they observe that the fine must be large enough to have meaning. Furthermore, when using signs to convey both an official message and engender a sense of an official presence, managers should be careful to not overstate a negative directive. In other words, a long listing of "do nots" does little to create a positive visitor experience. An example was cited of signs that indicated to the visitor all the things they could not do at a particular location, but failed to mention the main attraction (rock art) that would be of interest. The investigators also note that overstating what cannot be done in an area can lead to resentment and

deliberate vandalism to either the sign or the resource. However, in some instances, such vandalism may in fact be beneficial in diverting the acts away from the irreplaceable cultural resource.

Finally, Gale and Jacobs observe that care must be exercised in formatting the message placed on the official sign and cite two examples. In one case, a sign was erected prohibiting visitors from entering the area of a nearby burial area. However, because the sign only noted the prohibition, visitors were actually drawn to the area by curiosity. The problem was that the sign did not specify the prohibited area, either in writing or by an enclosure, nor did it provide any explanation as to why the Aboriginal population did not want tourists entering the site. The other example given involved a sign that indicated to visitors that there was a \$5,000 fine for "damaging" rock art, but the sign did not indicate that "touching" the art surface was "damaging." In this context, many visitors did not think that such a simple action warranted the stated fine.

Turning to onsite interpretive signs, Gale and Jacobs (1987:91-92) indicate that these features are one of the simplest, cheapest, and most effective ways to educate the public, both in terms of conveying precise site-specific information and for modifying visitor behavior. Field studies on the effectiveness of such signs indicate that they should contain few words and be free of jargon, include pictures or diagrams, and be well located. Visitors were found to be more amenable to longer more detailed texts at parking areas than at the sites where short messages were preferred. Field studies showed that interpretive sign location was important to visitors. Signs should be located along with the resource so that visitors can match what is being said with the resource itself, but not in a way to interrupt the taking of photographs.

A final more general observation made by the Australian researchers is that any protective procedure, including sign posting, will work best when it is but one part of a comprehensive and integrated protection context. For example, the effectiveness of properly designed warning and interpretive signs will be enhanced when combined with other approaches such as visitor centers, self-guided tours, maps and brochures, well-designed paths or walkways, and barriers, if necessary.

Signs and other resources

Little information being available concerning the effectiveness of signs and sign messages in protecting other types of resources through modification of inappropriate visitor behavior is somewhat surprising. Although there are some early examples of evaluating sign and message usage in recreational settings (e.g., Brown and Hunt (1969), Ross and Moeller (1974)), most of the useful data come from two recent research efforts, both conducted in the Pacific Northwest.

One of these investigations involved the effect of alternate signs on the illicit removal of pumice stones from the recently created Mount St. Helens National Volcanic Monument (Martin 1987). The other study dealt with the effectiveness of different trailside sign messages in protecting a fragile meadow from off-trail hikers in Mount Rainier National Park (Johnson and Swearingen 1988). The results of these two studies (detailed below) reflect the kind of field research necessary to evaluate effectiveness of protective signs in a natural setting. Each of these studies contains a brief review of available literature that discusses comparable research.

Because a large amount of pumice was being removed by visitors at Mount St. Helens, a field study was conducted to evaluate what strategy could be put into place to reduce this behavior. Marked and replaceable pumice stones collected from outside the monument were set along a heavily used trail. Four treatments, three separate sign texts and a brochure, were devised and evaluated in an attempt to reduce the collecting activity. Each treatment was tested for 5 randomly selected days; in each case (including the control sample), between 500 and 600 observations were made for each sign and the brochure. The three signs mounted on a post near the marked specimens included the following messages:

- a. Standard sign--PLEASE DO NOT REMOVE ASH OR PUMICE.
- b. Sanction sign--VIOLATORS WHO REMOVE ASH OR PUMICE
WILL BE PROSECUTED.
- c. Social influence sign--PLEASE REPORT VIOLATORS WHO
REMOVE ASH OR PUMICE.

The brochure was a card with an informative text telling visitors to look for certain features and to please not remove ash or pumice because the area is a natural museum. It was made available on the same post as those on which the signs were individually mounted.

During the 6-week study period, a total of 2,811 visitors were observed. With no protective treatment in place, 12.3 percent of the subjects were observed picking up material during the control period. Placement of the signs and the brochure in the study area reduced collecting incidents by at least two-thirds. The sanction sign had the greatest effect--a reduction to 0.9 percent violations. Visitors removing pumice during the other experiments were as follows: standard sign--3.3 percent; social influence sign--3.9 percent; and brochure--3.8 percent. Aside from the higher effectiveness of the sanction sign, the other interesting result was that the brochure was as effective as the standard and social influence signs--this despite the fact that about twice as many visitors read the signs as opposed to those taking the brochure. Martin also observed that young males (age 5 to 12 years) and older females (estimated 51+ years) represented almost two-thirds of the pumice removers.

Based on the results of the experiments, some important implications exist here for cultural resources, which could be seen as a similar resource (i.e., artifacts as the equivalent of pumice stones). The most obvious implication is that visitors responded best to the sanctions text--was a simple and straightforward message. Based on this information, the most effective strategy may be a sign and brochure combination--a method not tested by Martin. Another implication is that this type of analysis could easily be undertaken in areas where surface collection of artifacts is a problem. As demonstrated by Martin's investigation, acquiring data not only on the relative success of various protective strategies, but also on who or what groups are initiating the majority of the depreciative behaviors, is critical. Emphasis can then be directed toward those audiences.

The study conducted by Johnson and Swearingen (1988) at Mount Rainier National Park also employed various signs coupled with field observations to assess the reactions of visitors to varying messages designed to protect a resource. In this instance, the resource was a high-altitude meadow that was suffering from trampling by hikers leaving designated trails and shortcutting across the fragile meadow.

Eight separate treatments, seven signs and an unsigned control sample, were tested. The sign messages were as follows:

- a. Old standard meadow text (previously used)--NO HIKING--MEADOW REPAIRS.
- b. New meadow text (proposed)--STAY ON THE PAVED TRAILS AND PRESERVE THE MEADOW.
- c. Symbolic message--an international red circle and crosshatch over a hiker's profile.
- d. Hybrid text--the symbolic message with a prohibitory message, NO OFF-TRAIL HIKING.
- e. Threatened sanction sign--OFF-TRAIL HIKERS MAY BE FINED.
- f. Symbolic text on stake--short stake (one foot) with small version of the symbolic sign.
- g. Humorous sign--DO NOT--TREAD, MOSEY, HOP, TRAMPLE,--STEP, PLOD, TIPTOE, TROT,--TRAIPISE, MEANDER, CREEP,--PRANCE, AMBLE, JOG, TRUDGE,--MARCH, STOMP, TODDLE, JUMP,--STUMBLE, TROD, SPRINT, OR--WALK ON THE PLANTS.

Evaluations of each treatment's effectiveness under field conditions ranged from about 1,400 to over 2,100 observations. In the control sample with no sign present, 6.9 percent of the visitors left the designated trail and entered the

meadow. The corresponding percent of transgressions with individual signs in place were as follows (listed in order of decreasing effectiveness): (a) sanction sign--1.7 percent; (b) new meadow sign--3.3 percent; (c) humorous sign--3.4 percent; (d) hybrid sign--3.6 percent; (e) symbolic sign--4.1 percent; (f) old standard sign--4.9 percent; and (g) the small stake sign--5.3 percent.

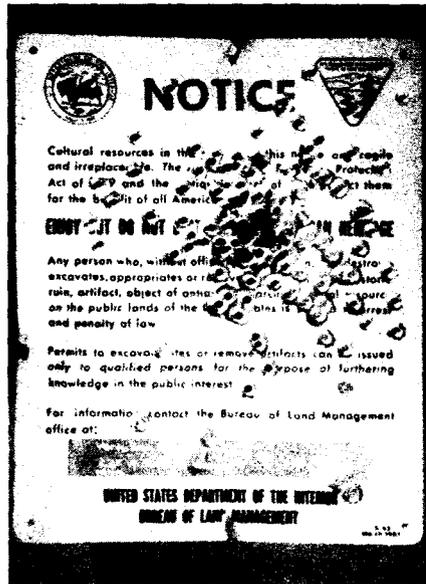
The Mount Rainier results mirror those found by Martin at Mount St. Helens in that the sanctions sign significantly outperformed other texts in reducing depreciative behavior. Comparing the control samples and the results after placing a threatened sanction sign, the undesired activities were reduced by 75 percent at Mount Rainier and by 97 percent at Mount St. Helens. Also of importance is the fact that the presence of any sign had a positive effect on visitor behavior in all instances. However, in none of the test cases did the presence of a sign completely eliminate rule-breaking behavior. Both studies also indicated that visitors react differently to various sign messages under similar conditions, which suggests that the message is important. Another variable that may enter into this situation is that the message selected needs to be correlated with the intended audience(s).

Although the results of these studies are limited in scope, an interesting fact to note is that a symbolic prohibition sign, employed either by itself or combined with an explanatory message, did not perform nearly as well as a simple sanction sign. Despite their limited results and narrow focus, these investigations clearly indicate that to achieve maximum effectiveness in a protective sign program, field testing can be of great value. At Mount Rainier, for example, the sign that the National Park Service had been using to protect the resource ranked next to last in the actual effectiveness ranking after field observations were completed.

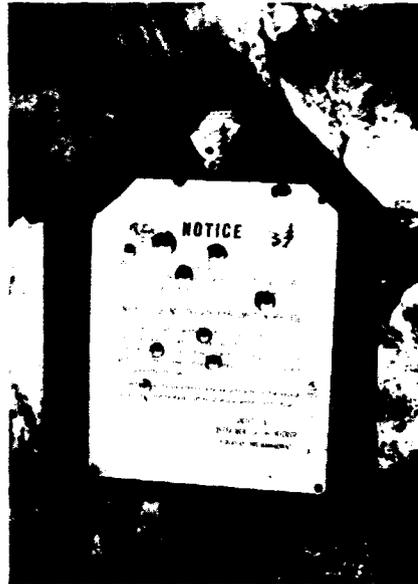
Vandalism of signs

Vandalism of signs themselves is always a consideration when designing an effective sign program. Once put into place, signs must be continually monitored to check for damage, and missing or defaced signs need to be repaired or replaced (Figure 5). These concerns relate to both the resource protection issues and to budgetary matters. Vandalized signs give the appearance of agency neglect if left in place too long, and stolen signs cannot serve the intended function if they are not replaced. Therefore, monitoring efforts and repair or replacement costs must be an integral part of the sign program.

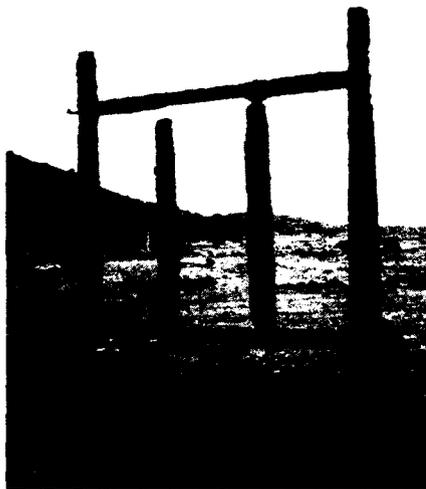
Damage and destruction of signs of all types is often a matter of considerable monetary significance to an agency. A nationwide 1978 survey by the Forest Service of their Districts indicated that about 28 percent of the agency's annual budget for signs went to replacing vandalized signs (Driessen and Nettleton 1984). That 28 percent was slightly over \$500,000 for that particular year.



a. Shotgun



b. Rifle



c. Burning



d. Destruction

Figure 5. Examples of commonly reported vandalism to cultural resource protective signs

The costs associated with sign maintenance can be partially mitigated in several ways. It is helpful to have data on the variables related to these costs, such as type of vandalism occurring, sign location, frequency, and materials durability. For a given recreation area, or larger project area, these data can only be obtained through monitoring of the ongoing conditions. For example, the earlier Forest Service investigation determined that bullets and theft were the main kinds of vandalism occurring, that prohibitive and restrictive signs were damaged the most, and that particular kinds of signs received more damage in certain areas (e.g., campgrounds versus along roads). The study also found that few jurisdictions were engaged in rigorous monitoring or field testing and evaluations of preventative measures that might reduce the impacts of vandalism and theft.

Aside from the obvious usefulness of reliable data on the problem, several sources for maintenance approaches designed to reduce vandalism and theft are available. These include vandal-proof hardware, materials, and construction techniques, highly effective vandal-resistant sign systems, and inexpensive replacement components. Some of the sources for developing vandal-resistant signs and sign programs are Christiansen (1983), Harrison (1982), Howley (1981), Nettleton (1979), and Shattuck (1987) (1988). Useful suggestions can also be found in various issues of two technical information publications, *Grist, Park Practice Program*, issued by the National Park Service and National Recreation and Park Association and *Equip Tips*, published by the Forest Service Equipment Development Center.

To reiterate a point made earlier in the discussion, vandalism of signs may actually deflect or deter some kinds of depreciative behavior away from the resource being protected to the sign itself. If managers were aware of the different types of depreciative behaviors toward the resource, signs could be used to deflect such actions, particularly if certain sign formats can be shown to be especially desirable as vandalism targets. For example, if a significant part of the vandalism problem in a given area is related to revenge or frustration with an agency or the government as a whole, an obviously official warning sign might serve as a magnet for depreciative behavior and at the same time draw it away from the resource needing attention. Unfortunately, studies are not available that indicate whether or not this "deflection theory" is actually valid or under what circumstances it operates. Demonstration of the effectiveness of a deflection approach to resource protection requires two results. First, it must be shown that depreciative activity is increasing at the acceptable target; second, damage to the desired protected area must be reduced.

General guidelines for signs

As might be expected, most large government agencies have internal sign guidelines and standards that cover a variety of basic topics such as developing sign plans, specifications for sign size, text, type style, layout, materials, procurement instructions, and, in some cases, sign maintenance

instructions. However, these documents rarely provide guidance on situations where conflicting issues may occur, such as the signing of cultural resources.

Within the Corps of Engineers, general guidance is provided in two Engineer Regulations (U.S. Army Corps of Engineers 1986, 1989), and more specific guidance is found in the Corps "Sign Standards Manual" (U.S. Army Corps of Engineers 1985). Among the relevant sections in the manual are those covering principles and guidelines for Corps signage, sign program planning guidance, and design standards (logos, colors, and typography).

Although maintenance guidelines for protective signs for cultural resources are not presently included in the "Sign Standards Manual," cultural resources personnel should be aware of two sections of the manual that are within a resource protection context. The first of these is Appendix C "Sign Maintenance Guidelines." This appendix provides a format for regular and systematic monitoring of signs, including a field report worksheet on which sign condition, vandalism, and other problems can be noted. Allowing for sign maintenance repair or replacement cost to be programmed into the budget is the primary reason for collecting information. These data could also be compiled on a project, District, and Corps-wide basis to accumulate details on sign vandalism. Until information on vandalism of signs is available, documenting the relationship or nonrelationship between depreciative behaviors targeted towards signs/messages and resource vandalism will not be possible.

The second useful part of the CE "Sign Standards Manual" is the recently prepared Section 13 of the document entitled "Interpretive Sign Standards." This section of the document provides guidance for planning, writing, and formatting interpretive signs. Interpretive signs are used to communicate specific educational and/or management learning, behavioral, and emotional messages to visitors. Because interpretive signs need to vary greatly in content and design, this section of the manual only provides guidance in developing signs that reflect creativity and flexibility, since they relate to specific sites, goals, and objectives. Consequently, unlike other signs in the manual, the appearance of finished signs is not stipulated in the manual.

Interpretive services and signs can have a significant role in educating the public about the need to protect and preserve cultural resource properties (Figures 6 and 7). Briefly outlining the Corps policy for interpretive services is useful, particularly with regard to interpretive signs. Policy and guidance for interpretation at CE Civil Works water resource projects is established in ER 1130-2-428 (U.S. Army Corps of Engineers 1983). Supporting this document are "A Guide to Cultural and Environmental Interpretation in the U.S. Army Corps of Engineers" (Propst and Roggenbuck 1981) and a series of supplements to the guide (U.S. Army Corps of Engineers 1984). The guide provides an overview of existing Corps interpretive services activities, and the supplements impart specific technical guidance for implementing interpretive procedures. As noted above, guidance for preparing interpretive signs is now included in the "Sign Standards Manual." The guide and its supplements are very useful and should be consulted anytime one undertakes

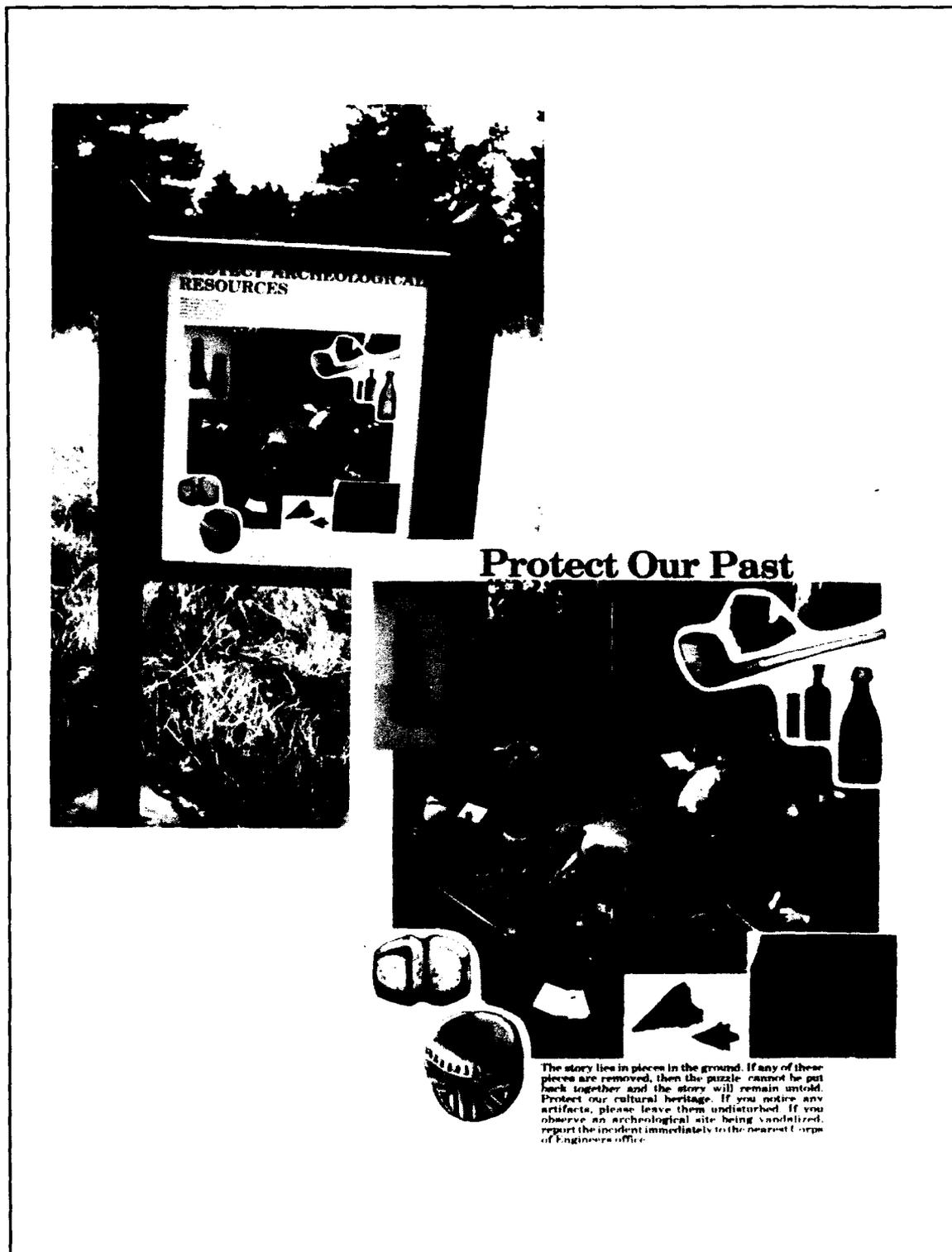


Figure 6. Interpretive sign, Corps of Engineers, Portland District. This sign is actually a laminated version of the back of a public education brochure that serves a dual purpose in protecting the resource sites



Figure 7. Interpretive panel incorporating a site protection message, U.S. Department of Agriculture, Bankhead National Forest, AL

interpretation of a resource such as cultural properties. However, the following points are taken primarily from the ER and Section 13 of the "Sign Standards Manual."

Interpretive services in the Corps offer an excellent context in which to increase protection of cultural resources. According to ER-1130-2-428, interpretive services are those communication services provided to the project visitors and others that support management objectives and goals, tell the Corps story, and/or reveal the meanings of and relationships between man-made, natural, cultural, and other project features. As stated in ER-1130-2-428, the objectives of an interpretive services program are to do the following:

- a. Aid project personnel in accomplishing management objectives.
- b. Enhance the public understanding of the role of the Army and CE in development and administration of water resources projects.
- c. Enhance the public understanding of the purpose and operation of the project and its man-made, natural, and cultural features.
- d. Develop public appreciation for proper use of project resources in an effort to reduce overall project operations and maintenance (O&M) costs.

Implementation of activities designed to meet these interpretive services program objectives include several that serve to promote protection of cultural resource properties. These include the following:

- a. Programs to provide understanding of Corps mission, responsibilities, facilities, objectives, etc.
- b. Programs to provide information on man-made, natural, cultural, and other project features.
- c. Programs to reduce management problems and O&M costs in areas such as vandalism, theft of privately owned property located on government land, destruction or removal of government property, water pollution, wildlife problems, forestry concerns, etc.
- d. Programs to enhance the visitors' skills for participating in recreational activities, thereby minimizing management problems and environmental impacts.

The interpretive services objectives and implementation activities listed above are also found in ER-1130-2-428 and clearly incorporate a resource protection role for interpretive activities at Corps projects. Obviously, there are several interpretive techniques and media available from which to choose to meet these goals. The focus here is on signs. The Corps "Sign Standards

Manual" contains a model that can be used in planning interpretive signs. This model, outlined below, includes several critical phases that apply to this discussion. According to the manual, effective planning for interpretive signs includes the following considerations.

Resource analysis. Determine the resource, object, or concept to be interpreted to visitors. Conduct research to find all the facts, interesting viewpoints, provocation, information, etc., that can be found about the subject or site.

Develop objectives for interpretive signs. For each interpretive sign, determine the objectives for interpretive message(s). These should include at least one each of the following:

- a. **Learning objective:** Facts of information that are important for the visitor to remember.
- b. **Behavioral objective:** These objectives are the physical behaviors or actions that are desired of the visitor either while reading the interpretive sign or an action desired after the visitor has read the sign.
- c. **Emotional objective:** The emotional objective is perhaps the most important objective. Unless the visitor is motivated to "remember" learned information, or "perform" the desired behavior, this objective cannot be accomplished.

Analyze the visitor. This approach involves considering who the audience is that will be using the interpretive signs. The kinds of visitors and their demographic characteristics are to be considered in determining what the content of the sign should be and how to best relate the message to the target group.

Determine how/when/where to use interpretive signs. This planning step addresses how, when, and where to use the signs. Considerations include site location, number of signs to use, size of signs, using permanent or seasonal signs, and if a sign should be used rather than some other interpretive service or media.

Evaluating effectiveness. This planning consideration includes the evaluation of the effectiveness of the proposed interpretive sign. This may be done via in-house review, review by a panel of visitors, or review by experts. Once the review is completed, the necessary changes can be economically made prior to fabrication.

Implementation and operations. This part of the planning process includes all the items that are needed to go from plan to reality (e.g., funding, selection of sign materials, text and design, approval steps, sign manufacture, and installation).

A final comment concerning the interpretive signs section of the Corps "Sign Standards Manual" is that it does include a caveat regarding interpretation of cultural resources. It states that care must be taken when interpreting any such resources or sites because of the potential for theft and vandalism problems, and that Corps resources personnel should seek the advice of their district archeologist in determining how best to interpret sensitive cultural resources (or not to interpret them at all).

Other useful information can be found in nonagency sources. For example, McIntosh (1982) offers suggestions for the design and use of signs and labels in an interpretive context. Binks, Dyke, and Dagnall (1988) offers a useful manual on the presentation and interpretation of archaeological excavations, including some details for design layout, construction, and placement of interpretive signs. While these sources deal with presenting meaningful information to visitors, they do not include resource protection messages in their discussions. However, they are very useful for assistance in designing signs, laying out messages, and selecting materials, as well as suggesting construction and placement specifications.

Remembering that many factors go into making a successful signing effort is important. One example of this is the use of effective colors. Research on color psychology has resulted in meaningful findings applicable to design of all types of signage, including resource protection. Caudill (1986) recounts an example in which a park having trouble with visitors not heeding warning signs solved the problem by simply changing the color scheme of the sign. Another research finding in the same article notes that the very young and the very old respond more favorably to bright colors. Recalling the situation found by Martin (1987) at Mount St. Helens National Volcanic Monument in which young males and older females were causing a large proportion of the depreciative behavior, the choice of color could make an appreciable difference.

Summary

Using signs to convey messages in a resource protection mode must consider several variables, the most critical appearing to be format of the message being communicated and knowledge of the characteristics and goals of the target audience(s). Having a good understanding of the resource being protected is essential, including its current condition and its susceptibility to impacts.

It is apparent from the review of persuasive communication and the limited relevant literature on the use of signs to protect various resources that applied research can be productive and is crucial to designing an effective signing program for cultural resource properties. This need includes an assessment of the pertinent variables prior to implementation of the signing effort, a

monitoring process to track effectiveness, and subsequent evaluation of follow-up data on the results.

