MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

# DAMAGE ASSESSMENT AND DATA RECOVERY PLAN FOR LA 120945, IN LEA COUNTY, NEW MEXICO

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# ADMINISTRATIVE SUMMARY

The Office of Archaeological Studies, Museum of New Mexico, conducted a damage assessment of LA 120945 on Bureau of Land Management lands near Carlsbad, New Mexico. It was determined that the site had been severely damaged during the cutting of a fiber-optic-cable trench. At least 15 cultural features, including possible pit structures, hearths, roasting pits, and fire-cracked rock areas were cut or exposed by the trenching. Based on the structural features present and the existence of late brown ware sherds, the site probably dates to the Late Globe phase, ca. A.D. 1000, and represents a rarely documented base camp of that time. This report details the extent of damage and provides a data recovery plan for the site.

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# INTRODUCTION

In November 1998, Ms. Rose Havel of the Bureau of Land Management (BLM), Carlsbad Field Office, requested a damage assessment of LA 120945, a site that had been recently cut by a fiber-optic-cable trench (Fig. 1). The site is on BLM land along U.S. 62-180 in Lea County, New Mexico, and was originally recorded by Martin (1997). The site is extensive, covering 26 acres or 1,136,706 sq ft (105,600 sq m). Only the portion within the highway right-of-way has been affected by the cable trench. Dorothy Zamora of the Office of Archaeological Studies (OAS) inspected the site and provided a damage assessment and data recovery plan for the disturbed portion of the site. She was assisted in the field by James Quaranta and Laura Rick of the OAS. A total of 21 man-hours was spent traveling to and on the site and 40 hours in preparation of the data recovery plan. Yvonne Oakes, principal investigator, assisted in the report preparation.

LA 120945 contains at least 15 cultural features within the highway right-of-way that have been cut or exposed by the cable trench. These include at least two possible burned pit structures, hearths, outside pits, and fire-cracked rock areas. Late brown ware ceramics are also sparsely present on the site, suggesting a Jornada Mogollon Globe phase occupation around A.D. 1000. The site is important because of the presence of potentially datable habitation structures, a rare occurrence in southeastern New Mexico. Martin (1997) states that the site is eligible for the National Register of Historic Places under criterion d of 36 CFR 60.4. A data recovery plan is included in this report because of the potential for the site to yield significant information on the prehistory of the region.

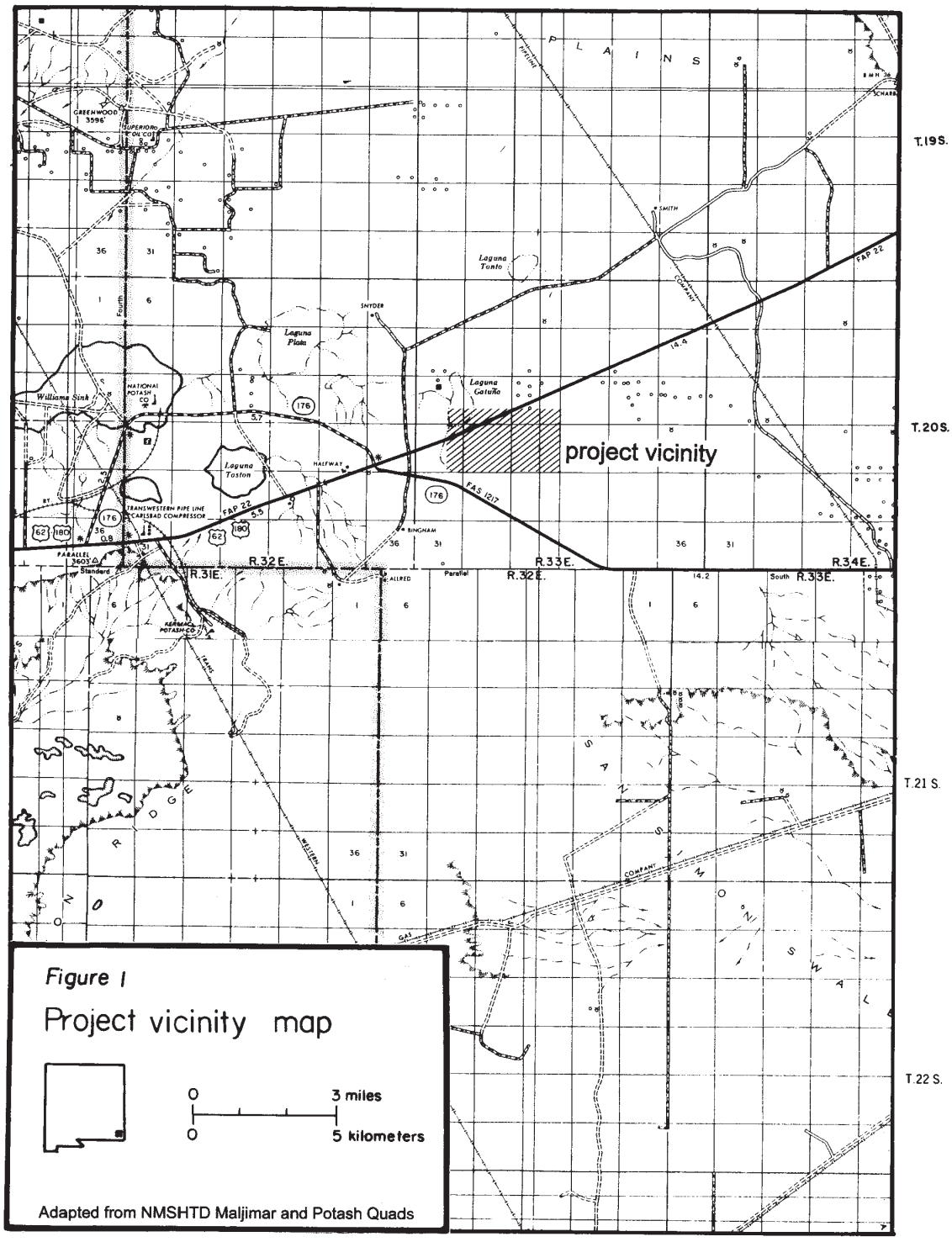


*Figure 1*

Project vicinity map

Adapted from NMSHTD Maljimar and Potash Quads

# CULTURAL ENVIRONMENT

LA 120945 lies within the Chihuahuan Desert biozone, which extends south to the New Mexico-Texas border and is defined on the west by the Guadalupe Mountains and on the east by the Llano Estacado (Stakes Plains). The Querecho Plains lie directly to the northwest of the site, the low trough of the San Simon Swale drops to the south, and Livingston Ridge rises several hundred feet at five miles to the west. The elevation of the site area is 3,510 ft (1,070 m). Numerous large playas occupy the area. Laguna Gatuna, the largest, is immediately north of the site. At present it is principally a dry salt bed. Generally, the region is very gently sloping and punctuated only by low ridges that run north-south. Blowouts and sand dunes dominate the site vicinity. The Pecos River, 35 miles to the west, is the only perennial water source in the region. Surrounding playas, such as Laguna Gatuna, are closed systems and fill up only during periods of heavy precipitation.