4 Questionnaire Methodology

Introduction

The initial interest in looking at the usefulness and/or effectiveness of signs for cultural resource protection originated because of a noted absence of studies related to verifiable data on the subject. Signs of many different kinds have been used in widely varying situations, usually relying on a "common sense" methodology rather than prescribed directives. Some agencies, such as the National Park Service, Forest Service, and Bureau of Land Management, have standardized cultural resource protection signs that can be obtained through normal procurement channels. Other agencies, including the CE, have traditionally either used other agency's signs (sometimes simply covering one agency name with another) or have devised signs for use within a particular administrative unit (e.g., a District or project). Since it was known at the outset that comparable data did not exist to assess opinions on the effectiveness of signs and that differences of opinion existed across the country, a survey instrument was developed to be distributed not only to CE offices nationwide, but also to other agencies with land management and resource protection responsibilities.

The Questionnaire

To assemble relevant data, a questionnaire was created with the intent of distributing it widely to cultural resource managers and specialists. Once in draft form, the document was given technical review by three WES scientists and the Corps' lead archaeologist at CE Headquarters. A revised version was then pretested in May of 1989 at a working conference on archaeological site vandalism and looting, sponsored by the Society for American Archaeology and held at the Fort Burgwin Research Center in Taos, NM. Participants at that conference were asked to complete the questionnaire and then to provide comments for improving the document. Following that input, the final edition of the questionnaire was completed (Appendix A). The questionnaire was designed to be self-administered and contained three parts. Part I employed a matrix question format that offered a number of statements regarding various issues associated with the use of signs for cultural resource protection. It

asked respondents to indicate their strength of agreement with those statements according to a five-point scale. The statements solicited opinions on topics related to overall effectiveness of signs, location of signs, sign messages, and what types of resources should or should not be signed. Possible answers were as follows: (a) strongly agree, (b) agree, (c) neither agree or disagree, (d) disagree, and (e) strongly disagree. Part II was a three-page section designed to collect information on cases where signs had been used in a field setting. Respondents who had signing experience were asked to provide narrative responses regarding the type of resource signed, impacts, location and numbers of signs, and sign text. They were also asked about guidance used in planning and implementing the signing effort, success or failure of the endeavor, monitoring of the resource and/or signs, sign vandalism, and whether written documentation was prepared. Part III allowed respondents an opportunity to expand on any of the responses or to provide any comments of a general nature on sign-use issues.

Methods and Response Rate

Distribution

To distribute the questionnaire as widely as possible, individuals or offices in each of the larger land-managing Federal agencies were contacted for a mailing list of cultural resources personnel or managers with significant cultural resources responsibility. These agencies included the following: Bureau of Land Management (BLM), Bureau of Reclamation (BREC), Corps of Engineers (CE), Department of the Army (DOD), Forest Service (FS), and National Park Service (NPS). In some cases, mailing lists were supplied; in others, an appropriate number of questionnaires were provided to the agency, which in turn then generated its own distribution. In the case of the NPS, distribution was requested not only for cultural resources personnel, but individual park units as well. This resulted in a significantly larger distribution for that particular entity. The survey instrument was also sent to each State Historic Preservation Office. In addition to the Federal and state agency mailings, a miscellaneous category was created to include interested individuals and agencies with a small number of mailings. Each questionnaire was mailed with a cover letter (Appendix A) explaining the research effort and a self-addressed, postage-paid return mailing label. A separate letter was sent to each NPS recipient office by the NPS Associate Director, Cultural Resources, encouraging participation in the survey.

Response rate

A total of 970 questionnaires were mailed, with 427 being returned. The overall response rate of 44 percent is felt to be somewhat misleading, since the distribution methods probably reduced the number of returns. For example, while the NPS return rate was comparable with other agencies, some small Park Service units with no cultural resources or sign programs probably did not feel compelled to answer the query. Likewise, questionnaire

recipients without direct land management responsibilities may not have responded at a high level. For the CE, the total number of surveys mailed included offices at both Division and District levels, as well as some individuals on the current research program mailing list at that time. Many CE offices list more than one cultural resource specialist on their roster. However, at least one response was received from each CE District.

The number of questionnaires mailed to each agency is shown in Table 1, along with the corresponding return rates. Of the 427 responses, 224 (53 percent) completed Part II of the questionnaire indicating that they or their office had signed cultural resources. Narrative comments in Part III of the questionnaire were provided by 259 (61 percent) of the respondents.

Agency	Number of Questionnaires		
	Sent	Returned	Percent
Bureau of Land Management	154	58	37.7
Bureau of Reclamation	11	6	54.5
Corps of Engineers	89	45	50.1
Department of the Army	12	7	58.3
Forest Service	146	57	39.0
National Park Service	461	203	44.0
State Historic Preservation Offices	56	36	64.3
Miscellaneous	41	15	36.6
TOTALS	970	427	44.0

Analysis

As the questionnaires were returned, a response list was formulated by agency and preliminary tabulations of the data were compiled. Then, each completed questionnaire was given a unique identifying number, and those responses that could be quantified were coded and entered into a database structure. In addition to the questionnaire identification number, name, address, and agency of the respondent, the database includes coded responses to Part I queries, subdivided coding for those questions in Part II where variation could be partitioned, and a presence or absence code for Part III. Because many of the Part II responses were highly variable in format and content, coding of all questions was not possible. Similarly, coding of the narrative responses in the returned Part III sections was not undertaken.

Following the coding and entering into the database, the questionnaire data were tabulated according to the following categories: (a) responses by all agencies, (b) responses by each individual agency, and (c) responses by all agencies versus those of the CE. In this report, the discussion in the next chapter is primarily focused on the responses submitted by CE personnel in comparison and contrast with all other agency/individual responses.

5 Questionnaire Results

Introduction

The results of the nationwide survey on opinions about protective signing of cultural resources and past use of signs are presented in this chapter. The three-part questionnaire included both statements that called for strength of agreement (and therefore easily quantifiable) responses to a series of statements and questions that permitted narrative responses. Parts II (examples of sign projects) and III (additional comments) of the questionnaire fit into the latter category.

The questions and responses are summarized below according to each question within each part of the questionnaire. Of the various ways in which the results could be viewed, the manner selected is to provide the data derived from the CE responses ($N = 45$) along with those generated by the remainder of the responses ($N = 382$). The rationale behind this approach is that it highlights the results of the sponsoring agency and then compares them with the remainder of the responses. Reviewing the results on an agency-by-agency basis is not deemed necessary herein, although such an approach is possible using the database. Because of the difference in sample sizes between the Corps and the other respondents and the distinct possibility of sampling error on some of the issues because of this disparity, Appendix B provides a summary of the total responses.

The responses to Part II of the questionnaire were expected to be subjective and case specific. However, once the analysis and coding of the responses began, the idea that some could be subdivided into quantifiable data sets became apparent. For example, the first question asked for the type of resource signed, which could be subdivided into prehistoric, historic, or both. In other cases, a response or lack of response could be transformed into a yes/no format.

One query in Part II asked respondents to provide a copy or photo of the sign text that had been employed. Many forwarded written text of signs, reproduced copies, photos, and, in some cases, actual signs. These examples ranged from rudimentary or simplistic signs and messages to more detailed formats. As might be expected, many of the examples provided were

repetitive. This especially occurred in the responses from an agency where the use of standardized signs is common. The sign specimens were illustrative from both a historical and comparative point of view. A "scrapbook" of some cultural resource protection signs from around the country is provided in Appendix C.

Responses to Part I

Part I of the questionnaire is comprised of three subparts. The first subpart requested the individual's name, telephone number, agency, and mailing address. The second asked respondents to indicate their strength of agreement with a series of 10 issues/statements related to the use of signs in a cultural resource protection mode and the relative effectiveness of different sign formats for preventing looting and vandalism of such resources. Finally, respondents were asked to indicate whether or not they felt that it would be productive and useful to conduct further field research on the relative effectiveness of specific signing strategies.

The results of the second and third subpart responses are listed below according to the following standardized format for each issue:

1. Statement:
2. Responses: A. Corps of Engineers (# of responses)
B. Other agencies/individuals (# of responses)

Expressed as percentage of respondents according to the following key --

SA -- Strongly agree with the statement
A -- Agree with the statement in most instances
N -- Neither agree nor disagree with the statement
D -- Disagree with the statement in most instances
SD -- Strongly disagree with the statement

3. Collapsed Responses: To provide another perspective, the responses were collapsed into simple agree or disagree categories. Neutral responses were disregarded in this analysis.
4. Discussion:

ISSUE 1: Signs can be used as an effective protective strategy at sites.

Responses: The responses to this straightforward statement are as follows:

	<u>CE (45)</u>	<u>Others (376)</u>
SA	15.56	21.54
A	64.44	58.24
N	4.44	10.64
D	13.33	7.98
SD	2.22	1.60

Collapsed Responses: When collapsing the CE and other responses, 89.29 percent of the Corps respondents agree, either strongly or most of the time, with this statement. This compares with a 83.72-percent agreement of the other respondents.

Discussion: Clear agreement exists among the Corps and other agency respondents that signs can be effective for cultural resource protection. Nearly 9 out of 10 either strongly agree or agree with the statement. The key word in the statement, however, would appear to be "can" as indicated by the responses to the next statement.

ISSUE 2: Signing contributes to vandalism or casual collecting.

Responses:

	<u>CE (45)</u>	<u>Others (375)</u>
SA	4.44	3.73
A	46.67	31.20
N	26.67	26.67
D	20.00	36.00
SD	2.22	2.40

Collapsed Responses: In this case, 69.70 percent of the Corps and 47.64 percent of the other respondents agree that placing signs directly contributes to looting and vandalism activities.

Discussion: The issue of whether or not signs create new or increased vandalism is one that often leads to considerable debate among cultural resource managers, and the results of the survey appear to corroborate those feelings. In the case of the collapsed data, nearly 7 out of 10 of the Corps personnel responding agree with this premise, while a little less than 50 percent of other agency personnel are in agreement. In each case, one in four of the respondents is neutral on the issue. Empirically derived data does not exist that support or counter this contention; however, a few respondents (less

than 10) did allude to personal experience in which placing of signs was believed to have directly led to subsequent impact to a resource property.

Apparent reason for the higher percentage of Corps responses agreeing with this statement was not discernible in the returned questionnaires. Sample size may be a factor in this case, since there are only 33 responses left when the neutral ones are subtracted from the number of those that responded to this statement. Based on intuition, the nearly equal split found in the other agency responses (N = 275) being closer to the national situation seems more probable. When the Corps data are combined with the other agencies, the figures are split evenly at 50 percent each agreeing and disagreeing with the statement, but again with just over 25 percent of the total respondents expressing neutrality. This issue is obviously one that cannot be resolved until systematically derived data are available.¹

ISSUE 3: Signing is more protective if placed offsite rather than on sites.

Responses:

	<u>CE (45)</u>	<u>Others (375)</u>
SA	8.89	6.67
A	42.22	26.40
N	35.56	37.87
D	11.11	26.67
SD	2.22	2.40

Collapsed Responses: When viewed from a simple agree/disagree perspective, apparent support exists for placing signs away from the actual site as opposed to signing the resource itself, particularly among the CE respondents (79.31 percent agreeing). In contrast with the CE responses, respondents from the other agencies are more evenly split with 53.22 agreeing. Important

¹ In his review of the report, Dr. James H. Gramann offered the following comment on this questionnaire result: "I suspect that one reason for this is that the "other" category is dominated by NPS personnel. By their nature as preservation reserves, and by their generally smaller sizes than BLM and USFS lands, NPS areas appear intrinsically to have fewer problems with vandalism and looting than other types of areas. Perhaps even more important, they may attract a different population of users than BLM, USFS, or CE areas. In particular, NPS users have been shown to be highly educated and generally strongly supportive of resource protection. Thus, they would be unlikely to be provoked into depreciative behavior by signs "advertising" the presence of a cultural resource. In fact, just the opposite might occur: the signs would make them feel *more* protective.... In contrast, I suspect that the looting problem at many CE projects is due to local residents who probably do not fit the same demographic and motivational profile as NPS visitors. As a result, NPS may have more problems with unintentional and uninformed depreciative behavior (which can be addressed successfully by signs), while CE projects may have a greater incidence of willful looting. In this case, signs may actually attract looters to the sites, thus increasing the damage and accounting for the opinions of the CE respondents."

to note is that on this issue, the number of respondents who expressed neutrality included nearly 38 percent of the total responses.

Discussion: This issue also relates to the often expressed fear that placing signs on cultural sites may serve to call attention that a fragile resource is located at that spot. On the other side of the argument, some managers feel that serious looters and vandals are fully capable of locating sites through experience, and signs may indicate not only an agency presence but also a clear warning that, if not heeded, could be used in court to the disadvantage of an apprehended violator. A number of respondent comments expressed the feeling that one of the primary functions of protective signs involved the potential for helping to obtain ARPA convictions.

Like the preceding issue, this is one that incorporates some controversy among those responding to the survey. In fact, the responses come close to constituting a normal bell-shaped curve, with the majority of opinions centering on neutrality. Probably, this question is one that depends heavily on the specific case under consideration, requiring one to consider the nature of the resource, ongoing and potential impacts, and an awareness of the characteristics of those performing the depreciative behavior.

ISSUE 4: Signing will be most effective if employed with other protective strategies, e.g., interpretive exhibits, visitor center, fence, patrol, or control of access.

Responses:

	<u>CE (45)</u>	<u>Others (377)</u>
SA	73.33	74.27
A	24.44	24.67
N	2.22	.80
D	0.00	.27
SD	0.00	0.00

Collapsed Responses: All of the Corps respondents were in agreement with this statement, and only one of the non-Corps respondents disagreed.

Discussion: The overwhelming results exhibited in the responses to this issue are not unexpected and convincingly indicate that resource managers feel that protective signs are best employed as only one part of a more comprehensive resource protection program. The use of signs being fully integrated into a resource protection framework and not simply placed in the field without thought to their potential effectiveness or consequences is important. Signs should not be viewed as a cheap solution by themselves and cannot substitute for other protective measures. Placing signs either at or near resources coupled with no other action will not likely provide adequate protection.

In reading through the survey responses, a variety of potential protective measures with which signs either have been or could be combined were evident. These measures include the following:

- a.* Patrols--foot, vehicular, horseback, and aerial.
- b.* Monitoring efforts--establish baseline conditions, regular monitoring, photographic, and electronic.
- c.* Control of access--foot traffic, vehicles, or hours of access.
- d.* Law enforcement/convictions.
- e.* Site steward programs.
- f.* Educational/outreach programs--directed toward public and within agency (e.g., rangers).
- g.* Interpretive trails with trailhead signs.
- h.* Fences--either decorative (e.g., split rail) or security.
- i.* Visitor sign-in book.
- j.* Visitor center or museum--displays/information on cultural site vandalism and resource protection needs.
- k.* Site camouflage efforts.
- l.* Promoting changes in management practices/attitudes--emphasis at project or command level.
- m.* Brochures.
- n.* Press releases.
- o.* Road turnouts/wayside exhibits.
- p.* Campgrounds and recreation areas.
- q.* Manned sites (e.g., uniformed personnel).
- r.* Maintenance programs--control sign vandalism and keep signs in good condition.
- s.* Awareness training/campfire programs.
- t.* Trail system to channel traffic from visitor access.

- u. In situ protection activities (e.g., ruins stabilization).
- v. Data recovery efforts (e.g., remove visible and desirable artifacts).
- w. Incorporate protective sign programs in other plans and documents (e.g., resource management, operational, or patrol plans).

ISSUE 5: Sign Message.

The issue covering appropriate sign messages is a complicated one that involves a number of factors concerning type of message and intended audience. Respondents were asked to provide their opinions about the relative effectiveness of six different message formats. They were also invited to express their thoughts on which combination of the message formats would work best to prevent cultural resource vandalism. The survey results are listed below for each of the specified sign message formats, followed by the results for the combination query. Discussion of the reactions to sign messages follows presentation of the specific message and combination results.

1. Nonspecific message (e.g., "Off Limits" or "Do Not Trespass").

Responses:

	<u>CE (45)</u>	<u>Others (373)</u>
SA	13.33	3.75
A	44.44	22.52
N	20.00	26.01
D	13.33	36.73
SD	8.89	10.99

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	72.22	35.51
Disagree	27.78	64.49

2. Specific (e.g., "Archaeological Site -- Do Not Disturb").

Responses:

	<u>CE (45)</u>	<u>Others (373)</u>
SA	2.22	4.02
A	40.00	44.50
N	11.11	22.25
D	26.67	23.06
SD	20.00	6.17

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	47.50	62.41
Disagree	52.50	37.59

3. Interpretive (e.g., "This is an important Mississippian Mound ...").

Responses:

	<u>CE (45)</u>	<u>Others (371)</u>
SA	6.67	20.75
A	37.78	50.67
N	22.22	14.29
D	24.44	10.51
SD	8.89	3.77

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	57.14	83.33
Disagree	42.86	16.67

4. Warning or threatened sanction (e.g., "Archaeological Site -- Protected by Law" and giving penalties).

Responses:

	<u>CE (45)</u>	<u>Others (373)</u>
SA	17.78	18.77
A	55.56	55.23
N	17.78	15.28
D	6.67	9.38
SD	2.22	1.34

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	89.19	87.34
Disagree	10.81	12.66

5. Bogus signs (e.g., "Poison Ivy" or "Hazardous Waste").

Responses:

	<u>CE (45)</u>	<u>Others (373)</u>
SA	13.33	4.56
A	24.44	16.62
N	20.00	20.38
D	26.67	26.01
SD	15.56	32.44

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	47.22	26.60
Disagree	52.78	73.40

6. Combination of one or more of the above formats.

Responses:

	<u>CE (38)</u>	<u>Others (341)</u>
SA	21.05	34.02
A	50.00	47.21
N	26.32	14.96
D	2.63	2.64
SD	0.00	1.17

Collapsed Responses:

	<u>CE</u>	<u>Others</u>
Agree	95.52	92.68
Disagree	4.48	7.32

With regard to which combination of messages would work best, the most favored combinations are as follows (based on the total number of responses):

<u>Combination</u>	<u>Percent</u>
Interpretive/warning	42.26
Specific/interpretive	8.71
Nonspecific/warning	3.55
Specific/warning	3.55
Nonspecific/bogus	2.58

The remainder of the possible combinations were selected by less than 1 percent of the respondents. About one-third of the respondents left this question unanswered.

Discussion: The results of the opinions on sign message were based on respondents being asked to separately evaluate six possible formats. A question that was not asked, but perhaps should have been, is "Which one do you like best?" Nonetheless, the respondents have apparently voiced more support for either a warning message or one that combines one or more of the examples offered. This preference is about the same for Corps and non-Corps respondents with about 90 percent agreement. In a combined format, strong endorsement is evident for blending interpretive and warning messages.

Support for other message formats is more variable and includes some intriguing polarity between the Corps responses and those of other agencies. For example, the percentages agreeing and disagreeing about the effectiveness of what have been termed "nonspecific messages" (No. 1 above) are almost exactly the opposite. The Corps respondents also give much more support to the use of bogus signs and offer a significantly lesser opinion about the effectiveness of interpretive signing than do non-Corps respondents. The Corps respondents did give preference to the use of warning and interpretive messages in a combined format, but still at a significantly lower percentage than other respondents.

The precise reason(s) contributing to these variances cannot be discerned from the questionnaire responses. Given the distinct differences between the percentages, sample size would seem to have little to do with the results. Two possible explanations may at least partially account for this situation. First, Corps archaeologists are often called upon to provide support to Army installations. Nonspecific and bogus sign messages may well have greater applicability in military settings than on public lands. Bogus signs integrated into a training mission have been successfully used at Fort Hood, TX (Carlson and Briuer 1986), and "off limits" is a term often associated with the military. In fact, in comparing the Corps responses with individual agency responses to these message formats, the small number of responses from military installations closely parallel those of the Corps, while the other agencies duplicate the non-Corps percentages.

A second reason for the differences pertaining to some sign messages may relate to policy. Corps cultural resource managers may possibly view their land and resource management responsibilities differently from other agencies

with either larger or differently configured land holdings, or differing land management purpose. Also, differences in user profiles may enter into this perception.

The bogus message is one that deserves additional comment. Included in the responses to this message are proportionately more "strongly disagree" replies than for any other message. This negative feeling carries over to comments and notations provided by some respondents that strongly opposed the use of bogus messages. (Some highly positive comments were expressed as well regarding bogus messages.)

Basically, the arguments are centered on two concerns. The first of these is simply that it is unethical to mislead the public. The second concern pertains to potential for loss of credibility on the part of an agency if the subterfuge is discovered. Another respondent felt that a bogus sign could activate an irrational fear or phobia in an unusual circumstance (e.g., warning people about snakes).

In its purest form, a bogus message is one that offers misinformation in hopes that it will lead to a desired result--in this case, resource protection. Bogus messages can obviously take many forms, ranging from something generally inappropriate like "Hazardous Waste" to more benign ones like "Protected Wildlife Area -- Do not Enter." On occasion, they can be coordinated with other management or operational efforts, such as the tank training example previously cited from Fort Hood. Humor can play a part in this type of protective measure, such as the effective placement of a sign inside the ruin walls at Pecos National Monument, NM, which read "Please Respect the Rattlesnakes' Right to Privacy." The intent here is to keep visitors from climbing on fragile masonry walls or entering the confines of the ruin. Visitors are also informed in the visitor center of the very real situation that rattlesnakes do inhabit the immediate area.

Another example that could conceivably lead to loss of credibility involves sign notification that an area or site is being electronically monitored. However, actual monitoring of a single site leading to a well-publicized arrest will likely increase the effectiveness of such an approach at other sites in the area where sensors are not actually in place.

ISSUE 7: Only large or highly obtrusive resource sites that are receiving impacts should be signed.

Responses:

	<u>CE (45)</u>	<u>Others (371)</u>
SA	15.56	9.43
A	44.44	42.86
N	6.67	10.24
D	26.67	29.65
SD	6.67	7.82

Collapsed Responses: For the Corps responses, 64.29 percent are in agreement, and for the non-Corps responses, 58.26 percent agree with the statement. Overall, only about 1 in 10 respondents are neutral on this issue.

Discussion: In each case, Corps and non-Corps respondents are somewhat in agreement that only large, easily observed sites that are being impacted should be signed.

ISSUE 8: Generally, unobtrusive sites should not be signed.

Responses:

	<u>CE (45)</u>	<u>Others (374)</u>
SA	28.89	16.04
A	55.56	51.07
N	8.89	12.03
D	6.67	18.72
SD	0.00	2.14

Collapsed Responses: Overall, the Corps respondents are in stronger agreement (92.68 percent) with this statement than are the non-Corps people (76.29 percent).

Discussion: Based on the responses to this statement, the majority of cultural resource managers across the country feel that cultural resource sites with low visibility should not be signed.

ISSUE 9: Sites located in remote areas with only periodic or little surveillance should not be signed.

Responses:

	<u>CE (45)</u>	<u>Others (372)</u>
SA	28.89	15.59
A	36.56	31.11
N	11.11	14.78
D	26.67	30.38
SD	2.22	2.69

Collapsed Responses: Agreement with this statement is slightly favored, with about 6 of 10 respondents in agreement (Corps--67.50 percent and non-Corps--61.20 percent).

Discussion: Like the preceding one, overall agreement with this statement is only by a slight majority.

The final issue dealt with in Part I of the questionnaire involved a perceived need for additional field-oriented research into the various issues associated with using signs to protect cultural resource sites. The question read:

ISSUE 10: Do you think it would be useful to investigate, under controlled conditions at selected archeological sites, specific signing strategies to evaluate their relative effectiveness?

Responses:

	<u>CE (45)</u>	<u>Others (373)</u>
Yes	88.89	94.10
No	11.11	5.90

Discussion: Not unexpectedly, given the current dearth of supporting data on this topic, the questionnaire recipients responded in a highly favorable manner to this question. Many respondents added brief notations vigorously endorsing the need to undertake additional research in this area.

Responses to Part II

Part II of the sign questionnaire was designed to procure information concerning the extent, circumstances, and results of past and ongoing protective sign programs across the country. Recipients of the survey were asked to respond to a series of inquiries, including the following: (a) type of resource, (b) location and context of resource, (c) impacts to resource, (d) sign text, (e) location of signs, (f) combination of signs with other protective

strategy(ies), (g) number of signs, (h) guidance used, (i) changes in impacts after signing, (j) monitoring strategy, (k) vandalism of signs, and (l) existence of written documentation. Respondents were also asked to reproduce Part II as needed to provide information on all sign projects that either they or their agency had undertaken.

Because of the way that the questionnaire was structured and the manner of the responses, arriving at an exact number of cultural resource sites that have been signed is not possible. Many responses to the survey described the use of signs for specific properties, while others were wider in scope and detailed broad area protective signing efforts (e.g., general property boundary signs or random signs on managed acreage). Based on the responses to Part II, however, stating that at least 505 separate protective sign projects have been undertaken by those individuals or agencies responding to the survey is possible. Broken down by agency, these projects are distributed as follows:

<u>Agency</u>	<u>No. of Sign Projects</u>
CE	31
NPS	179
FS	131
DOD	11
BREC	3
BLM	109
Other	41

A summary of responses to each of the Part II questions is provided below. Not unexpectedly, the responses to the queries tend to be highly variable and cover a wide spectrum of situations. In several instances, canvassing the narrative responses and identifying some discrete or preponderant categories of data that could be quantified was possible. In other cases, such as those dealing with location and context of resource or impacts, the variety exhibited in the responses was such that smaller categories of data could not be discerned. As was the case with the Part I responses, the format here is to present the Corps data and to contrast them with those of the combined other agency responses.

Type of resource signed

For this category, responses were coded as either prehistoric, historic, or both prehistoric and historic. The results are as follows:

	<u>CE</u>	<u>Others</u>
Prehistoric	12 (50%)	106 (40.46%)
Historic	6 (25%)	104 (39.69%)
Both	6 (25%)	52 (19.85%)

Location and context of signed resource property

The responses to this question are variable and not easily summarized. Corps sites tend to be located at lake projects, with many being near recreation areas. Others have been signed because of access-related problems, such as along roads or on shorelines where approach by boaters led to impacts. As might be expected, sites that have been signed by agencies with large and diverse land holdings, such as the FS, BLM, and NPS, are found in a wide variety of locales. However, problems associated with either access or visitation patterns are a recurring theme in the responses.

Impacts to the site

In this section, respondents were asked to briefly describe the nature of the impacts that led to the decision to sign the resource. Again, the responses varied greatly. Either actual or potential threats of vandalism and looting are prevalent among the responses. In other cases, signs are employed to control unintentional activities, such as climbing or walking on prehistoric or historic structures. Incidental actions are also targeted. Examples of incidental acts include the following: (a) establishing "new" trails across sites and features that results in damage or increased erosion problems, (b) inadvertent camping on a site, (c) cumulative impacts from heavy visitation, or (d) impacts associated with off-road vehicle and other recreation-related activities. Another widely used reason for erecting signs was for interpretation of a resource.

By far the most prevalent reason given, however, was to control vandalism, including surface collection of artifacts, digging of both prehistoric and historic sites, graffiti, or stripping of historic structures. A number of respondents indicated that signs were put in place not only to discourage such activities, but also to aid in prosecution of apprehended vandals.

Sign format/message

Examples of signs used in resource protection roles were provided in several formats, including reproduced copies, photographs, and signs themselves. An assortment of these signs is provided in Appendix C.

Review of these examples reveals that a wide variety of signs has been used. In many instances, land managers simply employ standard agency-provided signs, which generally provide little information beyond a definition of the resource, a citation to the relevant law, and a brief description of the possible penalties involved for infractions. In select cases, creative formats have been devised, usually in response to needs at specific resource properties.

Sign location and method of placement

Respondents were asked to indicate whether signs were placed onsite or offsite and to indicate how the signs were placed in position (e.g., on stake, fence, or tree). The responses regarding sign location were coded in the database according to three categories--onsite, offsite, or both. These results are as follows:

	<u>CE</u>	<u>Others</u>
Onsite	12 (46.15%)	174 (68.77%)
Offsite	6 (23.08%)	48 (18.97%)
Both	8 (30.77%)	31 (12.25%)

These results indicate that a majority of protective signing efforts involve placing signs at the resource property itself, this despite a prevalent feeling that signs might call attention to the site and lead to an increase in vandalism. A number of respondents stated that signs were placed in a manner to be highly visible on the site. Others noted that signs were placed in a way to be unseen unless the visitor actually entered the site boundary. Signs that are difficult to see from a distance have been placed behind small hills or away from access roads, in vegetation, at the bottoms of vandal potholes, or on short stakes with the sign near ground level.

Protective signs erected away from the resource property occur in a variety of locations. The most common placement is along access roads, either alone or at fence gates. Other signs have been placed along the boundary of the agency's lands, at recreation areas, campgrounds, and boat access ramps, and at trailheads.

The manner of placement also varies. Signs have been implanted as free-standing objects (wooden or metal posts), and on existing natural and cultural features (fence wire and posts, telephone poles, buildings, boulders, and trees). Cultural resource protection signs have also routinely been placed in wooden ramadas or kiosks, usually in combination with other signs. In one case, a sign was set in a cement pad located at ground level.

Combination of signs and other protective strategies

The respondents were asked if the sign was used in conjunction with another form of resource protection (e.g., interpretation, visitor center, museum, fence, or access control) (Figures 8 and 9) and to comment on what combination was employed. The initial responses were coded as yes or no. The range of other protective strategies of features was also reviewed, and a tally was made of the most common ones. These results are as follows:

- a. Combined with other strategy?

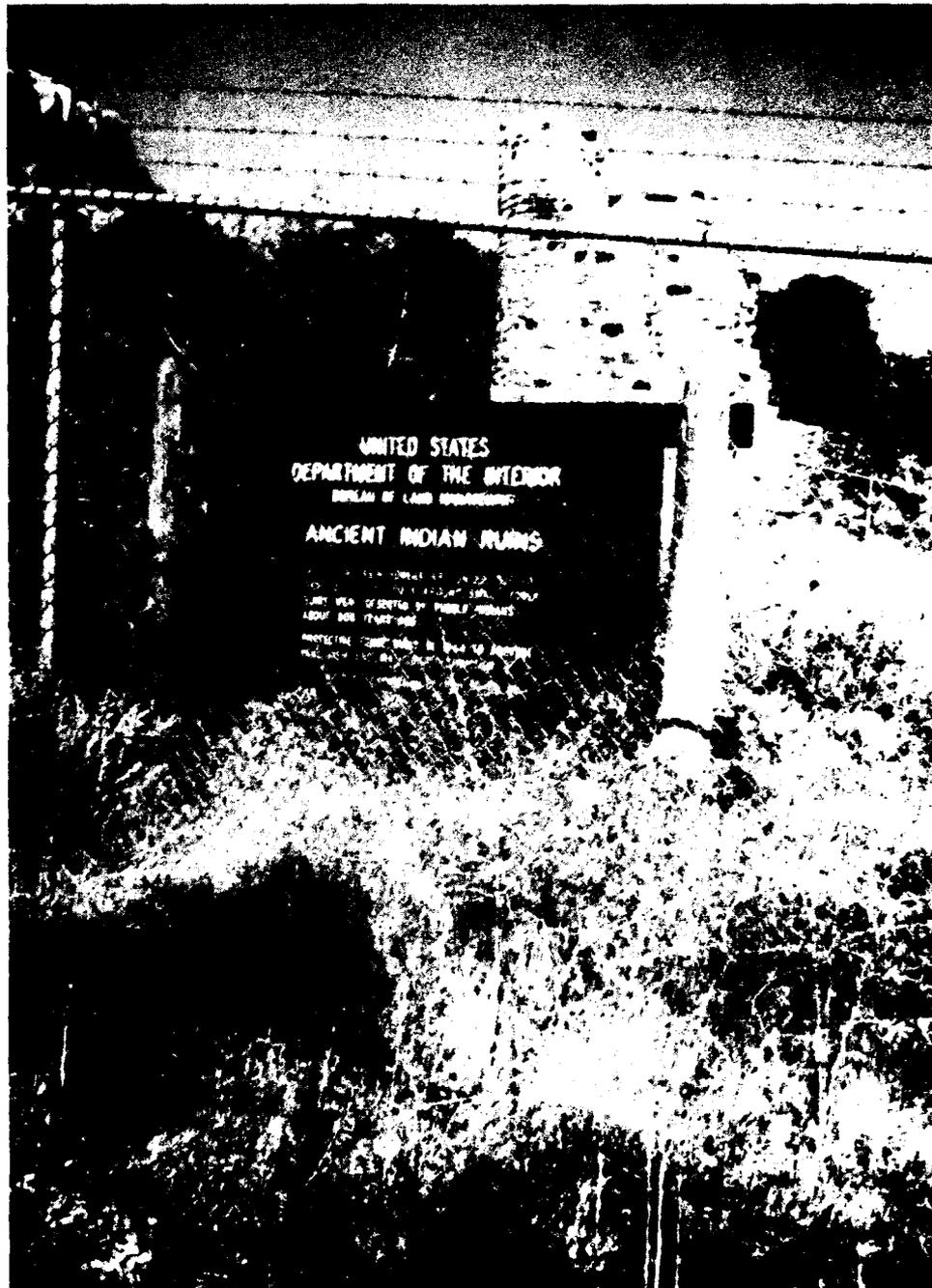


Figure 8. Combination of protective techniques at a remote prehistoric masonry site on BLM land in southwestern Colorado. In addition to the security fence and sign, the structure has been reinforced and stabilized

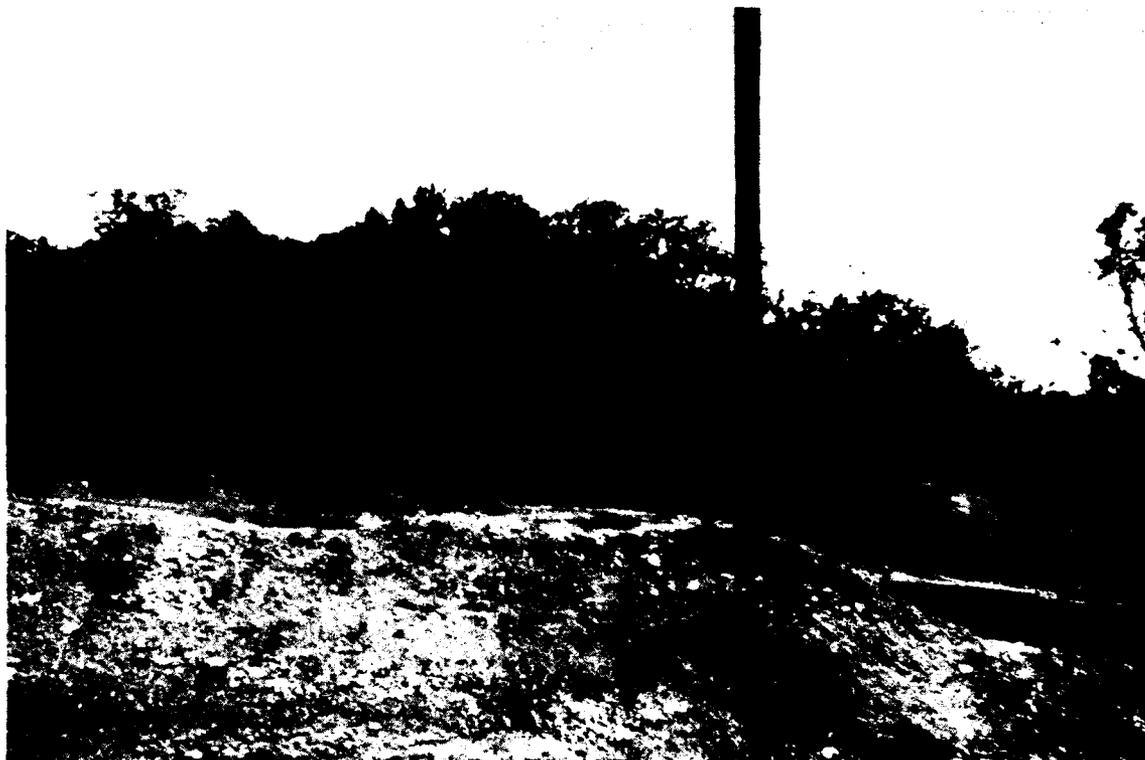


Figure 9. Historic cemetery at Fort Hood protected by fence and sign, with gate allowing access

	<u>CE</u>	<u>Other</u>
Yes	22 (84.62%)	196 (76.26%)
No	4 (15.38%)	61 (23.74%)

b. Which combination? (expressed as percent indicating usage)

	<u>CE (45)</u>	<u>Other (250)</u>
Patrol	46.15	38.40
Physical barrier	50.00	24.80
Interpretive methods	26.92	34.00
Visitor center/museum	0.00	11.60
Other	0.00	11.20

These results indicate that only about 20 percent of signing projects are undertaken without concern for any other protective strategy. The most popular strategies combined with signs are some form of patrol, use of protective barriers, and interpretation. It should be noted that an examination of the comments provided by many of the respondents indicate that many of these methods are actually more general in scope than resource site specific. For example, it is evident that in many instances limited patrol of very large

acreages is actually the case. Furthermore, such patrols may be very sporadic, in some cases only occurring once a year. Similarly, forms of physical barriers (e.g., fences or road closings) and interpretive programs are intended to cover large areas.

Several good examples of the combination of protective signs with other protective strategies were included in the responses to the questionnaire. Three of the more exemplary programs have been selected as being representative of such efforts. In each instance, they incorporate innovative approaches to signing of cultural sites.

In the first example, a signing program, closely coupled with a patrol and surveillance effort, was reported from the BLM Rio Puerco Resource Area in New Mexico. The BLM manages about one million acres in this resource area. Cultural resources inventories of less than 10 percent of these holdings has resulted in the recording of about 11,500 sites, a majority of which are sizable, visible properties. It is estimated that about two-thirds of the total resources are highly susceptible to vandalism activities. Since the late 1970s, some 300 sites (about 25 per year) have been signed with standard BLM antiquities signs (Figure 10). Priority has gone to those sites with known vandalism, relatively easy access, or special planning emphasis.



Figure 10. Signing of highly visible archaeological site in the BLM Rio Puerco Resource Area. Antiquities signs are placed at ground level in a way to be unobservable from a distance and also vandal resistant

The cultural resource signing projects in this case are an integral component of the resource area's patrol and surveillance plan. Protection of the significant cultural resource properties has been greatly increased because of a combined vehicle and walking patrol, particularly when augmented by the active antiquity signing program. Initially, regularly scheduled monitoring of both the effectiveness of the signs and the sign condition was completed as part of the patrol and surveillance plan; however, recent staff and funding constraints have forced curtailment of this monitoring effort.

While the formal integration of the resource signing program with the patrol and surveillance plan is notable, another aspect of the patrol and surveillance plan hints at the difficulties that resource managers face in providing adequate protection for sites. In spite of the aerial extent of the resource area and the density of cultural sites, the budget only allows for an annual total of 30 patrol days. Nonetheless, the signing program has resulted in important reductions of incidents of vandalism and looting within the resource area.

The second example is from the San Juan National Forest, located in southwestern Colorado, and involves a unique combination of a partnership, interpretation, and formal monitoring. The forest contains numerous highly significant prehistoric and historic cultural resource properties. The historic sites are of particular note since they are associated with early use of the region, including homesteading, mining and logging ventures, and related transportation routes. Other important resources are associated with the historic occupation of the area by the Ute Indians, who still reside on two reservations adjacent to the forest.

Beginning in 1981, the forest initiated an active signing program emphasizing protection and preservation of these important prehistoric, historic, and Native American resources. Funding was obtained from the Colorado Federation of Garden Clubs to erect historic markers at several sites. These markers include both an interpretive panel and a standard Forest Service notice concerning enforcement of antiquities laws (Figures 11, 12, and 13). As of the late 1980s, 15 sites had been selected for this type of sign program. Another eight cultural sites on the forest had been signed with interpretive markers under other programs. In addition to the historic markers and other interpretive signing efforts, the forest cultural resource management plan also calls for standard-type antiquities warning notices/signs/posters to be prominently displayed and maintained in good condition at points of public access and orientation, such as campgrounds, entrance stations, and boundary fences.

A brochure is currently being prepared that indicates the locations of the sites on the forest that are included in the historical markers program. In addition to location and interpretive details, a resource protection/preservation message will also be highlighted in the brochure.

Sites are selected for the historic marker program according to several criteria. The site to be signed must be one that has thematic importance and is suitable for interpretation. Next, it must have visibility (structures or other



Figure 11. Example of effective signing of a prehistoric archaeological site on the U.S. Department of Agriculture San Juan National Forest. The left panel includes general information, the center panel an interpretive panel and a standard antiquities enforcement sign, and the right panel describes an endangered bird species that inhabits the immediate vicinity

obvious features); this means that many of the less visible archaeological sites are not candidates for this form of signing. Signs placed at less obvious sites by the forest in the past have led to increased vandalism. However, a primary goal of the overall program is that by signing the more obvious resources in this manner, protection for all cultural resources on the forest will be enhanced. This is based on the belief that visitors and land users will be more interested in complying with the laws if they know something about the cultural history of the forest. Sites to be signed must also be located along public use travel corridors, such as vehicle access routes and hiking trails. Priority is given to those sites along vehicle access routes to better facilitate use by disabled citizens.

Cultural sites that have been signed in this manner are included in the forest's annual cultural resources monitoring plan. In all cases, either three or four visits by the forest archaeologist, or a designated person, are required. As part of these visits, the overall condition of the resource is documented, with special observance for signs of vandalism. Another function of the monitoring visit is to ensure that the historic marker and antiquities notices remain in good condition.

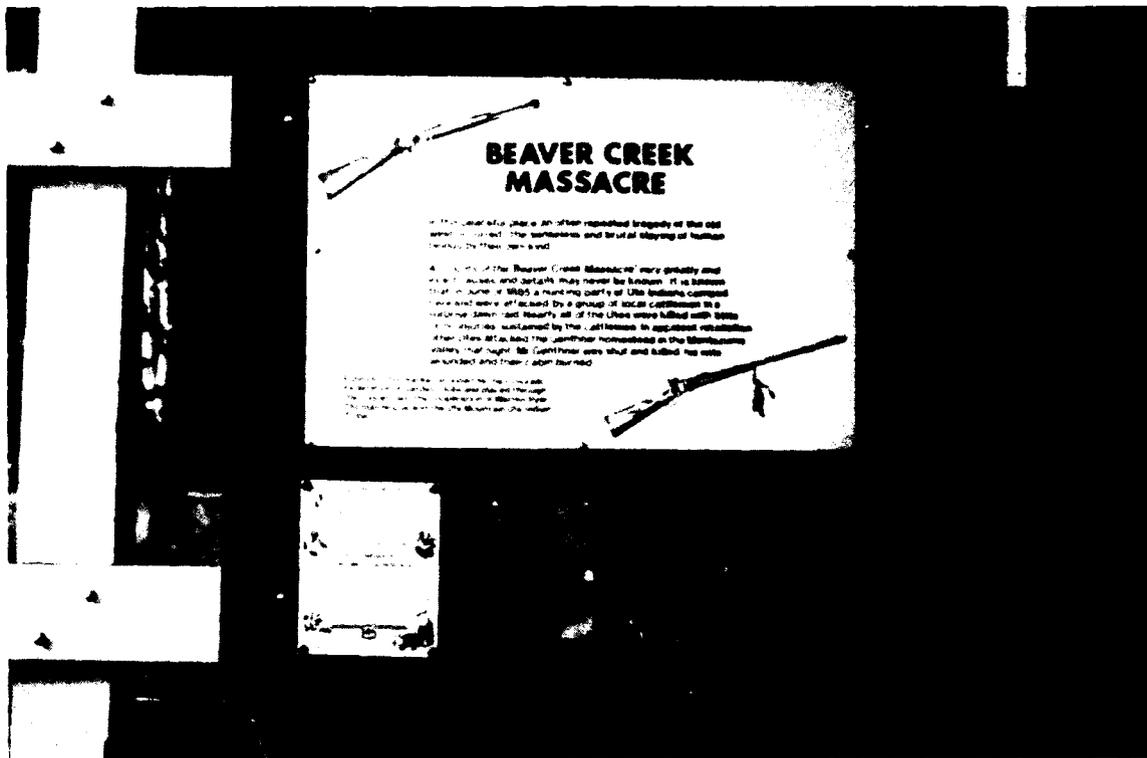


Figure 12. Close-up of a historical marker panel on the San Juan National Forest showing a combination of an interpretive sign, an antiquities enforcement sign, and, in this case, a sign indicating that the property has been listed on the National Register of Historic Places

Through the regularly scheduled monitoring activity, it has been possible to document a significant decrease in impacts to the signed properties. At some historic sites where vandalism was rampant in 1981, it has entirely ceased since erection of the historic markers. Over the past 10 years, the historic markers effort has helped to significantly decrease vandalism at nonsigned sites as well. Little vandalism of the signs themselves occurred.

The final example of a site protection program where the use of signs has been effectively integrated is on the Coconino National Forest in north-central Arizona. Like the other examples, the Coconino Forest contains numerous cultural resource sites, many of which are highly significant and often quite visible to visitors (Figure 14). Beginning in the early 1980s, the forest archaeologist initiated innovative site protection efforts aimed at reducing both incidental and deliberate damage and vandalism to some of the sites receiving large numbers of visitors. These endeavors included several components, including use of site steward programs, partnerships, interpretation, visitor sign-in books, ruins stabilization, graffiti removal, public service announcements, and antiquities signs (Pilles 1988). The signs were used in conjunction with the visitor sign-in books; discussion will focus on these approaches.



Figure 13. Partnerships are an important feature of the San Juan National Forest sign program. Here, a panel noting an important Native American sign is being dedicated by representatives of the Ute Indian Tribe, which is located adjacent to the forest

The visitor register (Figure 15) was initially tried as a low-cost experiment in interpretation and conveying a Forest Service presence at a site where vandalism was increasing. A three-ring notebook was attached to a free-standing holder. A standard Forest Service antiquities sign was affixed just above the notebook. A one-page typewritten interpretive message was placed on the inside front cover of the notebook, along with registration forms. Visitors to the site were asked to write down the date of visit, names, home, number of people in party, and comments.

The interpretive message placed in the notebook provides information about the importance of the site and explains the damage that can result from certain acts of depreciative behaviors at this particular site. The message also included a statement about site preservation efforts, such as wall stabilization or graffiti removal, along with instructions for visitors to follow during their visit in a manner not to damage fragile portions of the site. The interpretive message closed with a statement reflecting official presence. It asked visitors who desired additional information to contact the appropriate Ranger District or the "patrolling ranger."



Figure 14. Sign providing protection to a highly visible archaeological site, Coconino National Forest

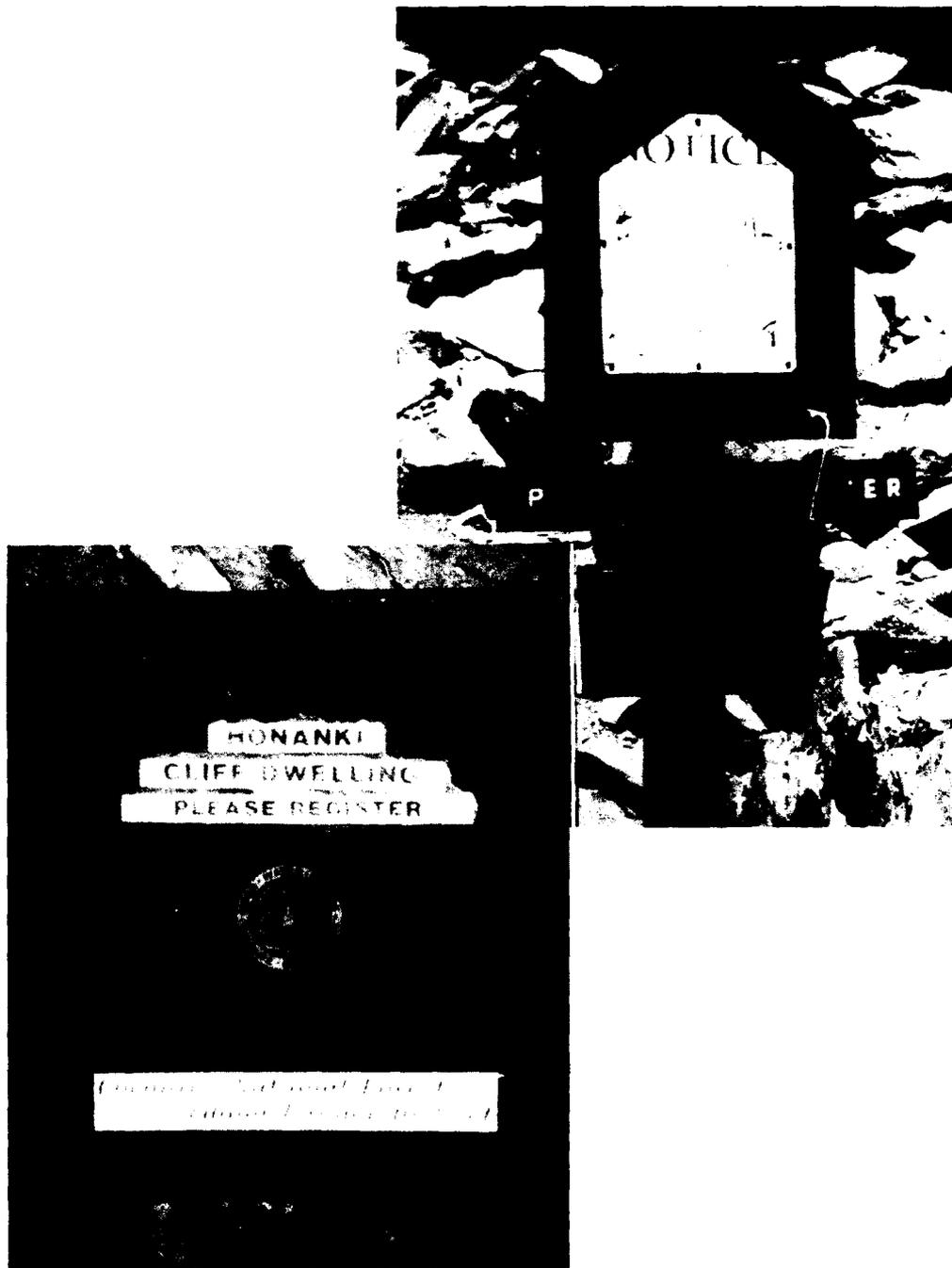


Figure 15. Visitor register station combining use of a visitor sign-in book (close-up) and an antiquities enforcement sign, Coconino National Forest

At sites where visitor sign-in books and antiquities enforcement signs were placed, success has been achieved in reducing vandalism. Also important is the fact that the Forest Service has been able to construct visitor profiles from analysis of the sign-in logs, including numbers of visitors, origin, size of groups, time of year the site is visited, and visitation patterns according to days of the week. Information such as this is critical to designing effective long-term resource protection and for efficient allocation of limited personnel and budgets. As of 1992, the visitor sign-in book/sign approach has been expanded to 15 archaeological sites on the Coconino National Forest.

Number of signs used per site

Respondents were asked to note the number of signs that were put into place to protect resource sites. For those responses that a precise number of signs per specific site could be determined, a simple integer value was assigned. As the percentages shown below indicate, using one sign per site is a decided preference. Over 85 percent of the total responses noted that four or less signs had been used. At the other end of the scale, one respondent had used 70 signs, and another said that 100 signs had been used to protect a site.

<u>No. of signs per site</u>	<u>CE (21)</u>	<u>Other (228)</u>
1	28.57	53.07
2	19.05	16.67
3	4.76	11.40
4	19.05	6.14
5	9.52	2.63
6	4.76	2.19
7	0	.88
8	0	.88
9	0	0
10	4.76	.88
> 10	9.52	5.26

Guidance used in planning and implementing the sign project

This question was designed to learn not only what guidance resource managers were using, but also to determine if any of the agencies in fact had any guidelines available. A majority of the respondents either left the answer blank, answered "none," or noted "common sense," "intuition," "seat-of-the-pants," or some other similar methodology. Some mentioned contacting other professionals with prior signing experience. Others observed that informal guidance was solicited from the NPS, or that information gained from the Federal Law Enforcement Training Center's ARPA training course was used. Written guidelines were not identified in the responses that were specifically oriented towards signing of cultural resource sites.