The area is geologically within the Mescalero Plain and is underlain by well-developed beds of caliche. Bedrock consists of limestone, sandstone, shale, dolomite, and gypsum of Permian age (Hawley 1986:27). Numerous subsidences have developed in this bedrock substrate. Alluvial materials now cover the area and consist of sand, silt, and clays (Hendrickson and Jones 1952:25). Surface soils are strongly carbonate (Katz and Katz 1993). In the project vicinity, this includes the Paleorthids-Haplargids soil association. Soils are mostly shallow with some pockets of deep soils. Caliche, sandstone, and shale are frequently exposed on the surface (Maker et al. 1976:41).

Vegetation in the project region is sparse and is associated with the Chihuahuan Desert biozome. Plants can include mesquite, creosotebush, tarbush, shinnery oak, broom snakeweed, ephedra, bush muhly, winterfat, yucca, four-wing saltbush, alkali sacaton, dropseeds, grama grasses, fluffgrass, and little bluestem. Fauna in the region may include pronghorn, some mule deer, cottontail rabbits, jackrabbits, coyotes, gray foxes, skunks, ground squirrels, gophers, birds, turtles, snakes, and lizards.

The climate is typified by mild winters and hot summers. The mean January temperature is 5.1 degrees C, and in July, 26.3 degrees C. The mean annual temperature is approximately 15.9 degrees C, with a frost-free period averaging more than 200 days (Tuan et al. 1973). The precipitation regime is summer-dominant, with a mean annual precipitation rate of 305 mm, 2/3 of which falls between April and September. Winds, which can be severe within the region, are strongest in spring and summer and blow from the southeast (Williams 1986:50).

# CULTURE HISTORY

(adapted from Zamora 1997)

The following culture history is derived from Leslie (1979), Stuart and Gauthier (1981), Katz and Katz (1985), and Sebastian and Larralde (1989).

The first documented occupation of southeastern New Mexico is the Llano complex (Clovis adaptation) of the Paleoindian period, approximately 13,000 years ago. Peoples of this period are known for the hunting of large mammals, such as mammoths and extinct forms of bison), and maintaining a nomadic or seminomadic pattern of living. They also relied on wild vegetal foods and hunted small animals.

The retreat of the Pleistocene glaciers and resulting warming of the more southern latitudes may have resulted in a shift in human adaptation to what is called the Archaic period. This hunting and gathering regime may have been more eclectic than the Paleoindian period, focusing on smaller animals such as deer and rabbits. The appearance of grinding implements and specialized burned-rock features at this time suggests a greater reliance on plant foods.

In this area of southeastern New Mexico, the Archaic sequence starts with the Middle Archaic rather than the Early, suggesting a lack of Archaic sites in the region until approximately 3000 B.C., the Avalon phase. Little is known about the people other than that they inhabited the area near the Pecos River at least part of the year. Hearths have been found dating to this period. Freshwater shells have also been recovered in association with this occupation, but not projectile points.

Late Archaic period sites are better known because more sites of this time have been recorded. Small hearths and burned-rock middens are common, and several projectile point styles have been identified in association. The Late Archaic is loosely dated from 1000 B.C. to A.D. 750. Later sites indicate a tendency to heavier utilization of agave and sotol; however, riverine resources were still being used. Numerous projectile point styles have been identified for this period.

The Formative period in this region begins with the Globe phase (A.D. 750 to 1150). Some major adaptive changes occurred at this time, for example, the use of ceramics and the bow and arrow. Habitation structures are associated with this phase, and the uplands seem to have been more of a subsistence focus than the riverine system. Projectile points styles are dominated by the corner-notched types identified as Scallorn. Wiseman (1997), among others, believes that this early Formative period phase is transitional between earlier and later patterns.

During the succeeding Oriental phase (A.D. 1150 to 1450), occupation along the Pecos River continued to diminish. Decorated pottery, such as Chupadero Black-on-white, Three Rivers Red-on-terracotta, and El Paso Polychrome come into use. Several of these types may have been imported from the west and northwest. However, the Archaic-like mobility pattern seems to hold for this and the preceding phase.

The Phoenix phase (A.D. 1450 to 1540) and the Seven Rivers phase (A.D. post-1540) are defined on the basis of projectile point styles only, and Katz and Katz (1985) admit that distinguishing between the two may be dubious in practice. We do know that riverine-area occupation was minimal and that hunting and gathering continued to be major subsistence foci.

It remains to be determined where many of the prehistoric peoples went after the late 1500s. There is a definite diminution of sites and cultural remains, suggesting at least partial abandonment of the area. Early Spanish explorers document the presence of hunter-gatherer peoples in this region during the protohistoric and early historic periods (Schroeder and Matson 1965). However, these may actually have been Jumanos or Apaches who replaced earlier occupants (Hickerson 1994).

From Spanish contact until after the American Civil War, Apaches, Comanches, Kiowas, and other Plains tribes were present in southeastern New Mexico. Following the Civil War, westward mass movement of Euroamericans and the drifting in of small groups of Hispanics led to settlement of the region. Cattle ranching was the principal economic activity, but by about 1890, drought had all but decimated the grasslands. Artesian water was discovered at Roswell in 1891, and its development throughout the region promoted widespread irrigation and a rapid influx of people. Also in 1891, the railroad reached Carlsbad, irreversibly setting the course for urbanization of the area. At the turn of the century, the area's economy was firmly based in agriculture and stockraising, and by the mid-twentieth century, the production of oil and gas.