Change in impacts to site after signing

The respondents were asked to indicate whether impacts had increased or decreased at sites where protective signing had been undertaken. Responses were solicited according to a five-point scale with an additional possible answer of "not determined." The results are as follows (given as a percentage of total responses):

	<u>CE (25)</u>	<u>Other (225)</u>
Large increase in impacts	4.00	3.56
Some increase in impacts	4.00	6.67
No change in impacts	16.00	20.44
Some decrease in impacts	28.00	28.44
Large decrease in impacts	24.00	16.89
Not determined	24.00	24.00

These results lend support to the responses to the first issue of Part I of the questionnaire in which respondents voiced a strong opinion that protective signs do help safeguard cultural sites. The comparatively small CE sample results are close to the other agencies in this regard. If the results are collapsed and combined, only 10 percent of the cases reported saw an increase in impacts after signing. No change was evident 20 percent of the time. Some decrease in impacts was observed in 46 percent of the sample. It is important to note, however, that of those responding to this question, approximately one out of four indicated that they had not determined whether or not impacts had changed.

Scheduled or formalized monitoring strategy

This question was designed to be a follow-up to the previous one. Respondents were asked if they had a structured monitoring plan for determining and evaluating the success or failure of their signing effort. If the response was positive, they were also asked to briefly describe the monitoring strategy. The results here are as follows (given as a percentage of total responses):

	<u>CE (26)</u>	<u>Other (247)</u>
No	84.62	68.83
Yes	15.38	31.17

These results are interesting in that they seem to indicate that while resource managers feel their signing projects are effective, relatively few actually have a formalized plan for acquiring pertinent data. Only 30 percent of the total respondents claim to have such a plan. However, the narrative responses reveal that while formal monitoring plans are not the rule, informal monitoring of the signing efforts commonly occurs. Certainly one of the

basic problems with formal monitoring of signed resources has to do with personnel and budget constraints coupled with the large numbers of resource properties that many must manage.

Vandalism of signs

Vandalism of the signs themselves has been discussed previously. Both pros and cons exist with this issue. Signs are expendable but must be replaced when damaged for continued effectiveness. Many of the respondents observed that signs need to be kept in good condition so that visitors get the impression that agency presence is continuous. Faded or badly damaged signs indicate that agency presence is not up to date.

However, the deflection of depreciative behavior to the sign and away from the resource could be desirable, despite the maintenance requirements, if some vindictive or malicious types of damage were transferred. There is no reason to believe, however, that deflection of depreciative acts will include all forms of violations. For example, damaging a sign is not likely to reduce collection of surface artifacts.

Within this context, the respondents were asked to indicate if their signs had been vandalized and, if so, in what manner. The following results were obtained (given as a percentage of total responses):

	<u>CE (26)</u>	<u>Other (244)</u>
Yes	42.31	48.36
No	57.69	51.64

About one-half of the respondents reported vandalism to signs. Shooting at signs is the most common form of damage, but nearly every type of sign vandalism imaginable was reported. In addition to damaging signs in place, theft was also reported. In one case, a Forest Service archaeologist noted that one of their signs that features the picture of a Native American was frequently stolen in an area adjacent to an Indian reservation. Others stated that in their areas, a stolen antiquities enforcement sign increases the value of an artifact collection from a looted site.

It is interesting to note that the three sign project examples described above as effective combinations of protective strategies all report very low incidences of sign vandalism. In the BLM Rio Puerco Resource Area where more than 300 signs have been installed since 1977, fewer than 12 have had to be replaced in that time period. Little or no sign vandalism is reported by the two National Forests for antiquities enforcement signs installed in conjunction with interpretive signs or visitor sign-in books. The Forest archaeologist from the Coconino National Forest observed that protective signs at cultural sites are not vandalized as much as other Forest Service signs in other areas, such

as campgrounds or along roads. However, this situation may be a function of relatively higher numbers of visitors at those locations.

The issue of sign vandalism appears to be an important one and one in which very few discrete data are available. Knowing, for example, that certain types of signs (e.g., warning versus interpretive) and/or messages are damaged more than others would be useful. Being able to evaluate the "deflection of impacts" hypothesis to see if it really operates and under what conditions would also be useful.

References for sign projects

The final question in Part II asked respondents to provide a reference to any reports or other type of available documentation that described any of their sign projects. During the analysis, the responses were coded simply "yes" or "no." These results are as follows (given as a percentage of total response):

	<u>CE (26)</u>	<u>Other (256)</u>
Yes	7.69	14.06
No	92.31	85.94

These results reveal that only in about 1 in 10 cases is there any written documentation prepared following signing projects. Most of the positive responses stated that such information is commonly included in some type of management plan or sign plan.

Responses to Part III

As noted in Chapter 4, written comments were provided by 61 percent of the respondents. These narratives ranged in length from one or two sentences to several pages. On the whole, the comments are quite valuable for evaluating sentiments associated with signing issues. Because considerable redundancy exists in the observations and because of the overall amount of information, making all of these remarks available in this report is not deemed practical. Rather, representative examples of some of the respondents' comments have been selected for inclusion and are found in Appendix D. While these selected Part III responses do not cover the entire scope of thoughts on these issues, they are indicative of the cross section of opinions expressed by respondents to the questionnaire.

Summary

The results obtained by the nationwide survey include an extensive body of data on the opinions of resource managers and specialists on issues related to using signs in a cultural resource protection context. These opinions come from several Federal and state agencies. As anticipated, much variability is evident in the responses. However, a consensus of opinions is apparent in several cases. The respondents clearly believe that signs, if properly employed, can be used to effectively reduce the effects of depreciative behavior to cultural resource sites, even though considerable general sentiment exists that signs may contribute to increased vandalism or looting of resources. However, of those who had used signs, only 10 percent reported a subsequent increase in impacts, while a decrease in impacts after placing signs was observed by 46 percent of the sample.

According to the responses, near complete agreement was reached that signing, to be effective, should be combined with other forms of resource protection strategies. The key here is that the signing effort must be combined with other strategies through an integrated approach, not simply as an addition to other strategies. Support was also voiced for messages that incorporate both an interpretive intent and a clearly worded warning that cites regulations and penalties. The warning part of the message is felt by many to be crucial in the event of court cases involving ARPA violations. This combination can be portrayed in one of two ways--either by using two appropriate signs in tandem, such as the example from the San Juan National Forest, or by designing one message that incorporates interpretive and warning aspects.

Despite the volume of data derived from the questionnaire responses, apparent gaps occur in the extant information. For example, few guidelines are given for personnel to follow in designing effective sign programs. Similarly, little formalized monitoring of the results is done once signs are placed in the field. Without systematically derived data in this regard, little can be said about the effectiveness of various types of signs in different kinds of settings. Finally, the results of signing efforts rarely find their way into written formats. The consequence of this situation is a general lack of comparative data for use by resource managers and specialists. Over 90 percent of the respondents supported the need for field research to evaluate various signing strategies.

6 Guidance for Effective Signing Projects

Introduction

The topics covered in the preceding chapters serve to create a context or base from which to develop guidance for planning, designing, implementing, and evaluating protective sign projects for cultural resources. Given the variability of opinions and the multitude of factors associated with the use of signs for this purpose, arriving at a single set of procedures that will work in all cases and in all regions of the country is not possible. Rather, the following guidelines are offered to include a spectrum of concerns that may be considered when planning and implementing a cultural resource sign program. In all cases, it is recommended that the general model be followed in the design of an effective signing effort.

Guidelines

Objectives

The primary objective of the effective protective signing effort is to aid resource managers in reducing the potential for partial or total destruction of significant historic and prehistoric cultural sites caused by either incidental or deliberate depreciative behaviors. It must be recognized that no matter how effective the sign program is, it cannot totally prevent vandalism and looting. Achievement of this objective will aid the Corps of Engineers in accomplishing management goals and requirements related to historic preservation activities at Civil Works projects.

A second objective of signing of cultural resources is to make the public aware of the pertinent rules and regulations pertaining to actions that might adversely impact these protected resources. This objective covers Corps regulations and other Federal or state antiquities laws that remain in full force and effect at Corps projects.

The third objective includes the need to enhance the public understanding and appreciation for cultural resources located on Corps project lands, particularly in regard to the necessity for protecting and preserving these fragile properties. To attain maximum effect in reducing loss of resources, public understanding of the need for preservation as well as adherence to legal requirements is crucial. An effective sign can serve as a mechanism for building public awareness and support for cultural site preservation.

Relationship to the "Sign Standards Manual"

The CE "Sign Standards Manual" establishes standard guidelines for all CE signage, including the following: planning, use, placement, materials, and maintenance. The first three sections (2-4) of the manual provide basic guidelines that apply to all Corps signs. Section 2 "Principles and Guidelines" describes the basic principles of Corps signing, including the following: message preparation and sign legend content, mounting methods and placement guidelines, material selection, and maintenance procedures. Section 3 "Program Plan and Documentation" covers guidelines for developing a comprehensive sign plan for a given project, including the following: inventory of existing conditions, analysis of sign requirements, preparation of a sign plan, and program implementation to comply with the manual. Section 4 "Design Standards" describes the graphic and visual elements that are to be used in the design and layout of signs.

Currently specific guidelines are not in the manual for signing of cultural resources nor are there any standardized sign formats for use in this regard. However, standard sign formats are available for area regulation signs that are used to identify the major regulations within an area of which visitors should be aware. There are also recreation area signs, some of which are used to close areas to the public or channel visitors to designated areas. Cultural resources personnel should be aware of these signs and their potential use in a creative manner to protect cultural sites. For example, a simple "no trespassing" sign might be posted, which implies that a closed area may be something other than a significant archaeological property.

The recently completed standards for interpretive signs (Section 13) come closest to the need for flexibility in designing signs and messages for cultural resource purposes. The manual does not control the visual look of the finished interpretive signs; rather, the intent is to provide guidance in developing interpretive signs that need to reflect creativity and flexibility since they relate to specific sites, goals, and objectives. The same approach is essential for cultural resource signs, except that they are more specifically oriented towards resource protection via a combination of interpretive and warning/regulatory messages. The planning model presented in the manual for interpretive signs also includes many of the elements that managers and specialists must consider when designing cultural resource signage. Because of this similarity, the interpretive planning model serves as a basic framework for the cultural resource sign guidance. The interpretive sign planning model includes six

elements: (a) analyzing resource, (b) developing objectives, (c) analyzing the visitor, (d) determining how/when/where to use the signs, (e) evaluating effectiveness, and (f) implementing and operating. These elements are employed below in a modified and expanded format to cover signing of cultural resources.

Cultural resources sign planning model

The recommended model for guidance on the effective use of signs to protect cultural resources is discussed in the following paragraphs. The model includes seven steps: (a) analyzing the resource, (b) analyzing the source of the impact, (c) developing objectives, (d) determining sign logistics, (e) creating message and evaluating potential effectiveness, (f) implementing, and (g) monitoring.

The model is based on the following principles:

- a.* Signs can be used effectively to reduce many acts of depreciative behavior. However, the degree of effectiveness is dependent upon achieving a good understanding of the problem and its origins, followed by a careful analysis leading to an appropriate sign strategy. As noted previously, complete stoppage of vandalism cannot be guaranteed.
- b.* The potential also exists that signs may lead to an increase of undesirable impacts by calling attention to a resource. Careful and complete evaluation of the effort prior to implementation, along with systematic monitoring of the results, will greatly reduce this possibility. It must also be remembered that, as a protective strategy, signage is reversible and can be quickly removed if not working.
- c.* It is unlikely that everyone will be reached by the same sign or message. Care must be taken in devising the most appropriate message for local resource, area, and management conditions. In some situations, more than one type of message may be needed.
- d.* Protective signs have been shown to be most effective when actively combined with other forms of resource protection activities, such as surveillance or patrolling, site stabilization, interpretation, or public education.
- e.* Some type of systematic monitoring of the success (or lack of it) is needed for each sign project. This approach will provide much needed data on the effectiveness of signs under specific field conditions.

Analyzing the resource

Analysis of the resource requiring protection involves more than simple knowledge of its existence. In addition to standard recording and significance evaluation, detailed examination of the past and ongoing impacts as well as a site's exposure to risk of damage or loss should be undertaken prior to a decision to sign the resource.

A useful method for addressing overall risk is to conduct a "site vulnerability assessment" (Montalbano 1988). This procedure can be used to identify and rank those sites most at risk in an area, and it allows protection efforts to be focused on those resources most likely to experience impacts from vandalism and looting. The results of this type of analysis can certainly be utilized in helping to determine which sites require protective signs.

Employing this procedure, one selects a number of factors having to do with both physical site and protection factors. As an example, the following factors may be considered, although the actual ones used in the analysis should be modified as appropriate for local conditions.

a. Physical site factors.

- (1) Site accessibility--How easy is it to get to the site and remove artifacts?
- (2) Site density--Is the site in an area known to contain many sites?
- (3) Site visibility--Can the visible evidence of the site be seen?
- (4) Site condition--How heavily is the site impacted by past digging and collecting?

b. Protection factors.

- (1) Knowledge of the site--How well known is the site or the immediate area?
- (2) Site conspicuousness--What is the likelihood of inadvertent discovery by legitimate human presence?
- (3) Artifact type/value--What is the site's potential for uncovering marketable items?
- (4) Present site activity--What type of activity is going on at the site or in the immediate area?
- (5) Frequency of site patrols--How often is the site visited by an agency employee?

(6) Public support for cultural resource protection--How strong is the public support in the area?

Based on local experience, each of the factors chosen in the analysis is given a priority number. The factor that is considered most important is given a priority value of 10; the least important receives a 1. Next, each factor is subdivided into a number of items that characterize its parameters, and each of these items is assigned a value as in the following example:

Site Condition: Priority _____

- | | |
|-----------------------------|---------|
| a. Very heavily vandalized | Value 5 |
| b. Moderate to heavy | Value 4 |
| c. Low to moderate | Value 3 |
| d. Low | Value 2 |
| e. No evidence of vandalism | Value 1 |

Score: _____

The value selected multiplied by the priority becomes the score for that factor. Once scores for each factor have been determined, they are totaled to assign a risk number for that site, which can then be compared with other sites to identify those most at risk within a given area.

Once in operation, site vulnerability assessments can be quickly completed for sites in the existing database or as new ones are recorded. Since one or more of the factors selected may change in the future, sometimes rapidly, the site vulnerability assessment procedure should be dynamic and updated as necessary.

Analyzing the source of the impacts

If successful site protection is to be achieved, an awareness of the characteristics of the source of the impacts is just as important as knowing the resource itself. As reflected in Chapter 2 of the report, delineation of the motivations leading to vandalism and looting of cultural resources is not a simple task. The target audience that needs to be reached with the resource protection message can range from incidental actions caused by uninformed visitors to what have been termed "hard-core vandals," who likely are going to ignore all attempts to communicate with them. However, being aware of the types of visitors and their motivations will greatly assist in designing the most appropriate signing strategy to combat these depreciative behaviors.

The level of detail involved in acquiring and evaluating these data will depend on the vulnerability of the resources and the severity of the problem. At a minimum, it is useful to know how many people visit the area or site, their reasons for being there, their methods of access, and the duration of their stay. In some cases, the demographics of the visitors (origin, age groups, sex, income, etc.) may be useful in designing the protective message. Local attitudes towards the resource, historic preservation in general, or the government itself can also be important.

If, as is recommended herein, the use of signs is integrated with other strategies in a comprehensive long-range resource protection program, this information becomes even more valuable. This is especially true when the resource manager is faced with the prospect of combating the problem with limited funds or manpower.

Developing objectives

When asked to provide details about why signs were used, one of the respondents to the nationwide questionnaire simply and honestly stated "We just put up signs and hope for the best." Unfortunately, this approach has probably not been uncommon in past protective sign projects across the country. For each sign project, explicit objectives need to be formulated. These objectives may be specific only to the signing effort or incorporated as part of a more comprehensive resource protection program. These should include the first and one or more of the remaining interpretation-related objectives listed below:

- a. *Protection objective.* This objective should state the reasons for the protective signing effort, including the legal and regulatory basis, the kinds of resources involved, and the types of impacts caused by visitors.
- b. *Learning objective.* If a combination of interpretive and warning messages is used, those pieces of information that are important for the visitor/reader to remember need to be stated. An example of a learning objective is "the majority of visitors will be able to distinguish a cultural resource from a natural one following their visit."
- c. *Behavioral objective.* In that these endeavors involve the physical behaviors or actions that are desired during or following reading of the sign, these objectives are critical to the protection effort. An example of a behavioral objective is "after reading the sign, a majority of the visitors will not pick up surface artifacts."
- d. *Emotional objective.* Like the preceding objective, this one is central to the protective strategy since it involves getting the visitor motivated to "remember" learned information about resource protection or "do" the desired behavior. An example of an emotional objective is that

"after reading the sign, the majority of the visitors will feel it is important to preserve cultural resources and act accordingly."

Determining sign logistics

This planning step concerns itself with how, when, and where to use protective signs. Based on the results of the nationwide survey, considerations associated with this step are crucial to the success of the signing effort. Because of local or regional settings, generalizing specific approaches for these considerations is difficult. However, among the questions that may require evaluation are the following:

- a. *Placement.* Should signs be placed at the site or along access roads or other points of entry, such as boat ramps or recreation areas? Will the visual impact of the sign intrude on the historic atmosphere of the resource (Figure 16)?



Figure 16. Visual intrusion by the protective sign on the historic atmosphere

- b. *Number.* How many signs will be required to meet the objectives.
- c. *Time of placement.* Should the signs be permanently, seasonally, or otherwise temporarily placed? Should signs be placed immediately at an unsigned site if a vandalism incident is observed?

- d. Combinations.* Will more than one kind of sign be required to meet the objectives? How will the signing effort relate to other protective strategies?

Creating message and evaluating potential effectiveness

At this point in the process, the draft message can be prepared. Formulating the message requires attention to several concerns, not the least of which is ensuring that the stated objectives are being met. Other concerns may include the following: Should the message be generic or more area or site specific? Does the message make it clear what is being protected (to prevent the response "I wasn't digging where the sign was, I was digging over there" or "I thought only sites with signs were protected")? Should the message include an office or phone number (for additional information or to report violations)? Will graphics enhance the effectiveness of the message? Is a bilingual message needed?

Fully evaluating both the objectives and the message prior to implementation is important. Depending upon the circumstances, some techniques that may be used include the following:

- a.* In-house review, including the Corps Division/District sign coordinator.
- b.* Review by a panel of visitors.
- c.* Review by experts (e.g., archaeologists and other social scientists).
- d.* Review by other interested parties (e.g., Native American concerns may need to be addressed--Do they want signs erected? Are they in agreement with the message?).

Implementing

Implementing the protective sign effort involves a number of logistical steps needed to go from plan to operation. Following the Corps sign manual, a checklist of these items includes such concerns as the following:

- a.* Funds available to produce signs and install them.
- b.* Actual versus desired production time.
- c.* Selection of sign materials (wood, fiberglass, and metal).
- d.* Who will write the text and do design?
- e.* Who will review graphics and text?

- f. Approval steps.
- g. Who will fabricate the sign?
- h. Who will install completed signs?

One of the most critical concerns in this phase of the planning process involves material selection. Generally speaking, the most desirable material will be practical, meet the needs, and be vandal resistant. Guidance on materials and specifications is found in the Corps "Sign Standards Manual" (Section 2 and Appendix B). To reduce maintenance and replacement costs, special consideration should be given to vandal-proofing the signs through selection of resistant materials, tamper-free hardware, and installation methods that resist removal or vehicular impacts. Damaged or worn signs will also lead to a reduced level of effectiveness for resource protection.

Considerable research has been undertaken to identify vandal-resistant signs and installation methods. For example, the Carsonite Company, Carson City, NV, has developed a fiber-reinforced composite material that is nearly impervious to the various natural (cold, heat, water, and ultraviolet exposure) and vandal-related (vehicles, bullets, scratching, and burning) impacts that commonly affect signs. The Carsonite system also includes an installation procedure that uses a flexible post and antitheft post driver to install signs.

Other solutions come from responses to local conditions or needs. Anthony Lutonsky of the BLM Rio Puerco Resource Area office in New Mexico devised a cheap, vandal-resistant metal signpost and holder for standard agency antiquities signs. The signpost is made from a standard metal fence post, about a yard of 1/2-in. angle iron, and a foot of 1/2-in. strap iron (Figure 17). The apparatus was designed to require minimal maintenance and to resist most attempts at theft or vandalism. In this case, the signpost was designed to be installed near ground level, with a 3-ft metal post. The signs did not call attention to the site, but were in place to provide legal notice to visitors concerning resource protection laws.

Given the apparent importance for cultural resource protection signs in prosecution of vandals and looters, some basic information concerning the installation procedure needs to be acquired. At a minimum, the locations of the signs and their relationship to the site itself should be shown on the map included with the site recording form and/or on an area map (e.g., U.S. Geological Survey topographic map) if a larger area is signed. A file photograph of each sign should be made at the time of installation. If possible, the sign's relationship to the site should be indicated in the photograph.

Devising a simple District/project cultural resource sign database to track the distribution of signs including type of sign, date of installation, and location may also be helpful. A sign identifier and date of installation can also be included on the sign itself by using a small stick-on label affixed to the back of the sign (Figure 18). Not only will such a database be useful in legal

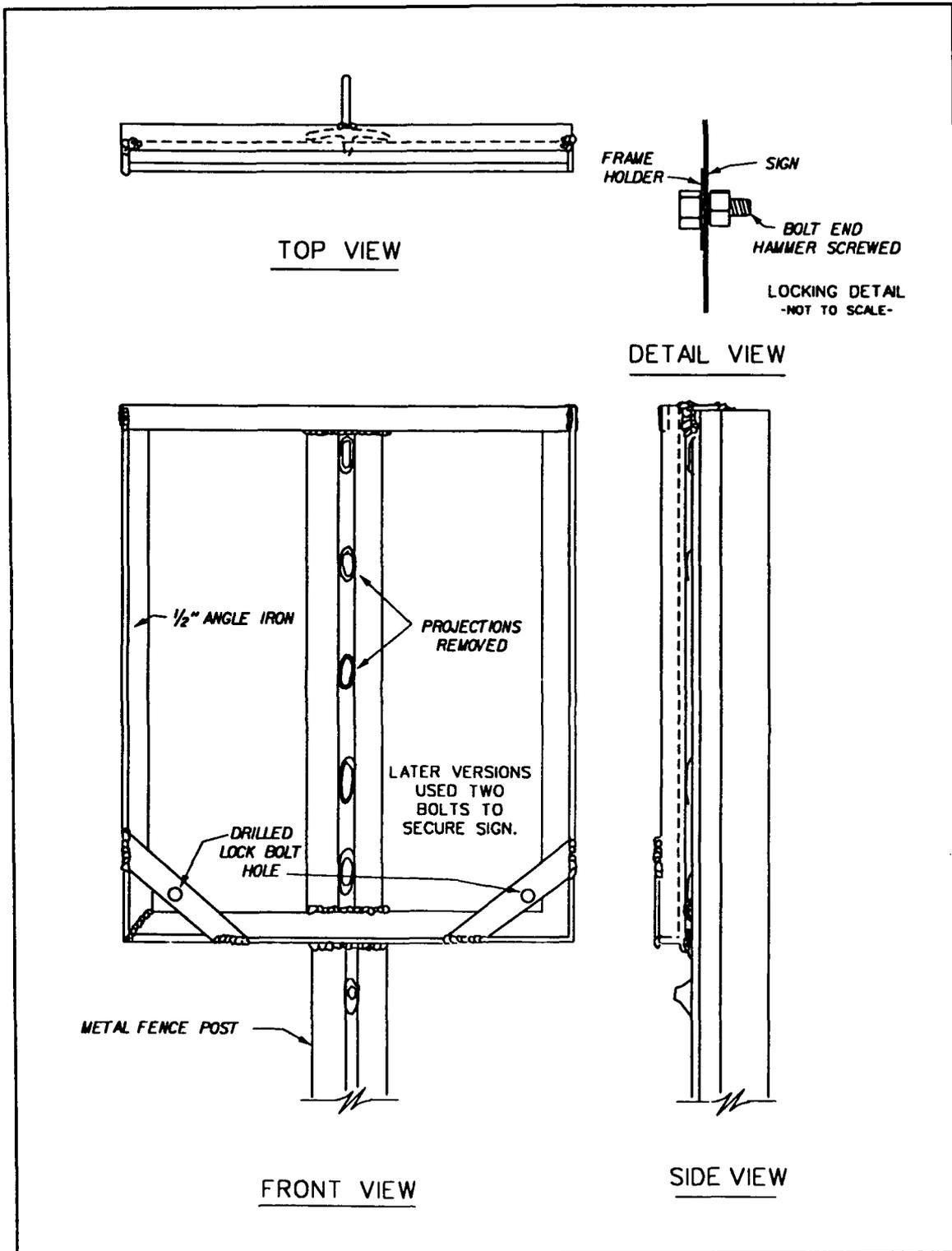


Figure 17. Vandal-resistant antiquities sign holder designed by BLM, Rio Puerco Resource Area. Figure 10 of this report shows a field application of this holder

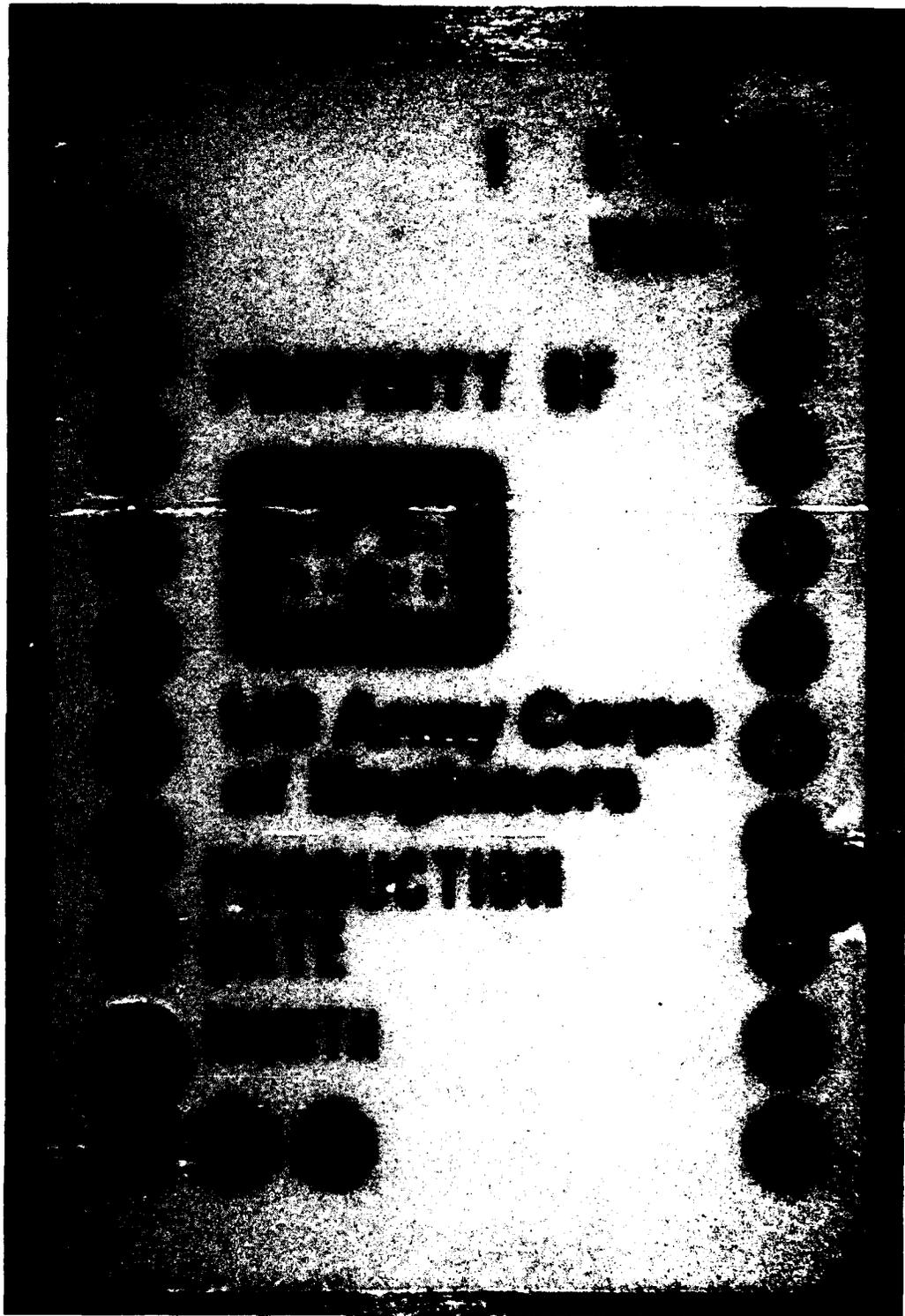


Figure 18. Close-up and enlargement of an example of an adhesive sticker that is placed on the back of a sign to identify and register it

issues, but it is also critical to establishing a framework to be able to evaluate the effectiveness of the effort.

Monitoring

Instructions and methods for checking and reporting on sign condition are found in Appendix C of the Corps sign manual. However, monitoring once the signs have been put into place should serve a larger role than simply checking to see if the sign is still present or requires repair or replacement. Given the current paucity of data on the effectiveness of signs in a resource protection mode, a methodology needs to be developed to monitor the effectiveness or lack of it. This will require evaluation of subsequent impacts to both the signs and the resources and should consist of *regularly scheduled* visitation and formalized recording of conditions at the time of the visit. The results of the monitoring effort can be incorporated into the sign database to yield a basic tool for more effective and efficient long-term resource protection.

Summary

This chapter of the report has outlined some guidelines for using signs to protect cultural sites from acts of depreciative behavior. Signs used in this manner should conform, as much as possible, to existing Corps requirements. However, given the complexity of the related issues, such signs should not be overly standardized. Flexibility in content will likely have the best chance of succeeding in meeting the defined objectives. Resource managers and specialists are encouraged to be creative and innovative in designing cultural resource protection signs. Local resource conditions and impacts, along with management requirements, all need to be carefully evaluated. Once implemented, systematic monitoring of the signs and ensuing impacts is critical to evaluating the level of effectiveness.

The model presented herein includes the general process that should be considered when designing and implementing a sign project. It is not intended to be rigorously applied in all situations, but should be consulted for guidance on the various issues or concerns that may have to be considered in the project.

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Appendix A

Cultural Resource Signing Questionnaire

As part of the ongoing research at the Corps of Engineers' Waterways Experiment Station on field preservation of cultural sites, one of our defined research goals is to investigate the issue of signing of cultural resources as a means of providing at least partial protection from intentional and unintentional depreciative behavior. Our research objectives are to accumulate information on past and ongoing signing efforts within the Corps and other agencies and to provide guidance on what aspects of signing have proven to be effective on other projects or in other parts of the country.

The questionnaire consists of three parts. All respondents are requested to complete Parts I and III. Part II is to be completed for past and ongoing signing efforts. If you have implemented more than one signing effort at either multiple resource properties or you are using different strategies, please reproduce Part II as needed and provide separate information for each signing project.

Please return the completed questionnaire to the address given below. For additional information on the survey or if you have questions concerning the project, please contact Dr. Paul Nickens at the following address or by telephoning (601)634-2380.

Return to: Commander and Director
 U.S. Army Engineer Waterways Experiment Station
 ATTN: P. R. Nickens, CEWES-EN-R
 3909 Halls Ferry Road
 Vicksburg, MS 39180-6199

PART I

Part I of the questionnaire is designed to identify the respondent and solicit answers in the form of strength of agreement with selected statements. Please use the following key in choosing your responses.

SA -- means I strongly agree with the statement.

A -- means I agree with the statement in most instances.

N -- means I neither agree nor disagree with the statement.

D -- means I disagree with the statement in most instances.

SD -- means I strongly disagree with the statement.

1. Name _____ Phone # (non FTS) _____
Agency _____ Office _____
Mailing address _____

2. Please indicate your strength of agreement with the following statements by circling your response:

- | | | | | | |
|---|----|---|---|---|----|
| a) Signs can be used as an effective protective strategy at sites. | SA | A | N | D | SD |
| b) Signing contributes to vandalism or casual collecting. | SA | A | N | D | SD |
| c) Signing is more protective if placed offsite rather than onsite. | SA | A | N | D | SD |
| d) Signing will be most effective if employed with other protective strategies, e.g., interpretive exhibits, visitor center, fence, patrol, or control of access. | SA | A | N | D | SD |

e) Sign message -- please indicate your feelings about how effective each of the following text formats would be (or is) in preventing cultural resource vandalism

- | | | | | | |
|---|----|---|---|---|----|
| 1) Nonspecific, e.g., "Off Limits" or "Do Not Trespass." | SA | A | N | D | SD |
| 2) Specific, e.g., "Archeological Site--Do Not Disturb." | SA | A | N | D | SD |
| 3) Interpretive, e.g., "This is an important Mississippian mound group..." | SA | A | N | D | SD |
| 4) Warning, or threatened sanction, e.g., "Archeological Site - Protected by Law" and giving penalties. | SA | A | N | D | SD |
| 5) Bogus, e.g., "Poison Ivy" or "Hazardous Waste." | SA | A | N | D | SD |
| 6) Combination of one or more of the above formats. | SA | A | N | D | SD |

Which combination? _____

- | | | | | | |
|--|----|---|---|---|----|
| f) Only large or highly obtrusive resource sites which are receiving impacts should be signed. | SA | A | N | D | SD |
| g) Generally, unobtrusive sites should not be signed. | SA | A | N | D | SD |
| h) Sites located in remote areas with only periodic or little surveillance should not be signed. | SA | A | N | D | SD |

3 Do you think it would be useful to investigate, under controlled conditions at select archeological sites, specific signing strategies in order to evaluate their relative effectiveness? Yes _____ No _____

5. Sign location (onsite or offsite) and method of placement (e.g., on stake, fence, or tree):

6. Was the sign used in conjunction with any other protective strategy (e.g., interpretation, visitor center, museum, fence, patrol, access control, or other approach)? Yes _____ No _____ Please explain:

7. Number of signs used per cultural resource site:

8. What guidance did you use in planning and implementing the signing effort?

9. What change in impacts have you noticed after signing? (Please circle letter indicating your response). If necessary, please explain your answer in Part III.

- a. Large increase of impacts.
- b. Some increase of impacts.
- c. No change of impacts.
- d. Some decrease of impacts.
- e. Large decrease of impacts.
- f. Not determined.

10. Do you have a scheduled or formalized monitoring strategy for determining and evaluating the success or failure of the signing effort? Yes _____
No _____ If yes, please briefly describe the strategy.

11. Has the sign itself been vandalized? If so, in what manner?

12. Reference (report or other documentation available describing the signing effort):

PART III

Please use this space to provide any comments of a general nature you might have regarding the issue of signing cultural resources or to expand, as necessary, on any of your questionnaire responses.

Appendix B

Summary of Questionnaire Results--All Agencies

Total Responses--427

Part I--Strength of Agreement with Selected Statements

2.a *Signs can be used as an effective protective strategy at sites.*

N = 421

	<u>Count</u>	<u>Percent</u>
Strongly Agree	88	22.90
Agree	248	58.91
Neither Agree nor Disagree	42	9.98
Disagree	36	8.55
Strongly Disagree	7	1.66

2.b *Signing contributes to vandalism or casual collecting.*

N = 420

	<u>Count</u>	<u>Percent</u>
Strongly Agree	16	3.81
Agree	138	32.86
Neither Agree nor Disagree	112	26.67
Disagree	144	34.29
Strongly Disagree	10	2.38

2.c *Signing is more protective if placed offsite rather than onsite.*

N = 420

	<u>Count</u>	<u>Percent</u>
Strongly Agree	29	6.90
Agree	118	28.10
Neither Agree nor Disagree	158	37.62
Disagree	105	25.00
Strongly Disagree	10	2.38

2.d *Signing will be most effective if employed with other protective strategies, e.g., interpretive exhibits, visitor center, fence, patrol or control of access.*

N = 422

	<u>Count</u>	<u>Percent</u>
Strongly Agree	313	74.17
Agree	104	24.64
Neither Agree nor Disagree	4	.95
Disagree	1	.24
Strongly Disagree	0	0

2.e *Sign Message--please indicate your feelings about how effective each of the following text formats would be (or is) in preventing cultural resource vandalism.*

1. *Nonspecific, e.g., "Off Limits" or "Do Not Trespass."*

N = 418

	<u>Count</u>	<u>Percent</u>
Strongly Agree	20	4.78
Agree	104	24.88
Neither Agree nor Disagree	106	25.36
Disagree	143	34.21
Strongly Disagree	45	10.77

2. *Specific, e.g., "Archeological Site--Do Not Disturb."*

N = 418

	<u>Count</u>	<u>Percent</u>
Strongly Agree	16	3.83
Agree	184	44.02
Neither Agree nor Disagree	88	21.05
Disagree	98	23.44
Strongly Disagree	32	7.66

3. *Interpretive, e.g., "This is an important Mississippian Mound Group..."*

N = 416

	<u>Count</u>	<u>Percent</u>
Strongly Agree	80	19.23
Agree	205	49.28
Neither Agree nor Disagree	63	15.14
Disagree	50	12.02
Strongly Disagree	18	4.33

4. *Warning, or threatened sanction, e.g., "Archeological Site--Protected by Law" and giving penalties.*

N = 418

	<u>Count</u>	<u>Percent</u>
Strongly Agree	78	18.66
Agree	231	55.26
Neither Agree nor Disagree	65	15.55
Disagree	38	9.09
Strongly Disagree	6	1.44

5. *Bogus, e.g., "Poison Ivy" or Hazardous Waste."*

N = 418

	<u>Count</u>	<u>Percent</u>
Strongly Agree	23	5.50
Agree	73	17.46
Neither Agree nor Disagree	85	20.33
Disagree	109	26.08
Strongly Disagree	128	30.62

6. *Combination of one or more of the above formats.*

N = 379

	<u>Count</u>	<u>Percent</u>
Strongly Agree	124	32.72
Agree	180	47.49
Neither Agree nor Disagree	61	16.09
Disagree	10	2.64
Strongly Disagree	4	1.06

Which combination?

N = 310

	<u>Count</u>	<u>Percent</u>
One and Three	4	1.29
One and Four	11	3.55
One and Five	8	2.58
One and Six	1	.32

	<u>Count</u>	<u>Percent</u>
Two and Three	27	8.71
Two and Four	11	3.55
Three and Four	131	42.26
Three and Five	2	.65
Four and Five	1	.32
Not Answered	114	36.77

2.f *Only large or highly obtrusive resource sites which are receiving impacts should be signed.*

N = 416

	<u>Count</u>	<u>Percent</u>
Strongly Agree	42	10.10
Agree	179	43.03
Neither Agree nor Disagree	41	9.86
Disagree	122	29.33
Strongly Disagree	32	7.69

2.g *Generally, unobtrusive sites should not be signed.*

N = 419

	<u>Count</u>	<u>Percent</u>
Strongly Agree	73	17.42
Agree	216	51.55
Neither Agree nor Disagree	49	11.69
Disagree	73	17.42
Strongly Disagree	8	1.91

2.h *Sites located in remote areas with only periodic or little surveillance should not be signed.*

N = 417

	<u>Count</u>	<u>Percent</u>
Strongly Agree	71	17.03
Agree	150	35.97
Neither Agree nor Disagree	60	14.39
Disagree	125	29.98
Strongly Disagree	11	2.64

3. *Do you think it would be useful to investigate, under controlled conditions at select archeological sites, specific signing strategies in order to evaluate their relative effectiveness?*

N = 418

	<u>Count</u>	<u>Percent</u>
Yes	391	93.54
No	27	6.46

PART II—Examples of past signing efforts. (Quantitative summation of narrative responses; missing questions were not quantifiable)

1. *Type of resource signed.*

N = 286

	<u>Count</u>	<u>Percent</u>
Historic	110	38.46
Prehistoric	118	41.26
Both Historic and Prehistoric	58	20.28

5. *Sign location (onsite, offsite) and method of placement (e.g., on stake, fence, tree).*

N = 279

	<u>Count</u>	<u>Percent</u>
Onsite	186	66.67
Offsite	54	19.35
Both	39	13.98

6. *Was the sign used in conjunction with any other protective strategy (e.g., interpretation, visitor center, museum, fence, patrol, access control, or other approach)?*

N = 282

	<u>Count</u>	<u>Percent</u>
Yes	217	76.95
No	65	23.05

6.a *Besides a sign, is the site area patrolled?*

N = 276

	<u>Count</u>	<u>Percent</u>
Yes	108	39.13
No	168	60.87

6.b *Besides a sign, is a physical barrier used to protect the site?*

N = 276

	<u>Count</u>	<u>Percent</u>
Yes	75	27.17
No	201	72.83

6.c *Besides a sign, are interpretive methods used to protect the site?*

N = 276

	<u>Count</u>	<u>Percent</u>
Yes	92	33.33
No	184	66.67

6.d *Besides a sign, is a visitor center and/or museum used to help protect sites?*

N = 276

	<u>Count</u>	<u>Percent</u>
Yes	29	10.51
No	247	89.49

6.e *Besides a sign, are other measures besides those listed above used?*

N = 276

	<u>Count</u>	<u>Percent</u>
Yes	28	10.14
No	248	89.86

7. *Number of signs used per cultural resource site.*

N = 505 (total responses, including negative ones and those reporting more than one signing effort)

<u>Number of Signs</u>	<u>Count</u>	<u>Percent</u>
0	256	50.69
1	127	28.15
2	42	8.32
3	27	5.35
4	18	3.56
5	8	1.58
6	6	1.19
7	2	.40
8	2	.40
10	3	.59
12	4	.79
13	1	.20
14	1	.20
15	1	.20
17	1	.20
30	2	.40
32	1	.20
35	1	.20
70	1	.20
100	1	.20

9. *What change in impact have you noticed after signing?*

N = 250

	<u>Count</u>	<u>Percent</u>
Large increase of impacts	9	3.60
Some increase of impacts	16	6.40
No change of impacts	50	20.00
Some decrease of impacts	71	28.40
Large decrease of impacts	44	17.60
Not determined	60	24.00

10. *Do you have a scheduled or formalized monitoring strategy for determining and evaluating the success or failure of the signing effort?*

N = 273

	<u>Count</u>	<u>Percent</u>
Yes	81	29.67
No	192	70.33

11. *Has the sign itself been vandalized?*

N = 270

	<u>Count</u>	<u>Percent</u>
Yes	129	47.78
No	141	52.22

12. *Is there a reference (report or other documentation) available describing the signing effort?*

N = 282

	<u>Count</u>	<u>Percent</u>
Yes	38	13.48
No	244	86.52

Appendix C

Examples of Cultural Resource Protection Signs

Included in this appendix are samples of sign formats provided by respondents to the questionnaire. These examples are reproduced here to provide a visual overview of past and current approaches for conveying a cultural resource protection message to the public. Representative sign formats from nearly every Federal agency with cultural resource management responsibilities are illustrated, along with some state and local examples. Examination of the illustrated formats indicates the diversity in past approaches and, at the same time, reflects expected overlap between agencies caused by simple diffusion of a particular format from one agency to another.

A perusal of the sign texts included in this appendix, along with those illustrated in the report text figures, shows a wide variety of messages ranging from a simple warning type to fully integrated combinations of warning and interpretation. While it is not possible to recommend any one message format that will be successful in any given case, readers can use the following examples as guides.

Who Passed This Way?



Please Don't Erase The Traces of America's Past

Archeological and historic sites hold clues to America's past. If disturbed, a part of our heritage may be lost forever.
Sites and artifacts on public lands are protected by Federal law.
If you discover such remains, please leave them undisturbed.
Report your discoveries to Forest Service personnel.

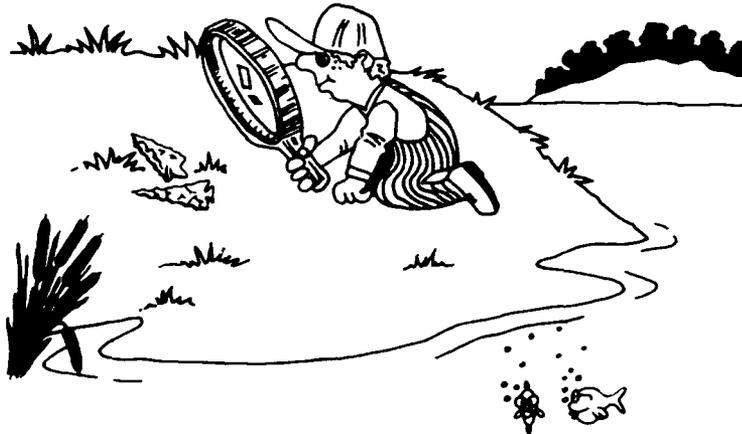
U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE



P23-46

LOOKING FOR ARTIFACTS?

If you are, you may be breaking the law. The Archeological Resources Protection Act of 1979 and other Federal laws prohibit the damage or removal of archeological and/or historic resources on Federal property without prior approval.

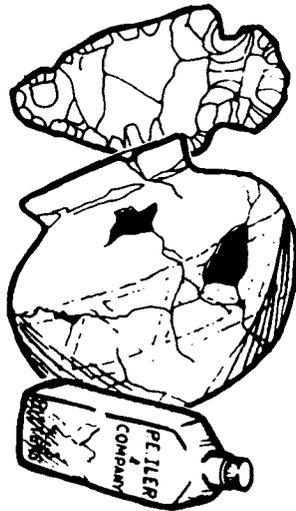


The record of past human activity lies buried in the ground. When collectors remove artifacts from their surroundings, this record is destroyed. Knowledge of our past, like knowledge of the environment, is essential to our well being. No individual should deprive the public of this knowledge. If artifacts are found, please notify a park official of the location of the find but **do not remove it**. You will be a participant in discovering man's history in this area. For further information, contact the project office.

Bill Wilson
576-460-246, 116



PROTECT YOUR NATIONAL HERITAGE



**The record of
past human
activity lies buried
in the ground. When
collectors remove
an artifact from its
surroundings, this
record may be
destroyed forever.**

Any person or persons who excavate, disturb or collect artifacts from any historic or archeological site on Corps project lands without specific authorization from the District Engineer is subject to citation and prosecution under the Antiquities Act of 1906, the Archeological Resources Protection Act of 1979 or Title 36 of the Code of Federal Regulations.



**US Army Corps
of Engineers**
Omaha District

7-15 GPO 1987 568 576

PREHISTORIC ROCKSHELTER

ROCK ART IS A FRAGILE AND UNIQUE TESTAMENT TO THE ARTISTRY OF OUR PREHISTORIC FOREBEARERS. IF YOU LOOK CLOSELY AT THE CEILING AND WALLS OF THIS ROCKSHELTER, YOU WILL SEE FAINT, PAINTED IMAGES.

THESE PICTOGRAPHS WERE ONCE CLEARLY VISIBLE, BUT BECAUSE OF CARELESS CAMPFIRES BUILT BY MODERN PEOPLES, THESE PRICELESS ELEMENTS OF OUR HERITAGE ARE VANISHING, BEING OBSCURED BY SOOT.

YOUR SUPPORT IN HELPING US PRESERVE IMPORTANT REMAINS FROM THE PAST IS VERY IMPORTANT. MORE DAMAGE IS DONE TO PREHISTORIC AND HISTORIC SITES BY HUMAN HANDS EACH YEAR THAN BY CENTURIES OF WEATHERING AND EROSION. PLEASE HELP US PRESERVE YOUR HERITAGE.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

WARNING

THIS BUILDING IS THE PROPERTY OF THE UNITED STATES AND MUST NOT BE MOLESTED. PARK REGULATIONS PROVIDE THAT ANY PERSON FOUND GUILTY OF THE DESTRUCTION, INJURY, DEFACEMENT, OR THEFT OF ANY PART OR CONTENTS HEREOF SHALL BE LIABLE TO A FINE OF UP TO \$500 OR IMPRISONMENT FOR UP TO 6 MONTHS, OR BOTH.

SP1702, 2/6, 10-2-55 (Rev. 1/66)

U.S. GOVERNMENT PRINTING OFFICE 16-60881

**POSTED
NO GROUND
DISTURBANCE**

27 MRSA 371-376

**PENALTY UP TO \$1000
PER VIOLATION**

**Property Listed in the
National Register of
Historic Places**

NATIONAL PARK BOUNDARY

FEDERAL REGULATIONS PROHIBIT:

- Hunting, trapping or possessing either a loaded or uncased firearm or a trap;
- Damaging, disturbing, removing or possessing any plant or animal or part thereof, any archeological or historic object or artifact, or any fossil or mineral;
- Possessing or using a metal detector;
- Camping or kindling a fire without a permit, except in designated areas;
- Allowing a pet off leash or in an area closed to pets.

VIOLATORS OF ANY OF THESE REGULATIONS ARE SUBJECT TO A FINE OF \$500 OR IMPRISONMENT FOR 6 MONTHS OR BOTH.

**UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE**

SIGN 10-11 (1987)



NOTICE

Cultural resources in the vicinity of this notice are fragile and irreplaceable. The Antiquities Act of 1906 protects them for the benefit of all Americans.

ENJOY BUT DO NOT DESTROY YOUR AMERICAN HERITAGE

Any person who, without official permission, injures, destroys, excavates or appropriates any historic or prehistoric ruin, artifact or object of antiquity on the public lands of the United States is subject to arrest and penalty of law.

Permits to excavate sites or remove artifacts can be issued only to recognized educational and scientific institutions.

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

© U.S. GOVERNMENT PRINTING OFFICE: 1977 O-237-020

S-53
(August 1977)

NOTICE

PLEASE HELP US
PROTECT AMERICA'S RESOURCES



FOR THE ENRICHMENT AND ENJOYMENT OF
PRESENT AND FUTURE GENERATIONS. DO
NOT DISTURB ARTIFACTS, BURIALS, ROCK
ART OR ANY PORTION OF ANY HISTORIC OR
PREHISTORIC RUIN OR SITE.

THANK YOU FROM YOUR



NATIONAL PARK SERVICE

Any person who, without an official permit, injures, destroys,
excavates or removes any historic or prehistoric ruin, artifact
or object of antiquity on public lands of the United States of
America is subject to arrest and penalty of law. Please report
any violation or suspected violation you observe to your nearest
National Park Service Office. Phone ◀ _____



WARNING

NOTICE IS HEREBY GIVEN that any person or persons who injure or destroy or, without specific authority from the Secretary of the Interior, excavate or appropriate any historic or prehistoric ruin, monument, object of antiquity, or of scientific interest, for the protection of which this reservation was created, will be subject to arrest and punishment under the provisions of the act of Congress approved June 8, 1906.

APPLICATIONS FOR PERMITS under the provisions of section 3 of the act of June 8, 1906, from reputable museums, universities, colleges, or other recognized scientific institutions, or their duly authorized agents, will be considered by the Secretary of the Interior, Washington, D.C.

**UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE**

Form No. 10-57 (Rev. 1964)

16-70210-1 U.S. GOVERNMENT PRINTING OFFICE





Notice

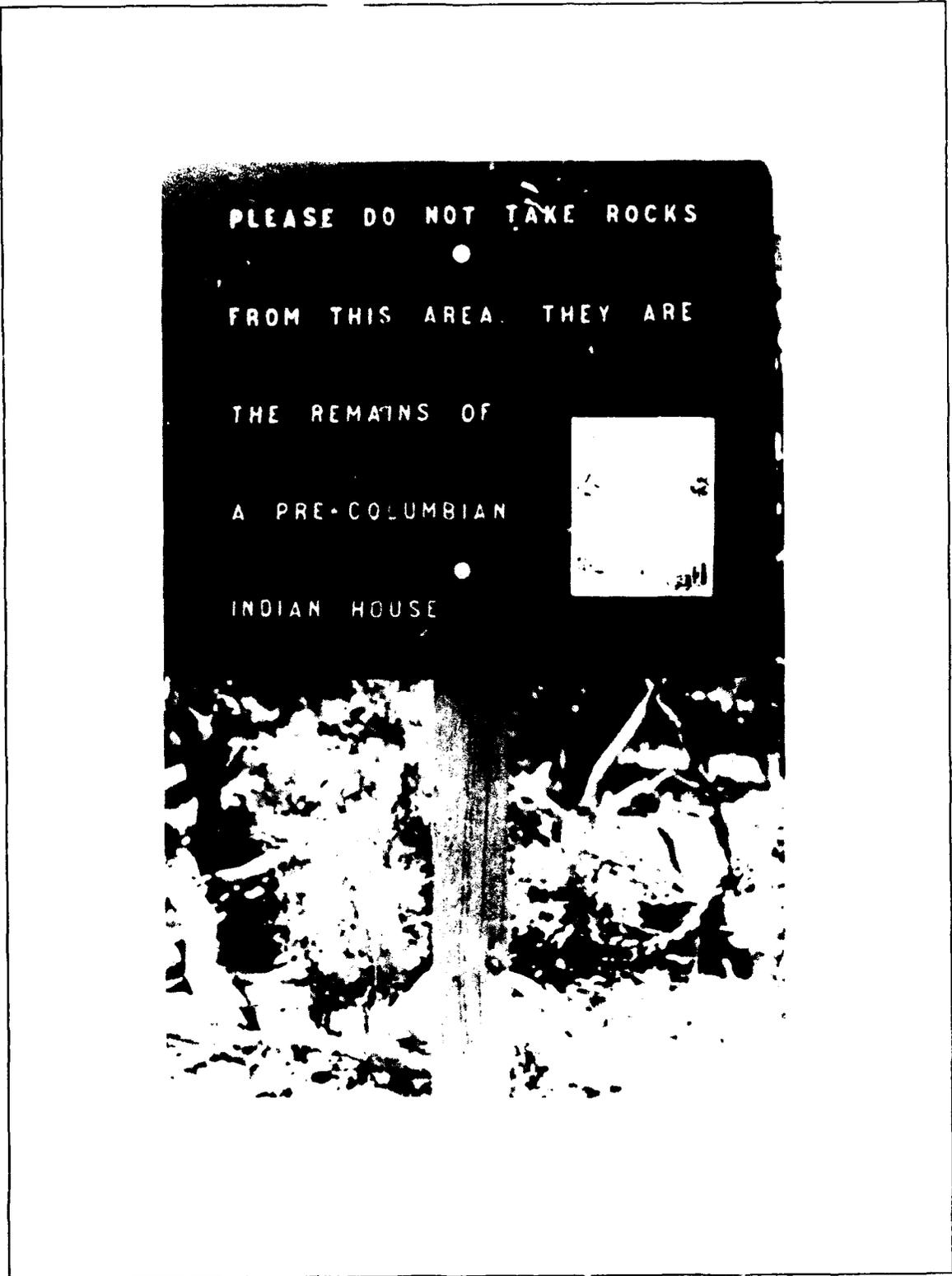
**Help preserve the past
for the future.**

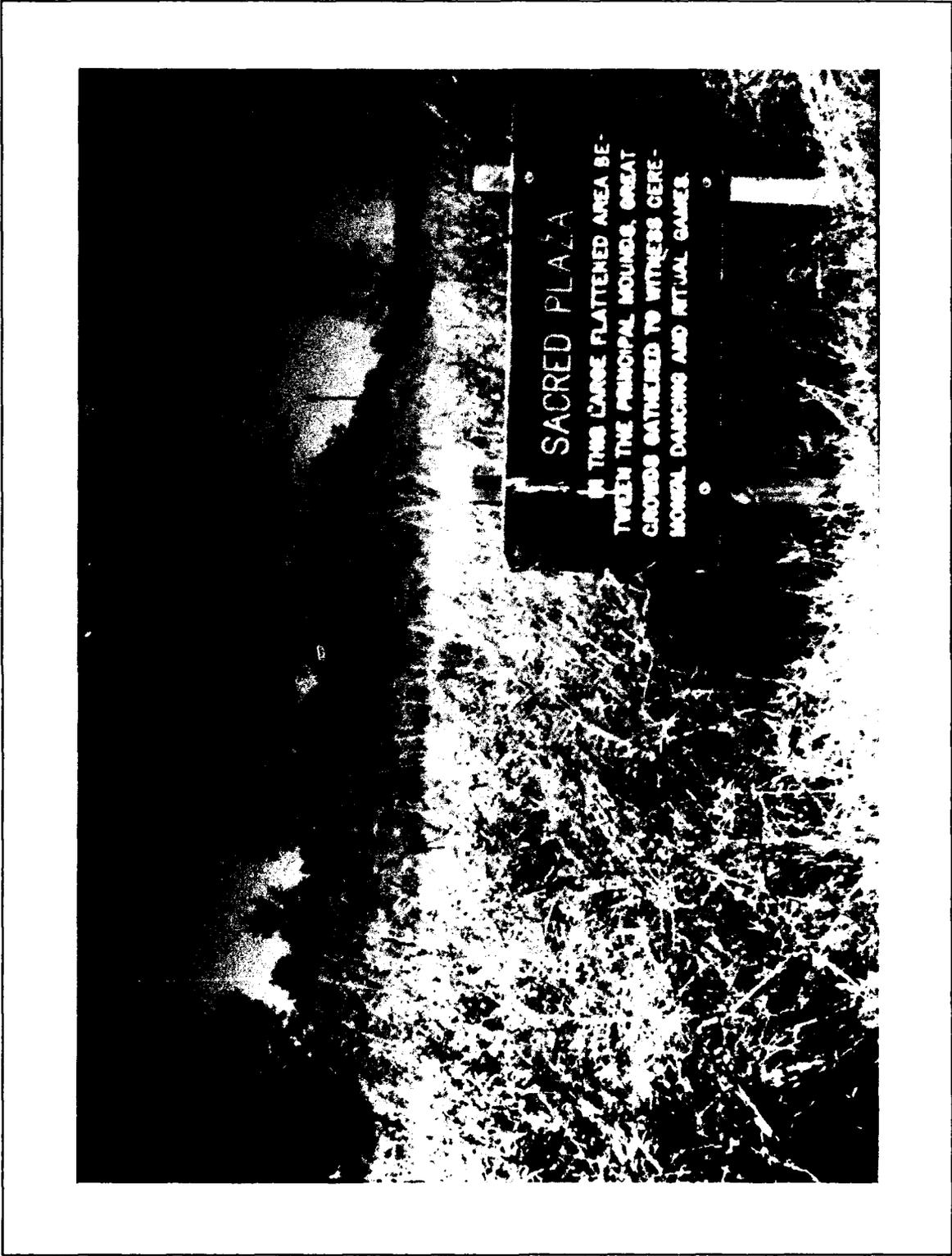
**Disturbance or removal of
artifacts is prohibited.**

**Violators are subject to
fine and imprisonment.**

CAMAS

THE TONGUE RIVER AND THE SURROUNDING HILLS AND MOUNTAINS WERE THE HOME OF THE SHOSHONE PEOPLE FOR THOUSANDS OF YEARS. WITH A BANDED CAMP, THEY WOULD TRAVEL THROUGH THE SITE AS PART OF THEIR WINTER WAYS. CAMAS, A VERY IMPORTANT PART OF THE WINTER WAYS, WAS USED FOR THE WINTER AND HIGHLY NUTRITIOUS. THE WINTER WAYS ALONG THE TONGUE RIVER WERE USED AS A WINTER HOME FOR THE SHOSHONE PEOPLE. THE TONGUE RIVER, THE TONGUE LAKE, AND THE TONGUE RIVER REMAIN AS A REMINDER OF THE EARLY HISTORY OF THE AREA.





HUM-ME-CHOMP

*"The rock where the river once churned to
make this place inaccessible to the living."*

We are the Aha-Makaav, Mojave Nation, People of the
Coko'ado River

The beautiful land graced before you in all its natural splendor
and grandeur is a sacred and holy place to the Aha-Makaav.
Since the beginning of time traditional songs and narrations
have passed to succeeding generations. This sacred site is one
that brings joy, awe, gratitude, and utmost respect to the living
as well as the spirits of our departed. The Petroglyphs (rock
writings) before you indicate this and tell our story. The history
of our people is depicted, as the Mojave people hand this oral
history down from one generation to another.

You are requested to respect these sacred grounds, as you would
your own place of worship and help preserve our heritage which
has existed since time immemorial.

We are joined in this request by fellow Native-Americans, the
Chemehuevi, who have lived in this area before the coming
of non-Indians.

This plaque is offered so that others who are not of our culture
can truly understand the importance of this area.

Today we all live together, and it must be realized that this is a
part of the common heritage we share with you.

Peace is found in the quiet, tall pillars of the high cliffs. Listen
to the songs that the winds bring around Hum-Me-Chomp,
a reminder that this is sacred ground.

The Aha-Makaav, Mojave Nation
and the
Nuwu, Chemehuevi Tribe



Illustration: Indian: Frank



United States Department of the Interior - Fish and Wildlife Service





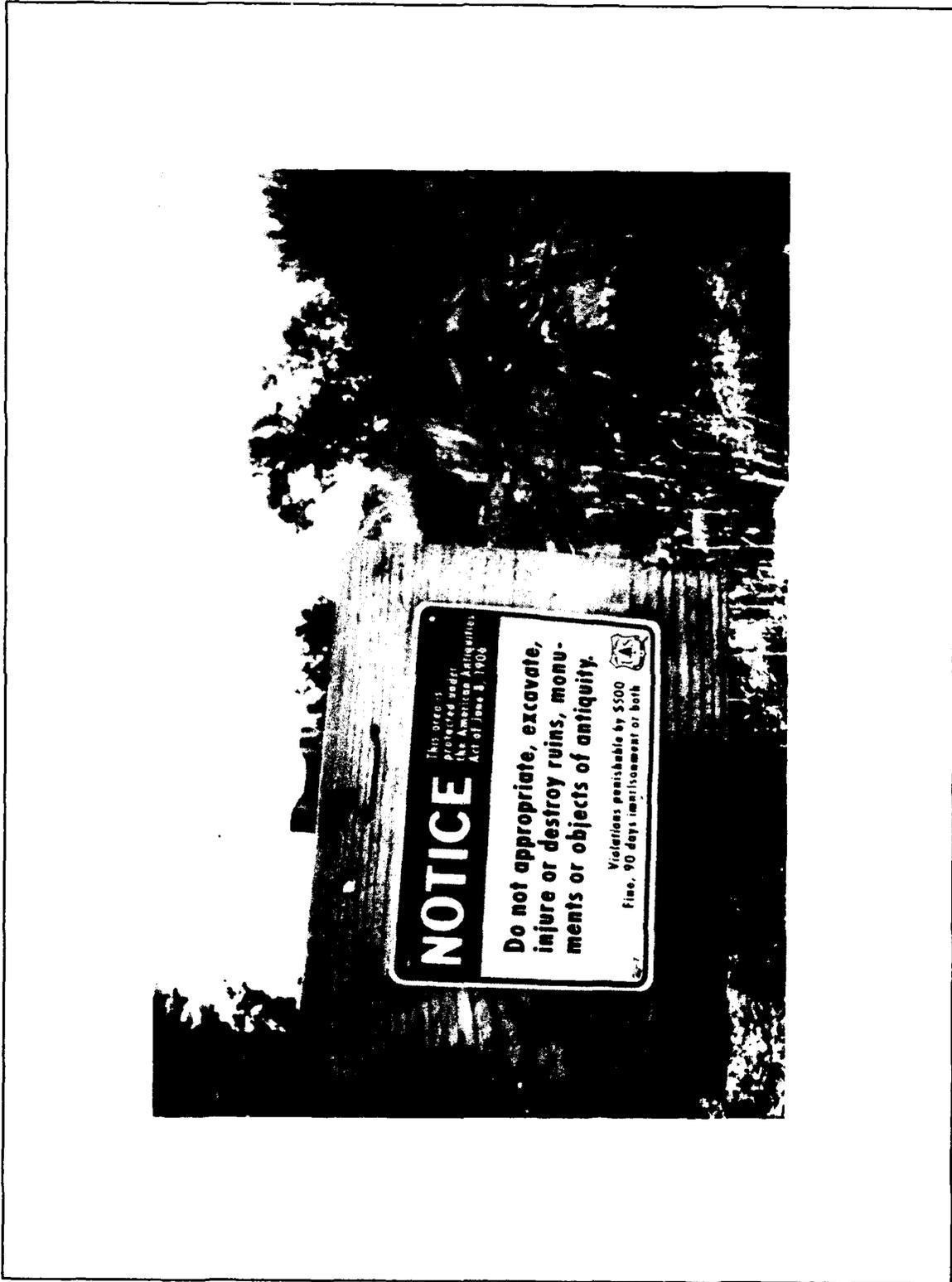
STAY ON DESIGNATED TRAILS

RUIN WALLS ARE VERY FRAGILE. YOUR
ADDED WEIGHT CAN CAUSE THEM TO COLLAPSE.
TRAILS ARE DESIGNED TO LET YOU SEE THE EN-
TIRE. RUIN IN SAFETY AND PRESERVE IT FOR
OTHERS. — — STAY OFF OF ALL WALLS.

RUINS ARE CLOSED AT SUNSET

TAKE ONLY PICTURES

LEAVE ONLY FOOTPRINTS



WARNING!

THIS AREA IS ELECTRONICALLY MONITORED

Persons caught excavating, removing, damaging or otherwise altering or defacing this archeological site may be fined \$20,000 and imprisoned for 2 years for a first offense.
(16 USC 470)



Protected by the Forest Service, USDA
Kisatchie National Forest



NOTICE

*Ancient ruins, artifacts, fossils and historical remains
are fragile and irreplaceable.*



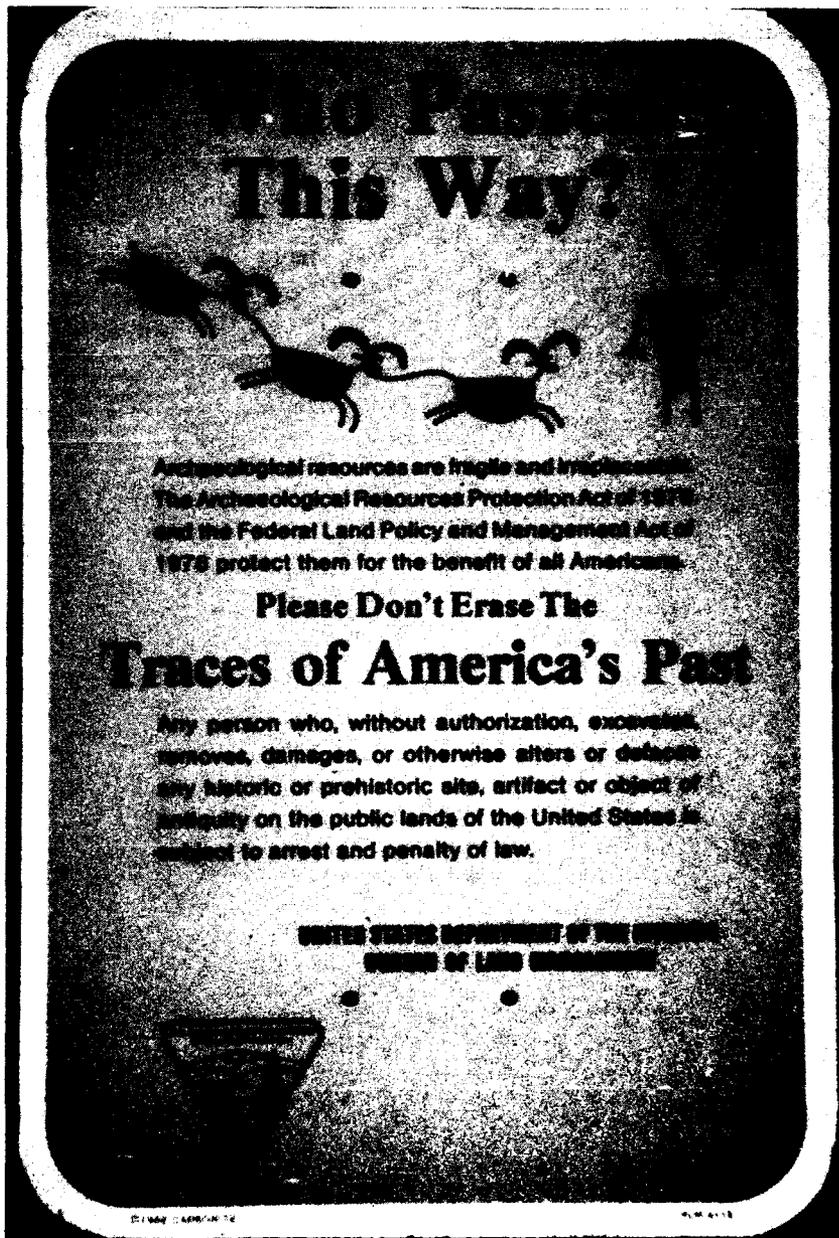
HELP PRESERVE YOUR AMERICAN HERITAGE

Any person who, without an official permit, injures, destroys,
excavates or removes any historic or prehistoric ruin,
artifact or object of antiquity on the public lands of the
United States is subject to arrest and penalty of law.

Please report all antiquities you find, and any suspected
violations you observe, to the nearest office of the
U.S. Forest Service

United States Department of Agriculture - Forest Service





• NOTICE •

PROTECTED AREA

**It is illegal to dig, excavate, disturb
the ground, or to collect
archeological artifacts in this area.**

**Violators are subject to criminal
penalties involving fines or
imprisonment or both; civil fines;
and forfeiture of vehicles and
equipment used in connection with
a violation.**

**Archeological Resources Protection
Act of 1979 (16 USC 470, &
36 CFR 261.9)**

**VIOLATORS WILL
BE PROSECUTED**

This sign is property of U.S. Government

**ARCHAEOLOGICAL
SITE
IN
THIS
AREA**



Protected by the Archaeological Resource Protection Act (16 U.S.C. 470 as et seq.) the Antiquities Act (16 U.S.C. 431 et seq.) and 18 U.S.C. 1361.

Unauthorized removal or destruction of these resources is punishable by fine and/or imprisonment.

**PROTECT YOUR
HERITAGE
DO NOT DISTURB**

WARNING

STAY OFF ALL RUIN WALLS
THESE ANCIENT RUINS ARE DANGEROUS. LOOSE
STONES, COLLAPSING WALLS, OR FALLS INTO DEEP
ROOMS CAN MAIM OR KILL. DO NOT CLIMB ON
WALLS. PARENTS AND GROUP LEADERS MUST
CONTROL CHILDREN.





**- NOTICE -
PROTECTED AREA**

It is illegal to dig, excavate, disturb the ground, or to collect archaeological artifacts in this area.

Violators are subject to: (1) criminal penalties involving fines up to \$2,000, or imprisonment (up to six months), or both; (2) civil fines up to \$5,000; and (3) forfeiture of vehicles and equipment used in connection with a violation.

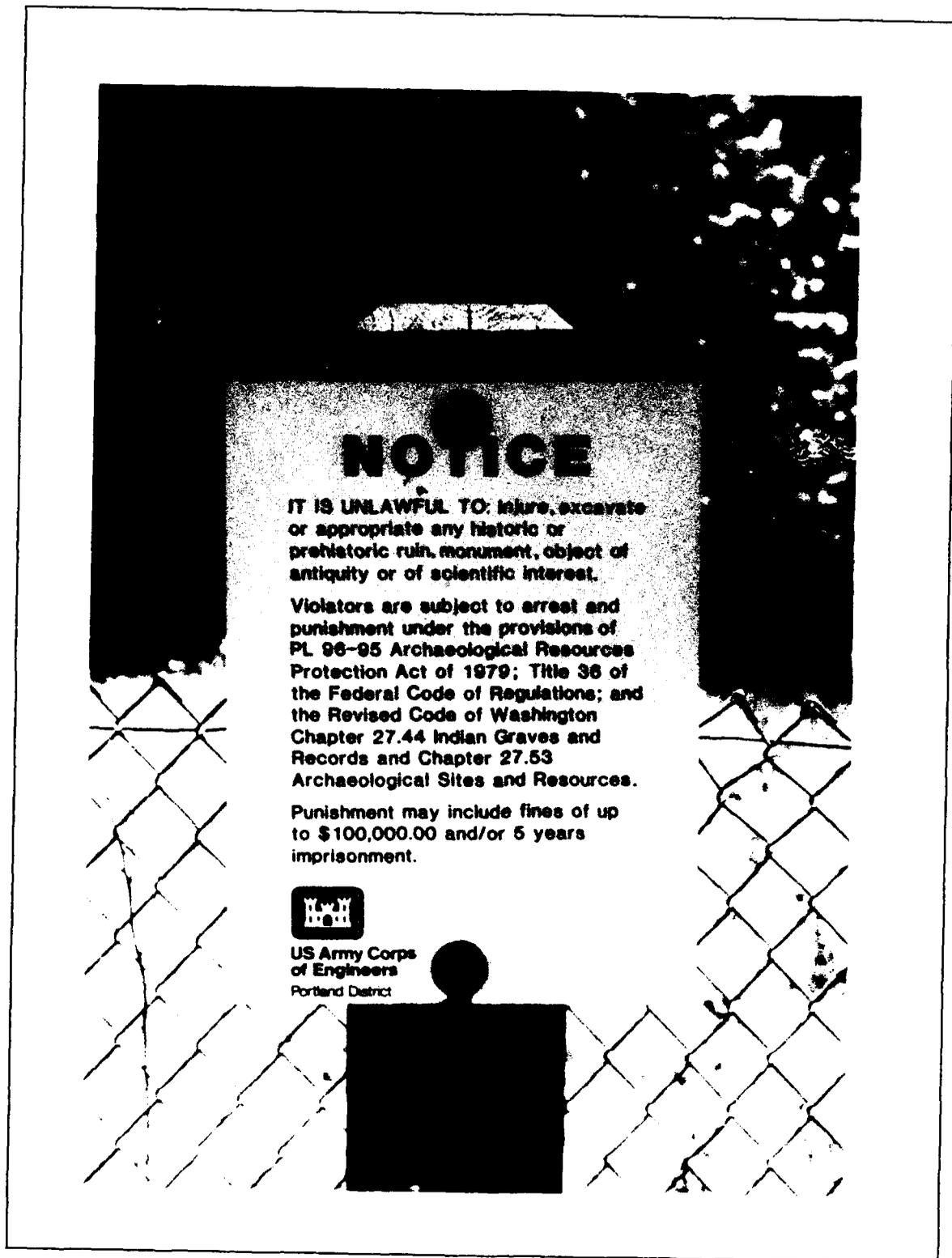
**North Carolina General Statute
70-12(3), 70-15, 70-16, 70-17.**

**VIOLATORS WILL
BE PROSECUTED**

**This sign is property of State of North Carolina
Division of Archives & History**

1250





NOTICE

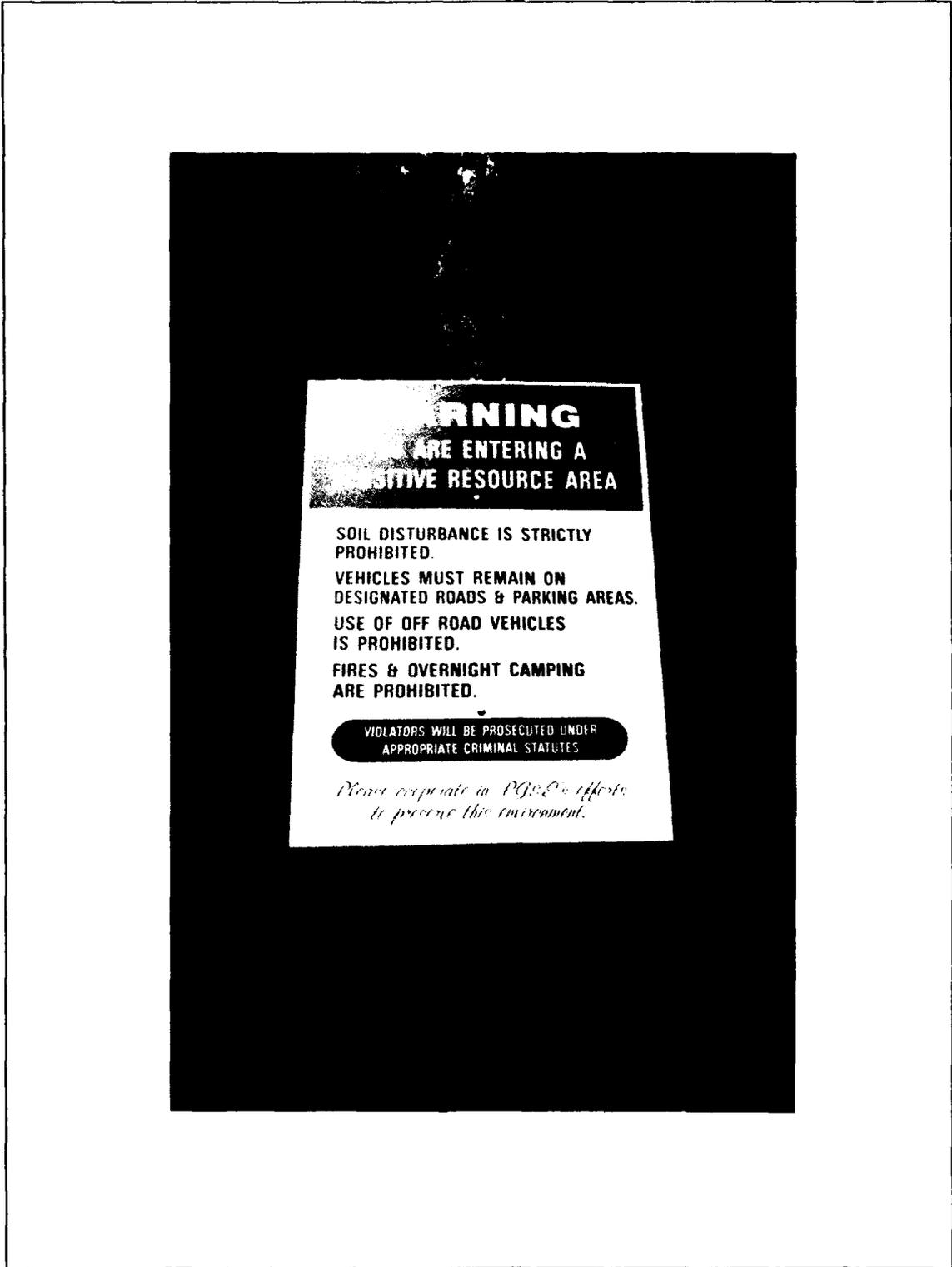
IT IS UNLAWFUL TO: Injure, excavate or appropriate any historic or prehistoric ruin, monument, object of antiquity or of scientific interest.