# DAMAGE ASSESSMENT AT LA 120945

The Bureau of Land Management (BLM), Carlsbad District, requested the Office of Archaeological Studies (OAS), Museum of New Mexico, to conduct a damage assessment of LA 120945 along U.S. 62-180, between Carlsbad and Hobbs, New Mexico (Fig. 1).

The site is within the highway right-of-way and extends beyond the right-of-way fence 320 m to the south. Craig Enterprises, subcontractor for GTE, trenched and bladed through the previously recorded site (Martin 1997) to lay a fiber-optic cable. During the trenching for the cable, several burned features were disturbed by mechanical equipment. Dorothy Zamora, Jim Quaranta, and Laura Rick of OAS inspected the site on November 24, 1998, and found approximately 15 areas that may contain cultural resources. It was determined that LA 120945 is one of few sites in the region that contain intact cultural features including habitation units.

## Site Description

The site is in an area of coppice sand dunes and blowout areas along U.S. 62-180 on the south side of Laguna Gatuna. It consists of a high-density scatter of lithic artifacts, ground stone, ceramics, and shell. Over 100 thermal features, including fire-cracked rock and burned caliche, were found during the initial survey by Martin (1997), eroding from the side of the dunes. The site measures 320 m north/south by 330 m east/west within the right-of-way, an area of 105,600 sq m, or 26.1 acres.

The lithic artifacts numbered in the thousands, and the dominate materials are chert and quartzite. All phases of reduction are present; however, no formal tools or diagnostics were noted. Over one hundred Jornada Brown Ware ceramics (A.D. 900-1400) were found on the surface. Ground stone artifacts numbering in the hundreds consisted of mano and metate fragments.

The site is probably a seasonal activity and camping area used for gathering and processing of the available resources as suggested by the many thermal features. Martin (1997) states that the site is eligible for the National Register of Historic Places under Criterion d of 36 CFR 60.4 because of its potential to yield significant information regarding the prehistory of southeastern New Mexico. He recommended that the cable be rerouted in the site area into the borrow ditch adjacent to the highway pavement to avoid impact to the site and that it be monitored during construction.

## Damage to Site

Craig Enterprises impacted a 4 by 320 m area of LA 120945 along the fenceline in the highway right-of-way (Figs. 2-6). During the assessment, several areas of blackened soil were noted, along with a few fire-cracked rocks from thermal features and compact, reddish-brown sand stained with charcoal flecking, which resembled the remains of a living surface. In the cut of a small dune, the profile exhibits the remains of a burned pit structure and an outside pit to the east (Figs. 7-9). The bladed area exposed the floor of the pit structure and the cable trench dug below the surface. The pit structure is 3 m in diameter. We also believe that because of the backfilling of the trench, more features may be present.

Besides the pit structure in the dune cut, there area two other areas that measure 3 m and 4 m long (the width was not determined because we did not want to expose more of the feature). In this area the blading of a 1 m portion of the features was exposed, which may represent habitation areas or pits.

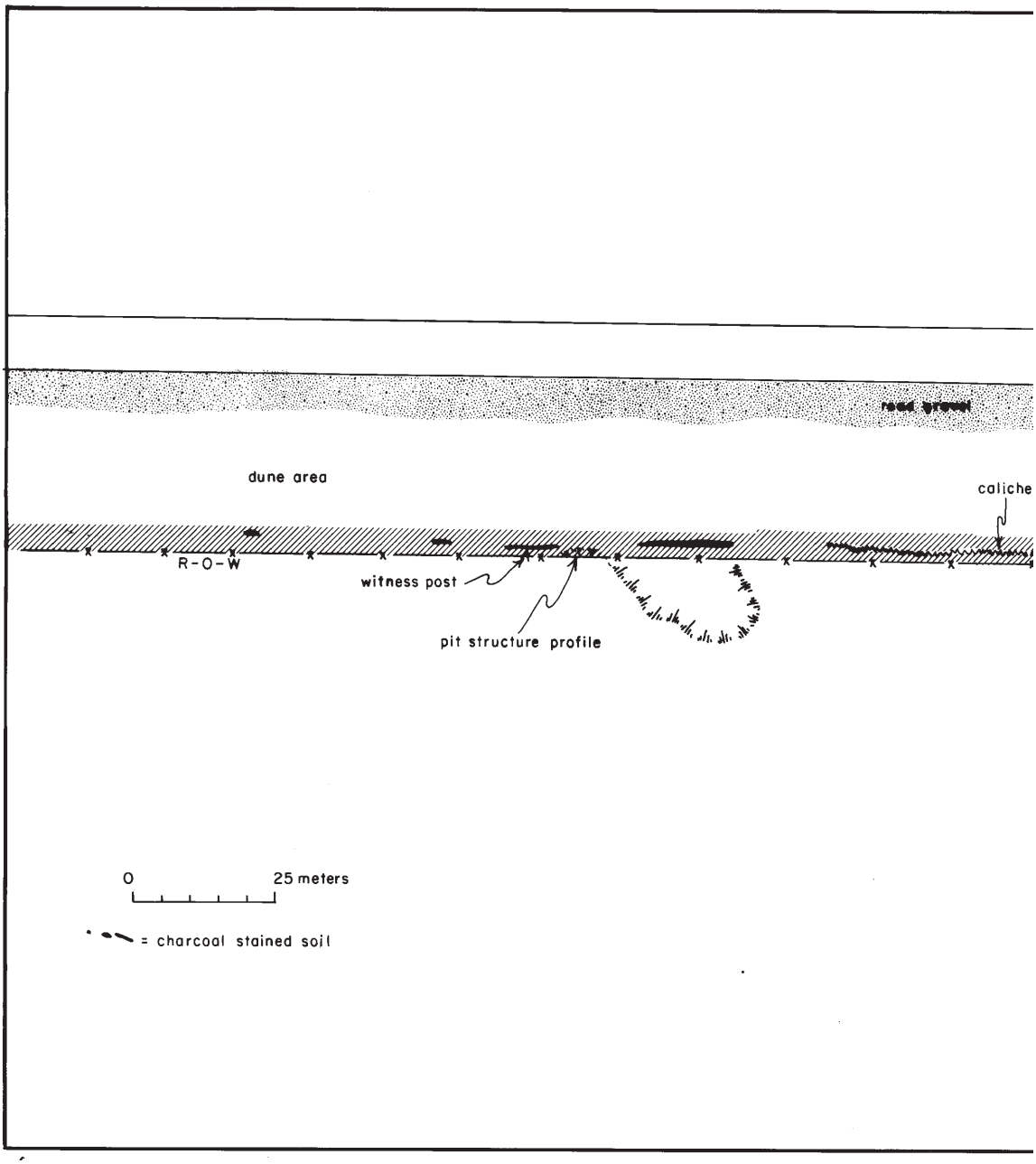


*Figure 2. Site map of LA 120945.*

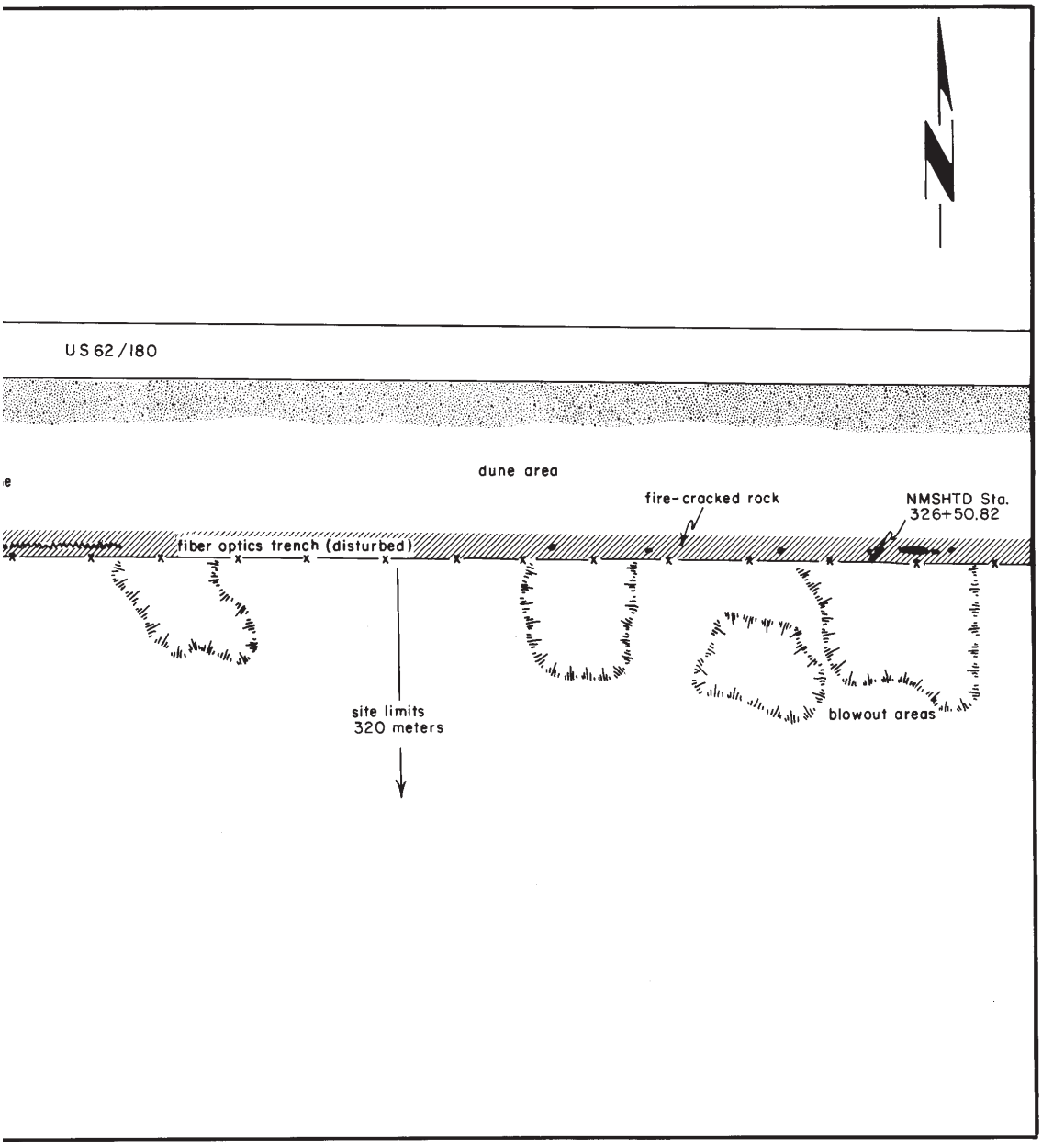
US 62/180
dune area
fire-cracked rock
NMSHTD Sta.
326+50.82
fiber optics trench (disturbed)
site limits
320 meters
blowout areas

*Figure 3. Blowout with fire-cracked rock and artifacts, facing south.*

*Figure 4. Disturbed area facing east.*

*Figure 5. Blowout close-up with fire-cracked rock and artifacts, facing southwest*