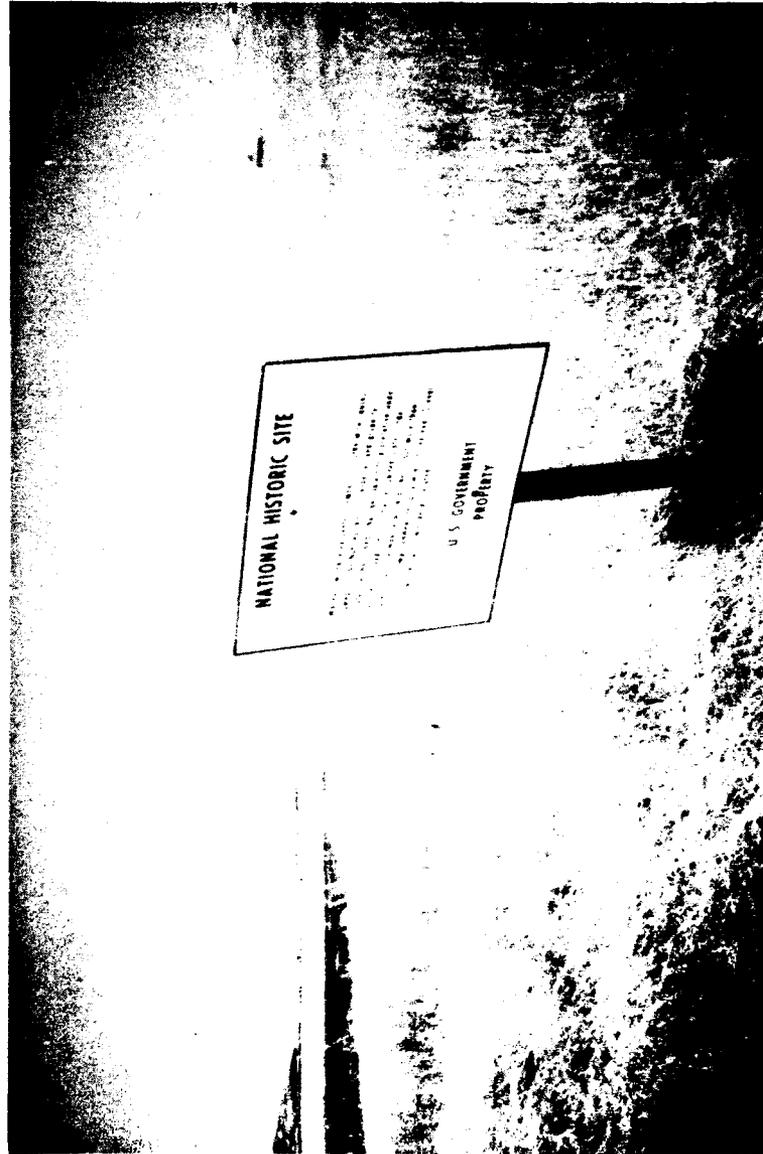
Violators are subject to arrest and punishment under the provisions of PL 96-95 Archaeological Resources Protection Act of 1979; Title 36 of the Federal Code of Regulations; and the Revised Code of Washington Chapter 27.44 Indian Graves and Records and Chapter 27.53 Archaeological Sites and Resources.

Punishment may include fines of up to \$100,000.00 and/or 5 years imprisonment.



**US Army Corps
of Engineers**
Portland District





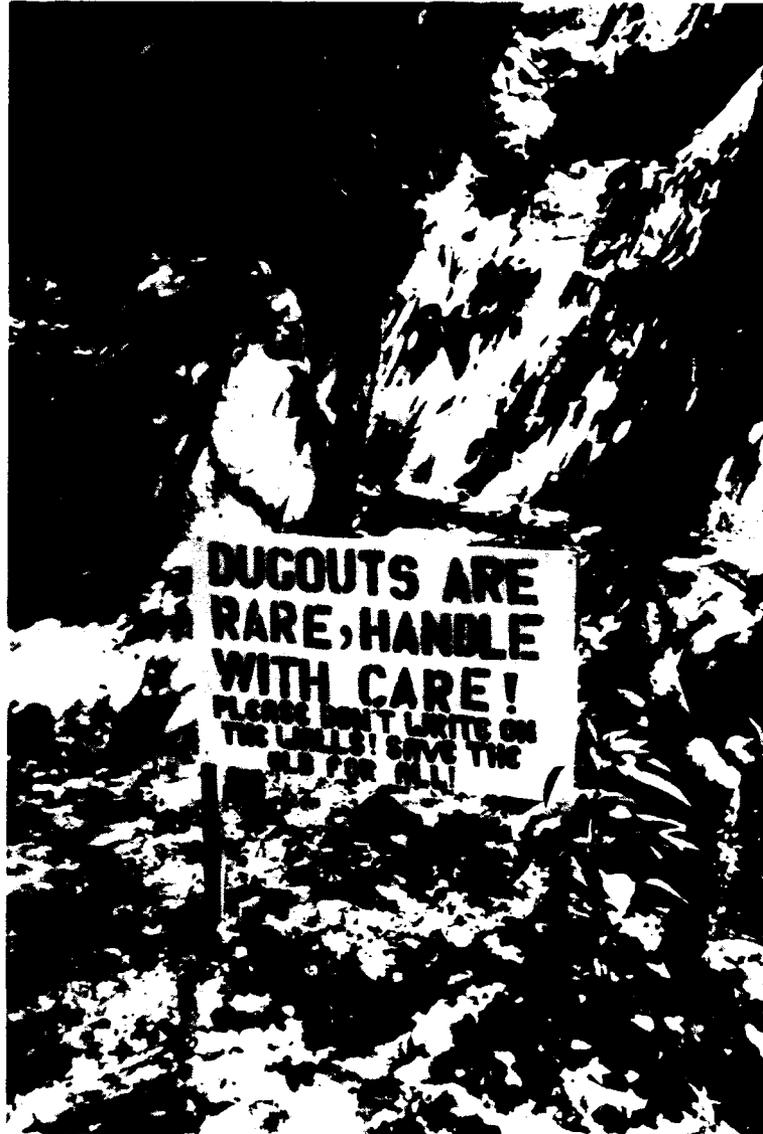


This historic site is part of America's heritage. The past belongs to the future, but only we can preserve it.

Join our efforts to protect this irreplaceable resource by leaving this site undisturbed. Report vandalism to the Bureau of Land Management or local authorities.

Visit any BLM office to obtain information on public lands resources.

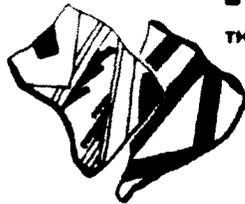






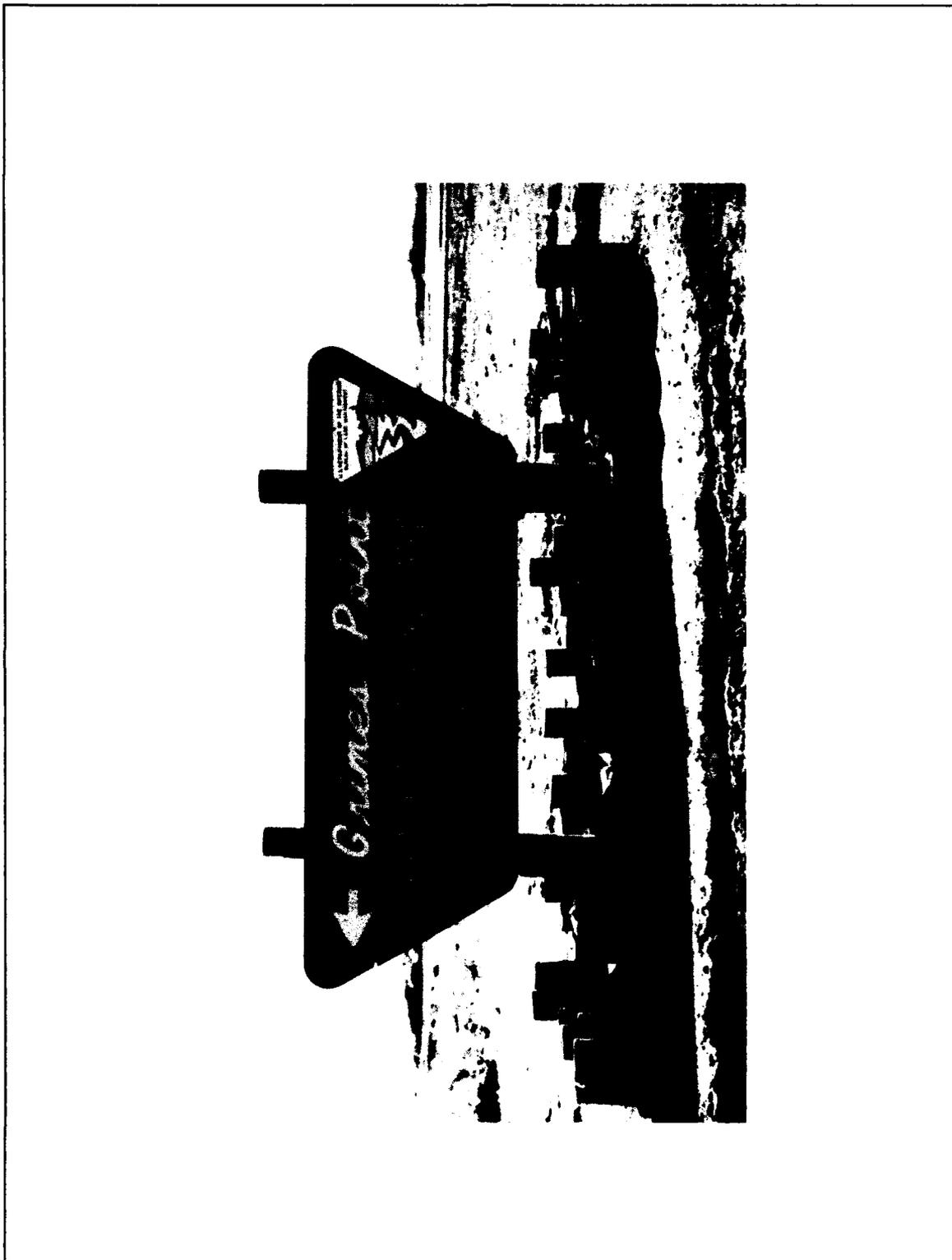
Archaeologists
are still working
to solve the
Chaco puzzle

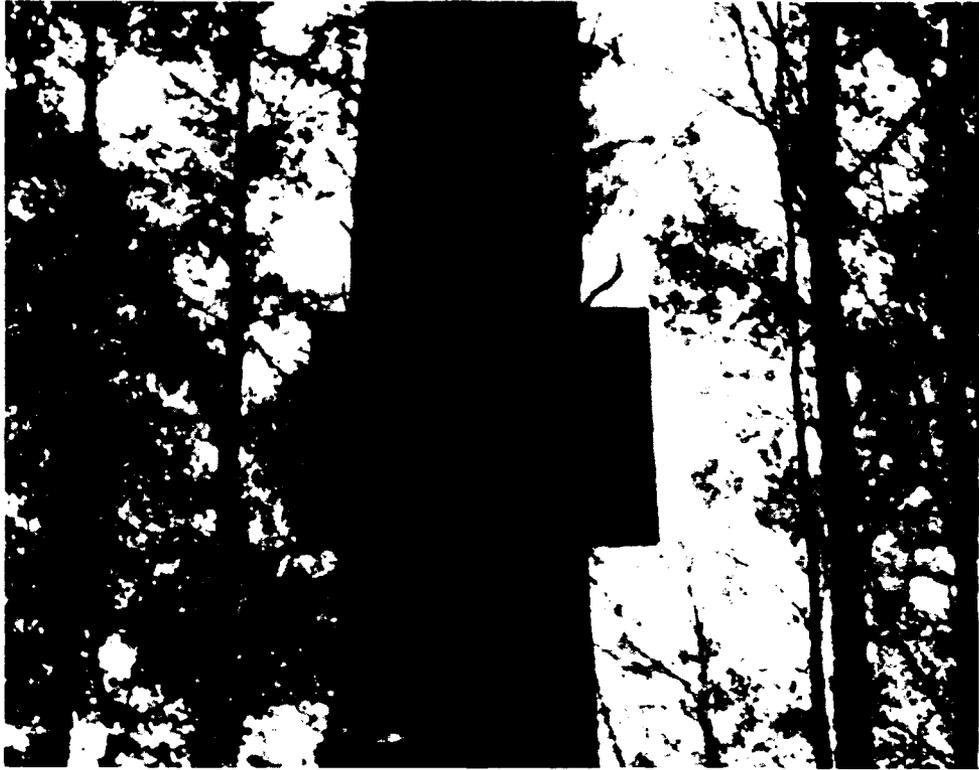
**please
don't pocket
the pieces**

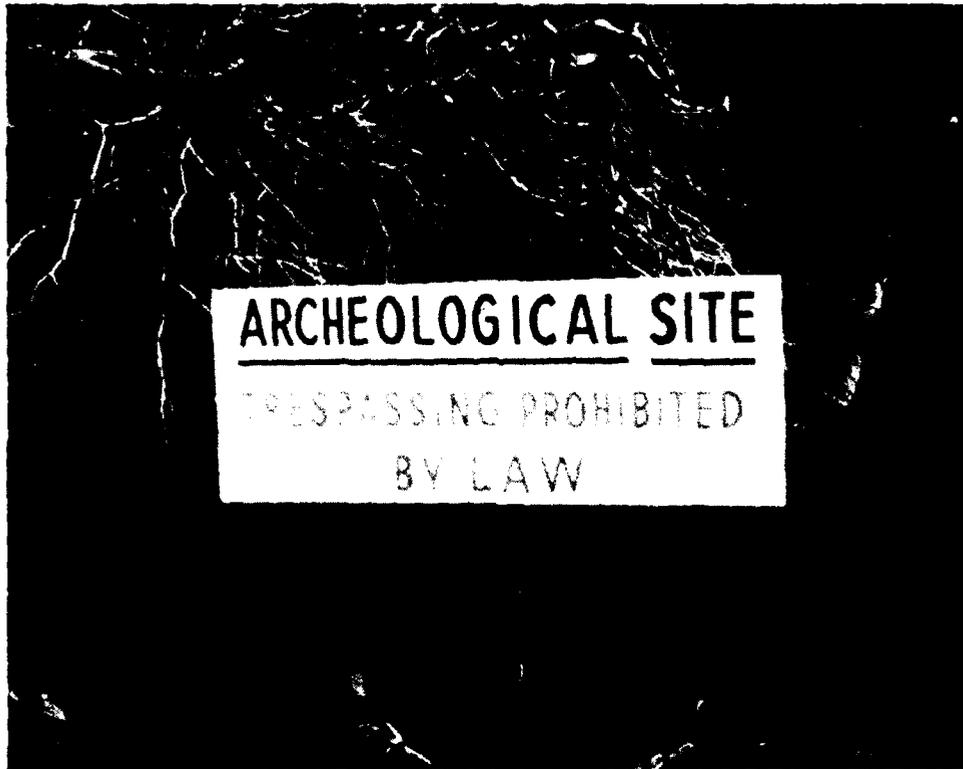


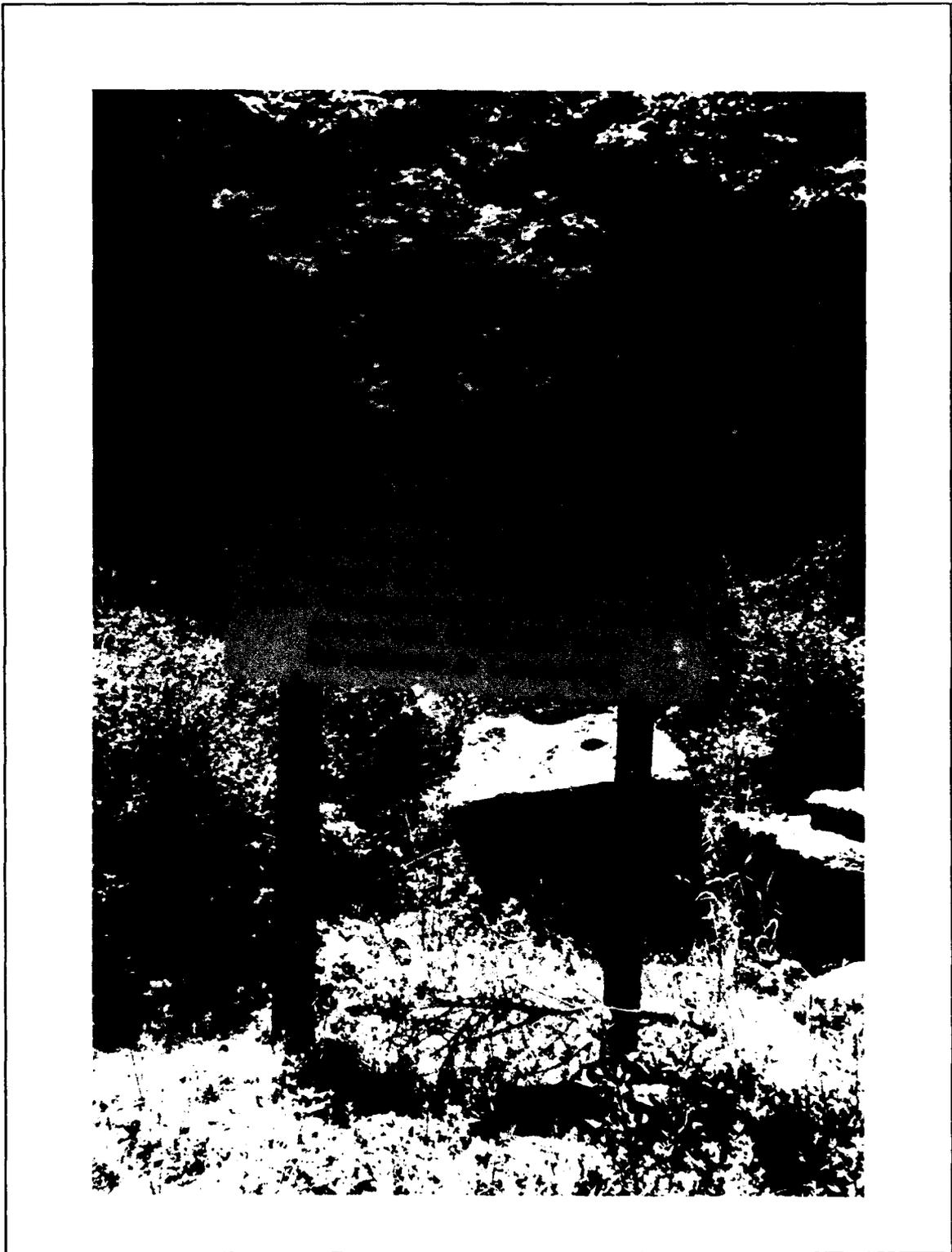
THE POTSHERDS YOU FIND AT CHACO

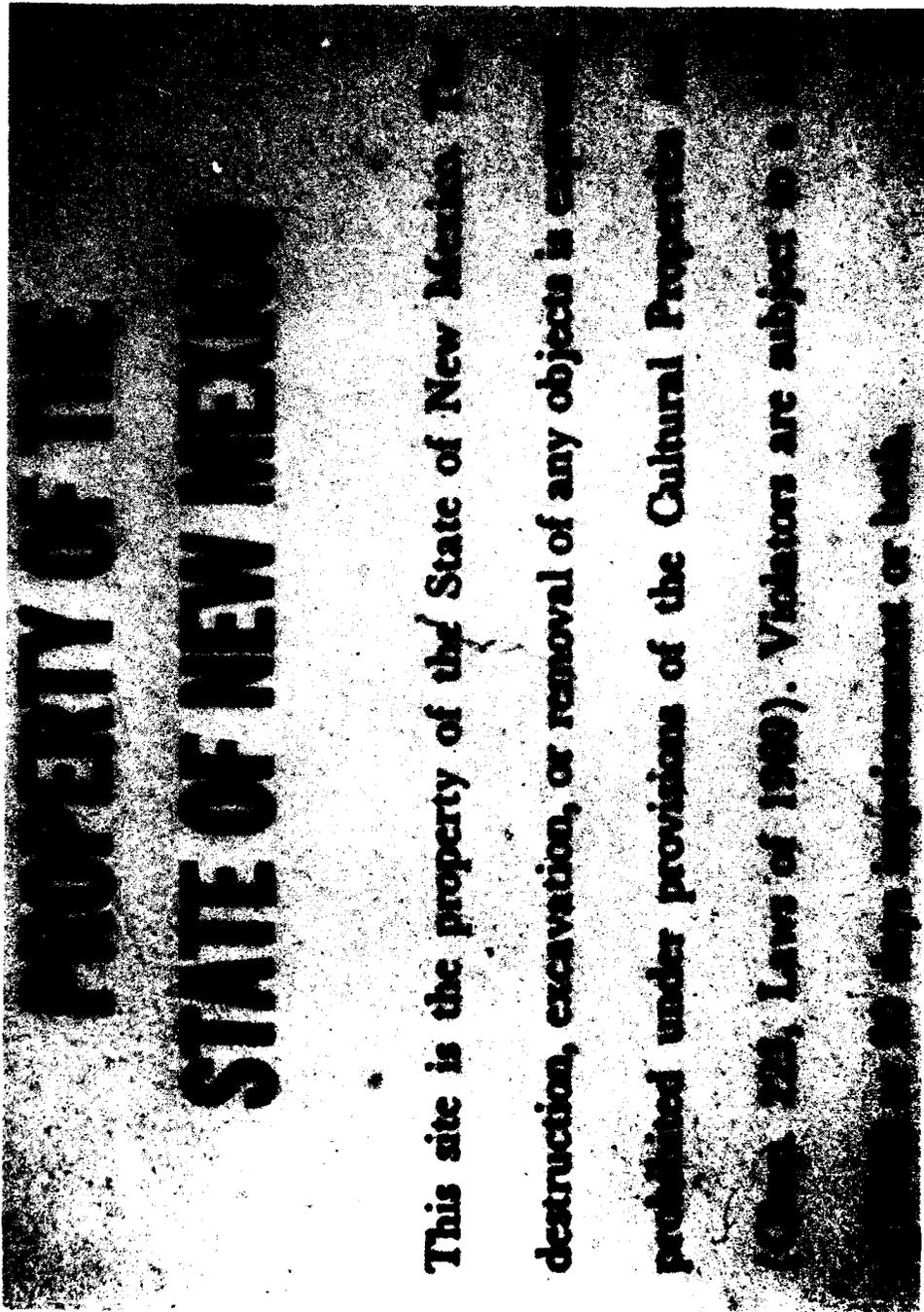
are important clues for scientists delving
into the pre-history here. Their patterns
often identify an archaeological site. And
their designs help establish the time period in
which these ancient people lived. But the
information is lost if sherds are taken, or
moved from their original location. Please don't
tamper with these archaeological
works. We invite you to observe and enjoy
everything you may find at Chaco. But please
not everything back exactly where it was found.