*Figure 6. Blowout cut by cable work.*

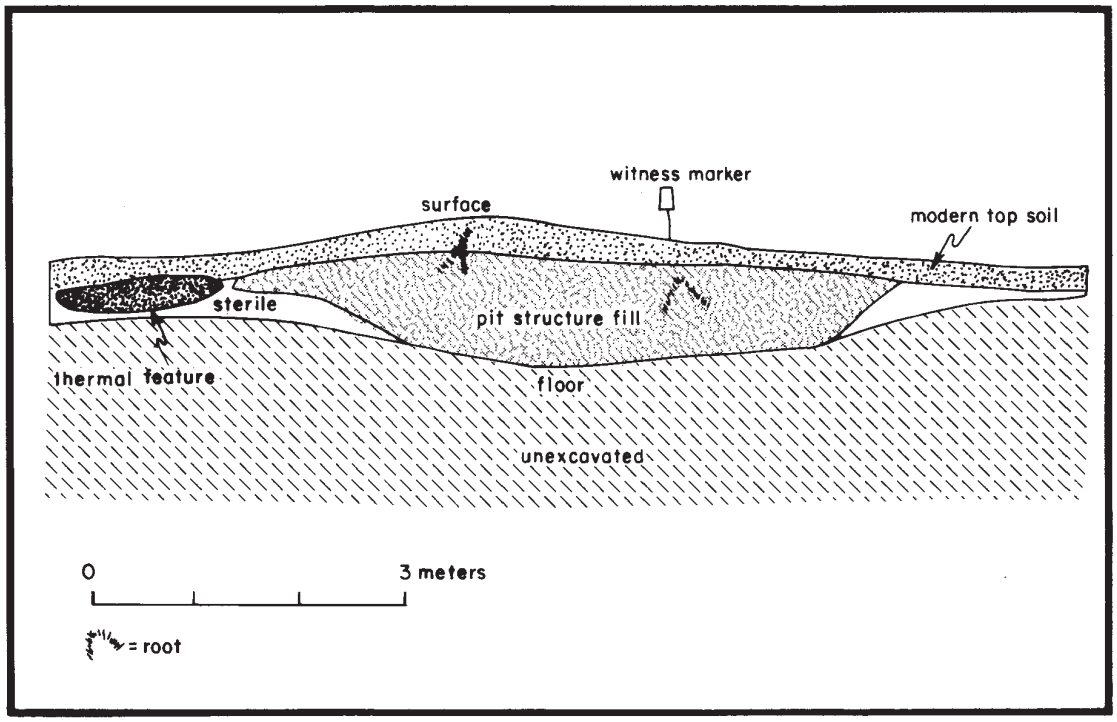


*Figure 7. Soils profile of pit structure.*

*Figure 8. Pit structure profiles in cut bank, facing south.*

*Figure 9. Cable cut facing west, with cut pit structure on dune in background.*

Few artifacts were seen within the impacted area. These included lithic artifacts and nonhuman bone, which were found in the area where the blackened soils were present and in the exposed pit structure. Ground stone fragments were found away from the burned areas.

## RECOMMENDATIONS

Recent unpermitted mechanical work on the site has adversely impacted LA 120945. We recommend that a full-scale excavation of the damaged portion within the highway right-of-way be conducted as soon as possible. If data recovery is not performed immediately, the exposed fragile features will erode away, since the vegetation has been removed, making the sand dunes very unstable.

# DATA RECOVERY PLAN

(adapted from Wiseman 1996 and Zamora 1997)

Prehistoric occupation of southeastern New Mexico has been documented from the Paleoindian period through the presence of the Mescalero Apache, a period of over 13,000 years. Earlier research goals in the region were geared mainly to defining the culture history of the region (Lehmer 1948) and its specific cultural attributes (Mera 1943). Interest in refining cultural manifestations, principally ceramics, has continued up to the present with the work of Greer (1965), Runyon and Hedrick (1973), Brook (1975), and Leslie (1979). However, today professional research goals have taken on broader, more regional aspects, primarily in differentiating sedentary phases (Whalen 1977; Katz and Katz 1985a), determining site functions (O'Laughlin 1980; Wiseman 1996), assessing subsistence bases (Basehart 1974; Oakes 1985), and correlating site locations with environmental parameters (Oakes 1985; Katz and Katz 1993). While explanation of the settlement-subsistence dynamics of southeastern New Mexico is still tenuous at best, the potential for systemic explication now and in the future is extremely promising.

The proposed research is based upon an environmental frame of reference in which culture is adaptively organized to solve specific problems posed by the environment. One primary problem for regional groups was the acquisition of subsistence items. Thus, variability in a culture's systemic organization is responsive to the variability in availability of food. Some adaptive responses could include collecting, foraging, hunting, storage, trade, sedentism, and mobility, or any combination thereof. We believe there were specific environmental variables in the Carlsbad region that conditioned the selection of particular food procurement strategies such as (1) seasonality of availability, (2) quantity of biomass, (3) accessibility of resources, and (4) density of participating population. It is believed that the generalized strategy of wild-food gathering would have been the best adaptive response to the local environment.

Katz and Katz (1985a) provide an excellent outline of prehistoric cultural developments in the Guadalupe MountainsCarlsbad region. But the Katzes would be the first to admit that this sequence, which covers Paleoindian through early historic Native American periods, requires verification and elaboration. The last two Formative periods--Globe (A.D. 750-1150) and Oriental (A.D. 1150-1450)--are not as well known as earlier ones, largely because aboriginal use of the greater Carlsbad area had decreased markedly in favor of the Guadalupe Mountains and their foothills west of the Pecos River. The project site likely represents the Globe (Formative) phase and lies east of the foothills of the Guadalupe Mountains and the Pecos River. In the nearby area, the Querecho phase represents the same cultural adaptation as the Globe phase. The site provides an excellent opportunity to examine prehistoric adaptations during this phase and to verify or modify the shift in subsistence emphasis posited by the Katzes.

As discussed in more detail below, horticulture evidently was not practiced prehistorically in the Carlsbad region. This fact, plus other characteristics, have led Robert Mallouf (1985) to suggest that the prehistoric remains of the Carlsbad area are more closely associated with the Trans-Pecos culture area of west Texas (the western "arm" of the state, except El Paso County) than with the Jornada-Mogollon to the west and north. We concur with Mallouf. Drawing on the Katzes work at Brantley, we suggest that the same applies to the Carlsbad area, including LA 120945. However, a formal line of demarcation between the Trans-Pecos (including the Guadalupe-Brantley region) and the Jornada-Mogollon remains to be defined.

There are several implications of assigning the Carlsbad region to the Trans-Pecos. First, as far as can be determined at present, the peoples inhabiting the Trans-Pecos--with the exception of those at La Junta de los Rios on the Rio Grande (present-day Presidio, Texas)--lived an Archaic-

like, hunter-gatherer lifestyle throughout the prehistoric and historic periods. Many late prehistoric sites in the Trans-Pecos produce small amounts of pottery, but all of it was probably traded in from nearby regions. Most or all of the pottery at Carlsbad sites came from the Sierra Blanca and El Paso regions to the northwest and west, respectively.

## Hunter-Gatherer Subsistence Systems

Past research in the Carlsbad region, as in the Trans-Pecos in general, indicates that baked succulents such as lechuguilla and sotol were a fundamental aspect of pottery-period (Late Prehistoric) subsistence (Greer 1965, 1967, 1968; Roney 1985; Katz and Katz 1985a). Archaeological remains of baking ovens usually take the form of midden rings or circles of burned rock surrounding central pits, though burned-rock mounds of other shapes are also known (S. Katz, personal communication, 1996; R. Phippen, personal communication, 1996). Midden circles date as early as the Middle Archaic period in Texas but are more common in later time periods. Most dated ovens in the eastern Trans-Pecos, including the Carlsbad area, belong to the post-A.D. 500 pottery period (Roney 1985:144). Since these succulents provide a reliable, year-round source of carbohydrates, they were understandably important to prehistoric and historic diets and probably obviated the need for many other carbohydrate sources, including corn (Sebastian and Larralde 1989; Roney 1985).

W. H. Wills (1988:54-55) points out that succulents are usually scattered across the landscape rather than clumped, which probably affected humans in yet another way. He posits that the scattering and year-round availability of these resources in the Trans-Pecos led to the retention of a more nomadic, "forager" pattern, rather than a less nomadic, logistically organized pattern (Binford 1980). In simplest terms, foragers move to the food, and collectors move the food to the people. Collectors do this by means of task groups that are sent out to obtain specific resources and return them to the group, a behavior warranted by resources that occur in clumped or patch-like distributions. The primary differences between collector and forager lifestyles are the degrees and ways in which people plan, organize, and conduct their food quest in response to resource distributions and seasons of availability.

In theory, forager and collector sites should have fairly distinctive attributes. These might be summarized as follows:

Forager sites should be similar, and their archaeological visibility should be subtle, perhaps even inconspicuous, because people are moved to the resources, the sites are inhabited for shorter periods of time and have smaller accumulations of trash and similar ranges of artifact types. Forager sites are occupied for relatively short periods of time (days or few weeks), and relatively few items (manufacturing debris, broken artifacts, etc.) should be left behind.

Collectors send out work parties to set up temporary special-activity sites, collect the target resource(s), and take the food back to long-term base camps. Base camps are generally quite visible archaeologically because they are used for a wide range of daily activities, resulting in the accumulation of a wide range of artifact types, activity areas, and refuse deposits. Some form of structure, whether ephemeral or more substantial in construction, is usually present, as are pits for storing food and other items. Base camps are generally used over long periods of time (several months) each year for several years, sometimes in sequential years, and sometimes in staggered years or sets of years. A logistically organized group generally has only one or two base camps that it uses during a given year.

Special activity sites, on the other hand, are created during collecting expeditions, might be used only once, and are almost invisible archaeologically because they are used for only short periods, have little or no accumulation of nonperishable debris and broken artifacts, and have limited artifact inventories, reflecting comparatively few activities.

While we generally agree with Wills's proposition, like Sebastian and Larralde (1989) and Collins (1991:8), we emphasize the view that these strategies--foraging and collecting--are two ends of a continuum, not a dichotomy. In a given year or over a series of years, some groups may actually employ both strategies because of factors relating to season, climatic regimen, economic success, demography, competition, and other factors (see Boyd et al. 1993). Sebastian and Larralde (1989:55-56) present an example of a "mixed" forager/collector strategy in the concept of "serial foraging." Using the Archaic peoples of southeastern New Mexico as an example, they define serial foraging as follows:

A strategy of serial foraging involves a small residential group that moves into the general vicinity of an abundant resource and camps there, uses the target resource and other hunted and gathered resources encountered in the general area until the target resource is gone, or until another desired resource is known to be available, and then moves on to the next scheduled procurement area. Such a strategy could be expected to create a great deal of redundancy in the archaeological record, an endless series of small, residential camps from which daily hunting-and-gathering parties move out over the surrounding terrain, returning to process and consume the acquired foods each evening. If the resources were randomly distributed, all the sites would look generally the same. But since many of the resources appear in the same place year after year or in some other cyclical pattern, some sites tend to be reoccupied.

Reoccupied sites, then, would be a clustering of small, single-event, serial-foraging sites. But Sebastian and Larralde (1989:56) also envision a complicating factor:

The only exception to the rule of basically redundant but sometimes overlapping small campsites would be the winter camps. Given the relatively brief winters of the Roswell District, many of the sites would, on the surface, be no different in appearance from reoccupied short-term camps. Excavation of such sites might recover resources indicating a winter seasonal occupation or features indicative of storage, however. If we were able to differentiate single, large-group occupations from multiple, small-group occupations, we might find that winter sites differ from warm season camps in that they were occupied by larger groups.

In the above examples, the settlement types of serial foragers should then start taking on the appearance of collectors' sites. While this introduces some difficulty in interpreting archaeological sites, it probably approximates reality to a greater degree.

In addition to feature and artifact content of sites, Collins (1991:7-8) suggests biological correlates of forager and collector sites, particularly those involving burned rock middens. He suggests that the difference between the two might be signaled by whether the plant species processed are r-selected or not. That is, collectors would focus on r-selected species that are available in large numbers/amounts during short periods of time, requiring some form of preparation and storage for long-term benefit to humans. Foragers, on the other hand, would rely mostly on those plant species that are available throughout the year, precluding the need for storage but usually requiring greater mobility because their distribution across the landscape is general, not patchy. Collins suggests that animal species might also be conducive to this type of analysis, but because animals are mobile, they are not particularly useful in this regard.

Regarding subsistence strategies, it is appropriate to touch on the subjects of gardening-farming and food storage. The evidence for prehistoric horticulture in the Carlsbad region is minimal at present. Roney (1985:44) states that corn was recovered from only three sites, all of them caves in the Guadalupe Mountains, but in each case, few remains were found. Pratt Cave (Schroeder 1983:67) involves a few corn kernels recovered from the vicinity of a hearth. Since two chile seeds were recovered from a lower level in the same test, it seems likely that the corn was introduced during the historic period by Apaches, rather than during Archaic times, as suggested by Roney. According to Roney, the proveniences and temporal associations of the other two reports of corn are also uncertain. This leads us to conclude that horticulture either was not practiced by many of

the prehistoric inhabitants of the Carlsbad region or was practiced on a very limited scale. Degree of dependency on corn in the Carlsbad area is an unresolved issue and will be addressed with the subsistence data obtained from the site to be excavated.