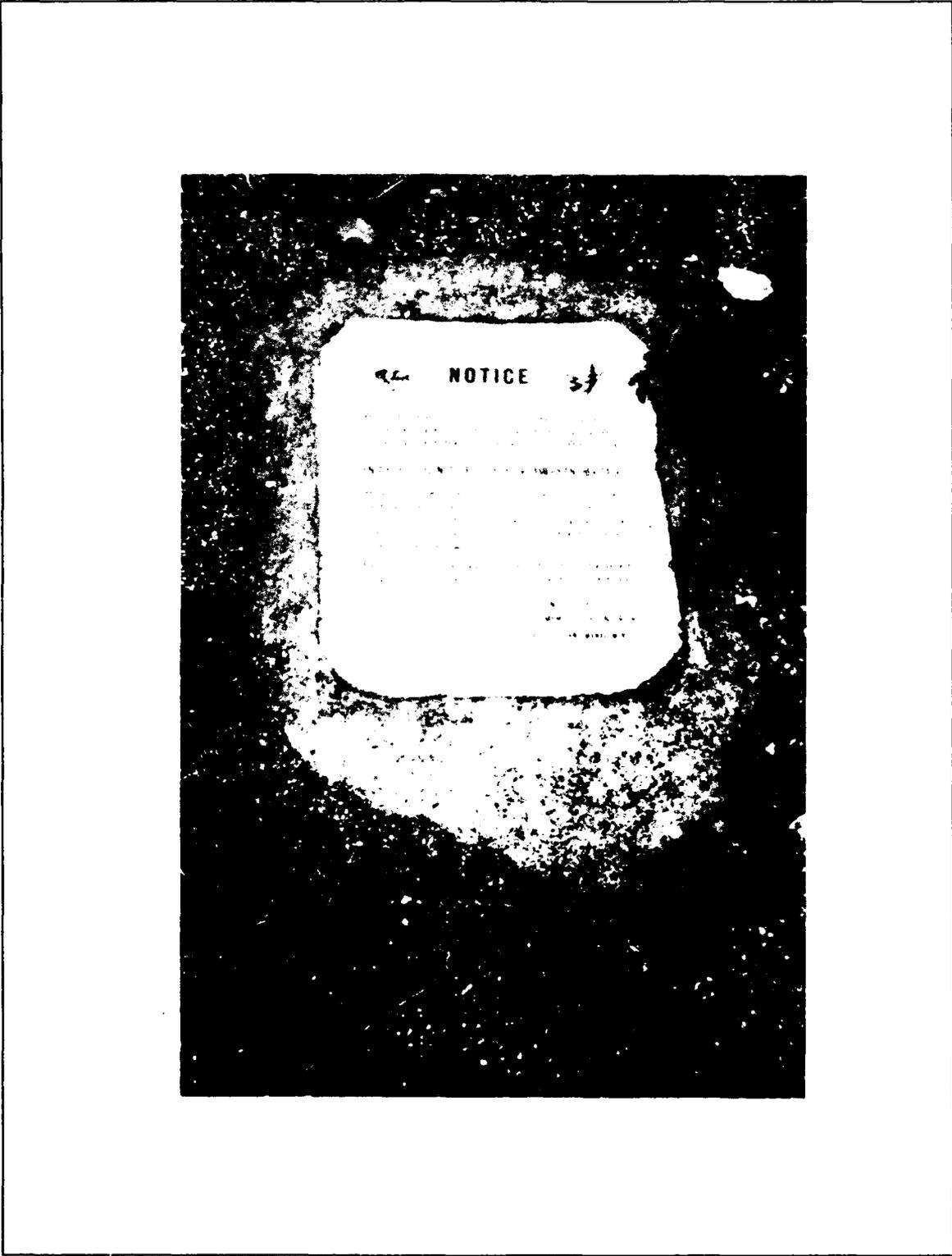


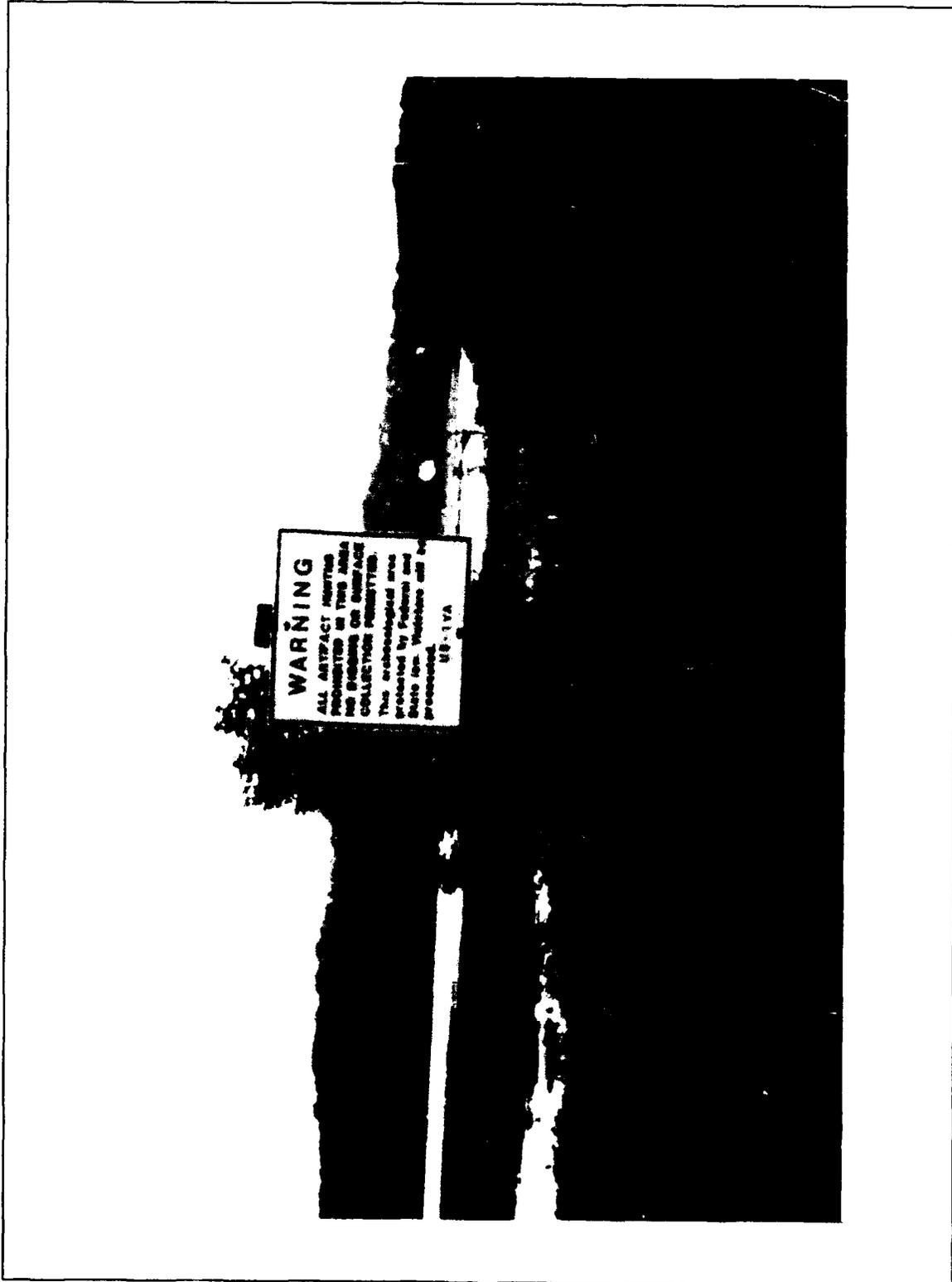


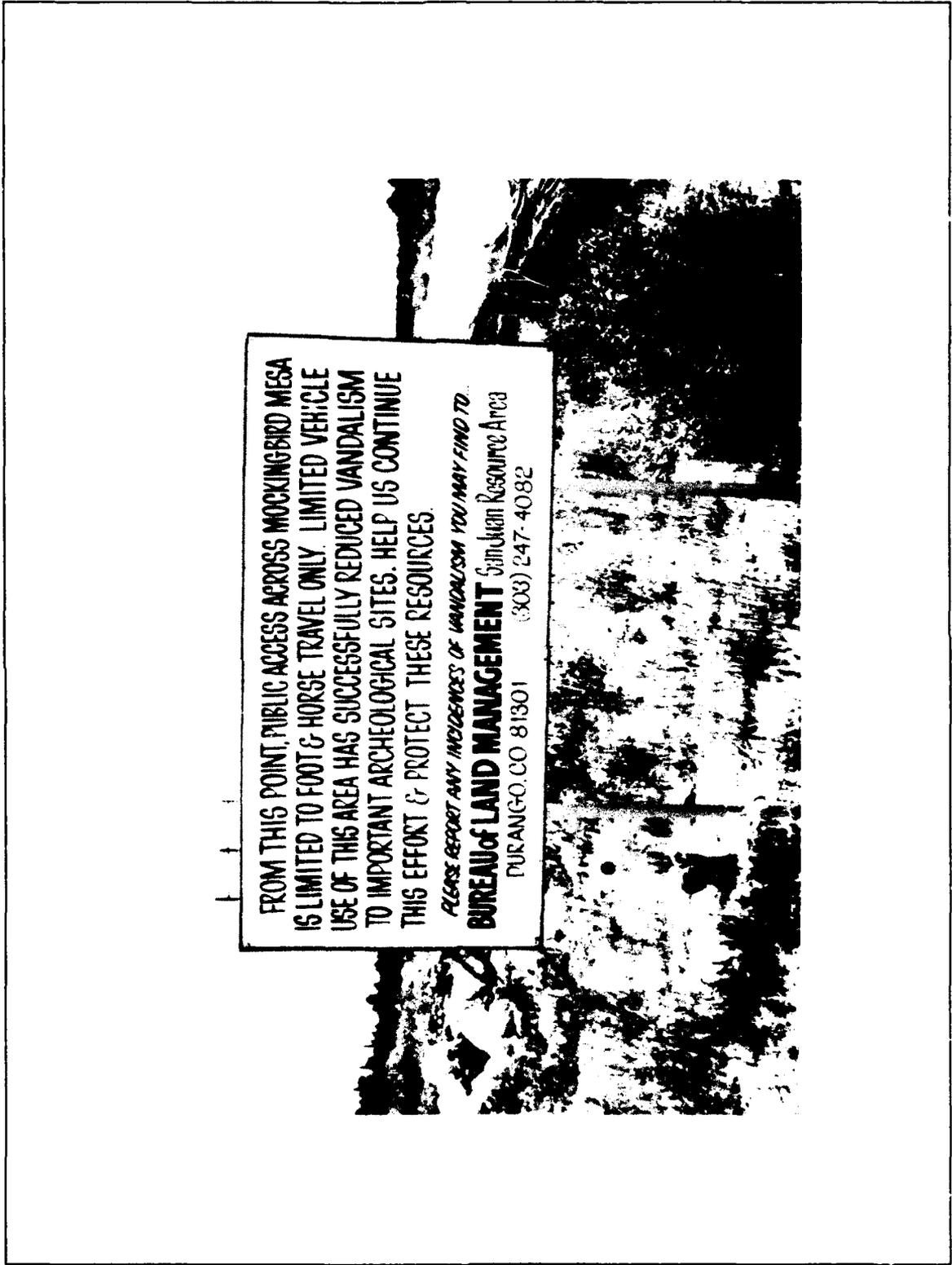












FROM THIS POINT, PUBLIC ACCESS ACROSS MOCKINGBIRD MESA IS LIMITED TO FOOT & HORSE TRAVEL ONLY. LIMITED VEHICLE USE OF THIS AREA HAS SUCCESSFULLY REDUCED VANDALISM TO IMPORTANT ARCHEOLOGICAL SITES. HELP US CONTINUE THIS EFFORT & PROTECT THESE RESOURCES.

PLEASE REPORT ANY INCIDENCES OF VANDALISM YOU MAY FIND TO:

BUREAU of LAND MANAGEMENT San Juan Resource Area
TURANGO, CO 81301 (303) 247-4082

Appendix D

Sample Narrative Comments

This appendix includes 13 examples of written comments provided by the questionnaire respondents. The sample comments that follow were selected from 259 Part III's provided and incorporated a wide variety of thoughts expressed in the responses. The comments also were selected to include examples from several agencies.

1. Our efforts in signing have had mixed results, but our efforts have not been uniform either. I do think that where sites are subtle and in remote locales it is better not to call attention to them. However, if the site is being repeatedly vandalized or impacted through inappropriate use, signs are necessary. How well they work is probably dependent on other factors such as public education and awareness efforts.

I think a balance of regulatory information and interpretive information is critical. All negative public contact does little to generate public interest or support. However, when tempered with educational and interpretive methods, those responsible members of society will be more responsive.

To date, we have done woefully little to positively educate the public. What we have done is sporadic and short-term. Our only long-term, ongoing effort has been through issuing "notices" citing cultural resources laws and regulations with each permit (fire, wilderness, woodcutting, etc.). This, though somewhat negative, has helped get the word out to the public, but we need much more in the way of positive contacts. (#352, Forest Service).

2. As is obvious from our responses in Part II, it is difficult to evaluate the effectiveness of signing since 1) we have no base-line data of vandalism on an annual basis, and 2) we do not have a formal quantification process of ongoing monitoring.

It is my impression that signing of any kind does make a difference. My thought is that the important thing is that "agency presence" is obvious at a site--that is the important factor, whether it is an interpretive sign or a law enforcement sign.

Another factor that needs to be considered is that it is not only the act of an agency signing a site, but also other educational efforts being undertaken by the agency and profession having an impact in raising public awareness. Reductions in vandalism are also due to these efforts, as well as signs.

From discussions with our District personnel, it appears that signs at sites are not vandalized as much as are other Forest signs, such as those in campgrounds and along roads. This is probably because those signs are subject to much higher visitation levels than are experienced on our sites. It would be nice to be able to say that interpretive signs are less vandalized than law enforcement or other agency signs, but it is probably related to the number of people visiting the spot. I think this is also the main explanation of site vandalism--it is simply that small minority of the public that vandalize. Whether it is a site or a sign, when those types eventually show up, you will have vandalism.

In sites that we are visiting quite frequently, the main form of vandalism we have is graffiti; it seems to be done mostly by young children. Similarly, kids running unchecked all over the site seem to be doing most of the "inadvertent" vandalism.

We are divided in the office in our opinions of whether or not a strong law enforcement/sanction worded sign is more or less effective than a "please help us - isn't this neat" kind of wording. As above, my suspicion is that it is the presence of any sign that is important.

I would be interested to know if there really are cases where posting of a sign has increased vandalism to a site. I can believe that posting a sign can increase vandalism to the sign. I wonder if it is more of a transference from the site to the sign itself--thus, the sign is helping protect the site, because vandalism is being deflected from the site to the sign. (#328, Forest Service).

3. A message such as "Off Limits" or "Do Not Trespass" would be more appropriate on a military reservation where this language is frequently in use (especially Off Limits). A "Do Not Trespass" sign in the "middle of nowhere" is as likely to draw ridicule/negative attention as any positive response.

The placement of a sign should be conditioned by landownership. The Albuquerque District owns relatively little land; the District has a large number of flowage easements on private land. Placement of signs would have to be negotiated with each individual landowner--some of whom would be willing and some would not.

The degree to which less obvious sites or sites in remote areas should be signed should depend on how much visitor contact the specific projects undertake by their staff and how often they patrol. A Corps project with a "developed program" of visitor contact which provides information about a number

of topics (including rules, regulations, safety, geology, archaeology, etc.) may have a more desirable result from archaeological signs than would an "undeveloped" project. The latter may do more damage by calling attention to the sites if they (the Project personnel) are not in a position to monitor the visitors and the sites.

Many western Corps projects are adjacent to other Federal lands (especially Forest Service and Bureau of Land Management). Arrangements should be made for looking across boundaries and reporting to the other Agency if something is observed.

The text on a sign should be a combination, and the combination should vary. Generally something along the lines of #4 with a "Do Not Disturb" would seem appropriate. If a site is large (e.g., a mound) then a second sign with interpretation would be a good idea because it would be an attempt to both teach and inform as to its importance and warn of the consequences. This is a more effective strategy than a blanket prohibition. There are reasons for many laws. People are a lot more understanding and cooperative when they understand what underlies a rule/requirement/law.

Bogus signs or "talking down to the masses" is not beneficial since most people are smarter than that and resent the misinformation. It probably would help to point out that sites are public (those on public land), and their destruction/vandalism deprives future visitors (take nothing but pictures, leave nothing but footprints).

Some small sites, even if unobtrusive, are sufficiently important to merit a sign. Size and/or obtrusiveness is not as important as the potential contribution of the site to archaeological/scientific/research knowledge.

Signs should be placed off sites. (#271, Corps of Engineers).

4. Signing by itself often underscores to the general public the presence of a valuable resource--otherwise why would it be signed? Based on our staff's collective experience (either as private contractors or former government employees involved with cultural resources at the active level (district or forest office) the general opinion is that signing without some type of monitoring (e.g., law enforcement patrol) is generally ineffective. Resources that are off the beaten track (i.e., not visible from generally traveled roads, etc.) are often vandalized since they are perceived to be valuable (i.e., for artifacts, buried treasure, etc.) and are not monitored. Signs in well-traveled areas (e.g., archaeological interpretive sites on a major highway) are generally left alone and the resource is not abused. I think that signing of a site should be left to the discretion of the regional/local archaeologist who often has a very good idea of what might happen to a site if it is signed (Are local vandals/pothunters active in the area? Is the general populace generally law abiding? What are local relations with the land managing agencies? Is there an active law enforcement program? Does the district manager/forester support an active

monitoring program?). The idea of "bogus" signs (e.g., hazardous waste present) is good but should be employed only in extreme situations. Remember the story of the boy who cried "wolf" too often. (#411, Private Contractor).

5. The primary value of signing, in my opinion, is to provide ample notice to would-be ARPA violators that they are on Federal land and that excavation or removal of archeological resources without a permit is prohibited. This makes ignorance of the law more difficult to plead in court and convictions under ARPA easier to obtain. Placement of signs offsite, therefore, is an effective strategy. Either a general, no trespass or a sign stating the archeological prohibition will do, the latter, perhaps, being the most effective. Such general signing would cover both the obtrusive and the unobtrusive sites in an area. I believe that onsite signs, regardless of how they are phrased, will contribute to vandalism.

No signing is likely to be effective if not coupled with patrolling and with a public education (e.g., interpretation, testimonials from respected individuals) effort. In keeping with my first sentence, the boundaries of Federal land should be obvious to the casual observer.

In regard to bogus signs--my first reaction was, with a chuckle, "What a great idea! Nobody is going to mess with a hazardous waste site." On reflection, however, I realized what a potentially hazardous idea it is. It would be sort of like crying "Wolf!" When word leaked out that some hazardous warnings are really just a cover for archeological sites--and word will leak out--someone just may wander onto a real hazardous site on the guess that the sign is bogus. I think there are some real safety considerations arguing against the use of bogus hazard warnings. (#414, Bureau of Indian Affairs).

6. It is my contention that signage would be most beneficial at sites which have high public visibility and are already being impacted by vandalism and collecting. Under these conditions, signs should discourage casual collecting by individuals who are not yet aware that artifact collecting on Federal lands is illegal and will hopefully prompt conscientious members of the public to report observed incidents of collecting or vandalism. In fact, some signs should perhaps state something to the effect that the public must share the responsibility for protecting our cultural resources and that it should be their responsibility to report incidents of collecting and vandalism.

Obviously, signs placed on sites which can be patrolled or which have controlled access would increase the effectiveness of signage. Sites not already being impacted by vandals or collectors should not be signed since there is really no reason to draw unnecessary attention to the sites.

A combination of interpretive signage and warning signage would be the most effective because such signs could relate why a particular site is important enough to be protected by laws and penalties.

On a military testing installation bogus signs stating "Live Ordnance - Do Not Enter!" could be pretty effective, although this has not yet been tried. (#397, Department of the Army).

7. As recreational use of our public lands increases, as we know it will, land-managing agencies will need to place more emphasis on interpreting the resources the public encounters. Signing cultural properties, even if they are very remote, is an excellent way to educate and foster appreciation for the values we are trying to protect. The hard-core looters will not be affected by signs. I believe the rest of the public will, and they need to know (1) the sites are important and people care about the values they represent and (2) it is illegal to collect or damage them. Arizona BLM plans to do more signing in the future, focusing on the more conspicuous sites, primarily as an educational and public-relations tool. This year we completed plans for self-guided interpretive trails, including signs of both types (antivandalism ARPA signs coupled with interpretive signs) for two large sites. Our plans for these sites incorporate a monitoring strategy to assess the impacts of our interpretive development on the various kinds of cultural features on the sites. We hope to begin accumulating some hard data, by watching these interpreted sites, to guide us in future efforts. (#216, Bureau of Land Management).

8. If a site has been vandalized, it should be signed, regardless. Placement of the sign is the critical thing, not whether or not the site should be signed at all. Locate the sign such that only someone who has purposefully walked up on to the site will see it. For instance, stake the site in the bottom of a pot-hunters' hole--it will not be seen by someone just casually walking by the site, but will certainly be noticed by anyone who has stopped there for an "extended stay." If it is not possible to place a sign without disclosing or announcing a site location, try placing the sign in a general location away from the site where people are sure to pass it--the mouth of a canyon for instance. To reject the use of signage in the belief that signs will only attract more vandalism is wrong. Serious pothunters do not need help to find sites. Signs will always keep honest people honest, and will at least make the hard-core looter think twice. There are always exceptions, but on balance, signs make sense. (#233, Fish and Wildlife Service).

9. Signing of cultural resources can be an effective deterrent to negative human impacts. There can be no absolute rule by which managers may sign or not sign a particular resource. The variables which the manager must consider include the following:

- The significance of the resource (which may change with area management, agency or national policy, availability of scientific data, the needs of the scientific community, etc.).
- Agency policy and guidelines.

- Area development and management needs.
- A history of vandalism, pothuntings, "souvenir" or relic collecting.
- Kinds of problems that the signs are to solve (legal warning, public interpretation, public education, etc.).
- Level of or immediacy of threat to the resource.
- Remoteness/accessibility of the site, either to vandals or to law enforcement patrols.

One question that should always be asked is "Will signing the resource increase the threat of damage?" Once that question is answered, it is then only necessary to determine the management approach to the resource, kind of verbiage, appropriate placement of the sign, etc. (#109, National Park Service).

10. I think that you first have to identify (if possible) the type of group you are attempting to keep from damaging the resource (it may in fact be anyone). Depending on the group that is identified, then one can make a choice concerning the signing strategy to be utilized.

In our case here at the park, the ultimate goal of the sign was to abrogate the parties that were taking place onsite on the weekend evenings. We assumed right from the onset that the group causing the vandalism was probably of adolescent age. The idea was to try and use a regulatory sign explaining what could happen if they were caught in the act of violating the Archaeological Resource Protection Act. In other words, we were attempting to scare the teenagers into complying with our wishes.

Unfortunately, the sign seemed to bring out the deviant behavior instead of stopping it. Ultimately, a group of the kids were found in the act of vandalizing the site and were dealt with by way of citations. As a result, there has been little problem at the site since.

The bottom line seems to be that this particular age group responds to such a sign as if it were a kind of challenge to do more vandalism. So in this particular age group a regulatory sign would seem to be ineffective.

Probably the best sign to start with in this particular instance would have been some kind of nonthreatening interpretive sign.

Perhaps the best thing to do in our particular setting would be to put up some kind of interpretive/educational display concerning the preservation of archaeological sites. This would probably reach the greatest concentration of

people, as most of the actual sites are never visited. Such a display(s) could be installed at the park's visitor center(s). (#183, National Park Service).

11. At our Park we have found that the use of signs, both general information and interpretive, can reduce vandalism. Signage seems to work best to reduce inadvertent vandalism such as camping at archaeological sites, burying garbage in rockshelters with cultural deposits, or digging fire pits in sites. Hard-core vandalism and looters digging for artifacts to sell do not seem to be affected by any type of signs. We strongly feel that the thrust of signage projects for cultural resources, whether they are historic buildings or pre-historic rockshelters, should use an educational approach that relies on common values rather than the often used confrontational approach typified by restrictive signage. (#195, National Park Service).

12. Cultural resources should be nearly vandal proofed or stabilized before drawing attention to them with signs. Even the most conscientious visitors will degrade cultural resources by allowing children to climb on them, sitting or leaning on them for photographs, or trying to look into or under something.

Metal-cast signs in stonework commemorating an event at a specific location are shot at and have glass bottles thrown at them in this part of California. Just a sign itself may invite its own vandalism.

Unfortunately, there is no simple way to measure a visitor's appreciation or enrichment by learning of a historical event by reading signs at sites. But vandalism and site degradation is almost expected, or inevitable.

Before land managers decide to sign a site or even direct persons to unsigned sites, they should consider the following:

- Cost of the sign.
- Budget for sign upkeep (assuming vandalism will occur).
- Why do you want this signed?
- Adequate protection of irreplaceable characteristics or artifacts at site.
- Is it in Agency's/Department's best interest to sign a site according to its mission.

Control of access to fragile sites, frequent deterrent patrols, and regulatory signs such as "Collecting of natural, historical and archaeological objects strictly prohibited by law" along with remote sensing devices are the only way

to protect valuable irreplaceable resources which have not been collected and catalogued by archaeologists/historians. (#196, National Park Service).

13. A number of preservation signs/messages appear throughout the monument: orientation map/sign has preservation message (i.e., do not remove), the entrance road is signed and drivers are expected to read it and are therefore responsible for being aware of regulations prohibiting the removal or disturbance of surface material. There are similar preservation signs in the visitor center, on bulletin boards, and in park brochures and site bulletins on artifacts and pottery.

Regardless of the number of times the messages have been put to the public, we still see visitors at sites in the obvious mode, walking slowly with head down and looking for surface artifacts and going through the motions of picking up artifacts. When approached, they act ignorant of the facts. In some instances, people have commented that they know not to take entire pots but thought potsherds were okay!

We have used small, stone signs along interpretive trails which have messages about "do not remove pottery." This message has been discussed in terms of its effectiveness in that without the message, people might not be aware that artifacts or potsherds were on the ground! The stone signs include a painted symbol (resembling local petroglyphs) and include a second message of "Please stay on the trail." People tend to wander where they please.

The Land Management agencies are caught between the "rock and hard place" when it comes to balancing the need for site access via public land argument and site preservation. Basically, the term preservation must be described or defined for each site or type of site. Preservation measures taken at sites developed for interpretive purposes include heavy degrees of stabilization, with interpretive messages usually related to prehistoric life but not necessarily strongly worded for the preservation of the irreplaceable resource. The degree of preservation at remote sites is of a higher quality in that walls can remain intact and with minimal intervention with former traditional stabilization measures.

Generally, the best protection afforded ruins comes from routine patrols with individuals, but alas the idealistic situation is often not reached due to staff shortages and collateral duties. This is where local volunteer help is most effective.

I do feel a sign effectiveness study would be interesting if not beneficial to learn which type of sign and wording would be the best. The project would be complicated by the variety of park visitors; some people are extremely well versed in how to behave themselves in a park setting, while others still need to have some degree of basic education on how to act in a park and to learn what the term preservation means. (#198, National Park Service).

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13. ABSTRACT (Maximum 200 words) <p>Prehistoric and historic cultural resource properties are protected by various historic preservation laws and regulations. Among the various impacts that cause damage or loss of these valuable resources are several forms of depreciative behaviors and vandalism. One type of mitigation of such impacts involves the use of signs to communicate both rules (and associated penalties for those who disregard them) and information concerning the importance of protecting and preserving the resources. Considerable debate has occurred among cultural resource specialists and managers regarding the overall value of protective signs and the kind of information conveyed in sign messages. Little in the way of written guidelines for developing and evaluating effective sign programs exists.</p> <p>This report examines the protective role that signs have played in past and ongoing resource protection programs. Following summary discussions of literature on depreciative behavior and signs and their messages, the results of a nationwide, interagency survey are presented. This survey incorporates data on opinions about the relative effectiveness of different types of signs and previous signing efforts. The information extracted from the literature reviews and the questionnaires is utilized to create guidelines for effective cultural resource sign programs.</p>
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