Storage, usually in the form of pits, is believed to be a key sign of base camps and habitation sites. The storage of quantities of foodstuffs is a characteristic of logistically organized subsistence systems. Generally speaking, storage implies a location that is easily protected or otherwise secure from theft. Sebastian and Larralde (1989:86) advance the interesting hypothesis that, because some resource patches are spread over the landscape and create a logistical problem for exploitation, some people may actually have cached foods in the collection areas and then moved their families from cache to cache as needed throughout the winter season. This constitutes yet another variation on the forager theme. But while it may actually reflect the situation in southeastern New Mexico, it also has the strong potential of confusing the interpretation of archaeological remains.

So how does one come to grips with this problem? Collins (1991:7-8), in discussing research on burned-rock middens in Texas, provides us with a test for determining whether a forager system or a collector system prevailed during the occupation of a specific site or set of sites. He posits:

Therefore, complex components associated with burned rock middens which evidence quantities of remains of any one or more r-selected resources to the near exclusion of other kinds of resources imply, at least to some degree, the adaptive characteristics listed above and would favor an interpretation that burned rock middens were specialized food preparation features. Mesquite beans, prickly pear tunas, all deciduous nuts such as pecans and acorns, and psoralea are examples of r-selected plant foods. The geographic distribution of burned rock middens [in Texas] does not encompass the range of any notable r-selected animal species, however, seasonal availability of some animals, such as bison or migratory waterfowl could sometimes trigger behavior similar to that of r-selected resource exploitation, but the availability of such resources is not sufficiently reliable to result in the establishment of the same adaptive pattern.

In contrast, plant and animal foods that are edible and available for all or much of the year (sotol, prickly pear pads, lechuguilla, antelope, rabbits, deer, bison in some areas, fish, mussels, turkey, and others) can be exploited in the more generalized foraging strategy and have different behavioral correlates. Evidence that foods of this kind provided the principal staples of groups responsible for burned rock middens would be evidence that these were not specialized food processing facilities, and that those responsible may have been foragers.

## Data Recovery Questions

The investigations proposed for the project site will be directed toward answering basic questions about settlement and subsistence behavior in the Carlsbad culture area. The main thrust will be documenting and validating the culture sequence formulated and outlined by Paul and Susana Katz (1985a), expressed as follows.

Judging by surface manifestations, LA 120945 dates to the Late Prehistoric or Formative period. Feature types identified include possible hearths, structures, burned-rock scatters, and artifact scatters. The proposed data recovery project will investigate these features. Part of the effort will also focus on finding and excavating any pits or other features currently masked by the dunes and artifact concentrations. Every effort will be made to recover and record information pertinent to the research outlined below and to the specific questions that follow.

1. Evaluate (verify or modify) our perception of the cultural content of the Globe phase as defined by Katz and Katz (1985a), and where possible, augment the criteria by which the phases can be

distinguished.

2. Evaluate (substantiate, refute, or modify) the subsistence trend outlined by the Katzes (1985a) for the Carlsbad area. The Katzes believe that a major subsistence shift took place during the prehistoric sequence. Riverine resources such as mussels were important foods during the Avalon, McMillan, and Brantley phases (Middle Archaic through terminal Archaic), and nonriverine resources were largely supplemental. But starting in the Brantley phase, and continuing throughout the Globe, Oriental, and Phoenix phases (the entire Late Prehistoric period), upland resources became more important and riverine resources less important. While this is better conceived as a change in emphasis, rather than a sharp change from one set of resources to another, it led to a markedly reduced human presence along the Pecos River.

Although the Katzes' reconstruction of the settlement and subsistence patterns appears justified by their data, we believe that the number of sites and components investigated by them are relatively few in number and, being concentrated near the Pecos River channel, do not fully represent the cultural adaptation of the Carlsbad area. The project site, away from the river, should permit us to fine-tune our perceptions of the broader prehistoric settlement pattern.

3. Determine whether the inhabitants of the Carlsbad region farmed and, if so, determine how prominently cultigens figured in the diet relative to wild foods. Given their proximity to horticultural peoples of the Southwest, it is surprising that prehistoric peoples in the Carlsbad area did not farm. But, assuming that they did not, we then need to determine whether the reasons are cultural, demographic, climatic, or some combination of these. Could the increased utilization of succulent baking preclude the need for, or usefulness of, the adoption of farming, as has been suggested?

1. Are the prehistoric components of the project site foraging or collecting, base camps/habitation sites, special activity sites, or some combination of these?

If LA 120945 functioned as a foraging locus, the following characteristics are expected: (1) Evidence of repeated short-term occupations (numerous redundant features scattered over the landscape). Attributes that should not occur include long-term storage features, residential structures, and formal midden deposits. Attributes that may be present may include ephemeral structures, sheet trash deposits, and a wide variety of manufacturing maintenance and food procurement activities (Moore 1996). (2) Formal interior heating should be absent. (3) Evidence of a wide range of floral and faunal resources in the diet. Cultigens would likely be rare. Only local food remains should be found.

If LA 120945 was used by ceramic-period logistical task groups, the following characteristic could be expected: (1) Evidence of relatively longer period of occupation than at foraging sites. Storage facilities may be present, and there may be specific trash disposal and activity areas. (2) Structures should be shallow and reflect warm-season use, although interior hearths could be present. (3) Evidence of a wide range of floral and faunal resources in the diet. Cultigens may occur. Foods from nonlocal sources may be found. (4) Structures and/or thermal features should be present and may evidence signs of reuse, or there may be evidence of redundant or related features representing repeated use over time. (5) A variety of food containers (ceramics) should be present, although they may be limited in number.

It may be difficult to distinguish between these patterns of use in some cases, particularly if curation of tools occurred at either site. However, the compilation of data should allow us to assess the assemblages and determine the patterns of use.

LA 120924 contains possible pit structures and a roasting or baking pits, probable hearths, and several burned-rock areas. But storage and other kinds of pits (for processing foods), and other types of thermal features also may be present on this site. It must be determined which ones were contemporaneous and which were not. Were the activities or site function during each occupation the same or different? At this stage in the investigations, we have few observational data and facts. More intensive work will probably greatly modify our perceptions and interpretations of the prehistoric components at the project sites.

Once individual components are defined, we can then proceed to document the activities that took place at each. The cultural features (storage pits, other types of pits, hearths, baking pits, etc.), associated artifactual materials, and the patterning of these remains are critical in defining site type by analyzing the activities represented. Important subsidiary studies will assist in determining site type, as well as overall subsistence patterns, and will include floral, faunal, and artifactual data, as discussed below.

2. What artifact assemblages are present at the project site? What types of tools and manufacture debris are present? What are the relative abundances of the various types? On the basis of the artifacts, what types of activities were performed at the site? How do these assemblages compare with those from other sites in the region?

LA 120945 contains lithic artifacts, pottery, and ground stone. Intensive surface investigation and excavation may produce other artifact types (projectile points, bifaces, ornaments, etc.), as well. The types of artifacts at a site help define the kinds of activities that took place at each location (component). Manos and metates imply grinding plant foods, projectile points imply hunting, and scrapers imply hide dressing. Multipurpose tools such as hammerstones, awls, and drills, and manufacture debris such as chipped lithic debris, shell fragments, and some types of fragmentary artifacts imply a number of generalized activities involving the manufacture or maintenance of items associated with day-to-day living. A wide range of artifact and debris types imply a base camp/habitation situation, and fewer artifact and debris types imply special activity sites. The percentages of each category will provide a very rough index to the relative frequency of each activity at the site.

Caution is required in interpreting the data in this manner because of the effects of tool use-life on artifact assemblage composition (Schlanger 1990). This line of interpretation makes several assumptions about the data and the activities they represent, and the technique greatly simplifies a number of complex variables and conditions.

The project site will be compared artifactually with other sites in the Carlsbad region. Sites to be used in this comparison include the Macho Dunes excavations and Seven Rivers sites, investigated recently by OAS staff.

3. What plants and animals were being processed or consumed at the project site? What biotic communities were being exploited? Were the inhabitants of the site exploiting all available biotic communities or only selected ones? Were cultigens being grown and consumed? During which season or seasons was the site occupied?

LA 120945 has the potential of producing burned plant remains and possibly some animal bone. Cooking activities probably took place at the site, as attested by the probable hearths, pits, and burned-rock concentrations.

Plant and animal remains recovered at archaeological sites provide first-line evidence for reconstructing various aspects of the human food quest. Animal bones and the pollen and charred remnants of plants will be studied to identify the species present and the biotic zones exploited, characterize the diet and food preparation techniques, and provide insights into the effects of

taphonomic processes on the archaeological record. Floral and faunal data also have the potential to provide information on the season of the year when they were collected or hunted. Although only certain plant and animal remains provide seasonal data, they are very useful in helping define the time of the year the site was occupied. Since it is unlikely that the data from the project site constitute a total view of the diet throughout the year or through time, it will be necessary to compare these results with those of other projects in the region to gain a better understanding of the total subsistence system.

As mentioned in an earlier section of this document, it is imperative that we establish whether or not domestic plants were grown in the Carlsbad region. Leslie's (1979) assessment of the structural sites in the vicinity of Hobbs in far southeastern New Mexico, though without benefit of flotation and pollen recovery techniques, suggests that corn was not being grown east of the Pecos River within New Mexico. The WIPP Project (Lord and Reynolds 1985), between Leslie's sites and the Pecos River, excavated three nonstructural sites but failed to find evidence of cultigens in flotation and pollen samples. On the other hand, corn was clearly being grown within the Pecos Valley at Roswell (Kelley 1984, Appendix 6; Rocek and Speth 1986; Wiseman 1985) and probably near Fort Sumner as well (Jelinek 1967). Thus, if cultigens are documented at the site, then the relative quantities may help us determine if the site occupants were farmers or full-time hunter-gatherers. Relatively large numbers of domestic remains would indicate that the people were farmers. Small amounts of cultigens would be less clear, for hunter-gatherers could have obtained them in trade from farmers.

4. What exotic materials or items at the site indicate exchange or mobility?

Intensive surface investigation and excavation at the site may produce examples of imported materials. At the present time, some scholars believe that all pottery is intrusive to the Carlsbad region in that it was produced in the Sierra Blanca and traded into the area. Since exotic or trade materials are by their very nature generally few in number in any site, a concerted effort will be made to recover them.

Materials and artifacts not naturally available in a region are indicative of exchange relationships with other people or a mobility pattern that permits a group to acquire these items during their yearly round. Judging which situation is applicable to the project site is difficult and will require careful comparison with data from the Roswell region. If we can determine whether the site occupants acquired the goods through trade or by direct access, we will gain perspective on the territory they used and therefore on the identity of the people themselves.

The absence of exotic materials is another matter entirely. In small sites and sites of short occupation, the absence of exotics can be misleading simply because such items may not have had time to find their way into the archaeological record. Or, perhaps the occupants simply did not acquire exotic materials. But this is precisely where comparisons with other assemblages in the region and the long-term accumulation of excavation data from numerous sites, both large and small and of all types, is necessary for acquiring perspective and, eventually, resolving the problem.

5. What is the date of occupation at LA 120945?

Dating of individual features and components is crucial. At the individual feature level, we need to determine which are contemporaneous (or approximately so) and which are not. This will permit documentation of site and areal use through time, whether or not these uses changed through time, and, if they did change, the directions, intensity, and, hopefully, the reasons for those changes. Dating information will also permit us to assess the Katzes' chronology, phase sequence,

and postulated cultural changes for the Carlsbad region.

The dating situation is critical in southeastern New Mexico, where dendrochronology, the most accurate and preferred dating technique, works poorly or not at all (W. Robinson, personal communication, 1975). Few absolute dates derived by other techniques are currently available (Sebastian and Larralde 1989). Recent advances in radiocarbon dating make it the most viable technique for southeastern New Mexico at the present time. Obsidian hydration and thermoluminescence have been tried in the region, but because these techniques have many problems and are not generally reliable, they will not be used in this study. Archaeomagnetic dating, however, has been successful at Macho Dunes, a recent OAS excavation, and will be employed if possible.

During excavation, charcoal will be recovered from as many features and cultural situations as possible. Because of the importance of dating the project site, we will submit both very small samples (for accelerator mass spectrometry analysis) and bulk samples (carbon-stained sands) for dating if necessary.

# SITE-SPECIFIC DATA RECOVERY QUESTIONS

Yvonne R. Oakes

LA 120945 consists of extensive artifact and cultural feature concentrations focused in several areas on the south side of U.S. 62-180 . It is believed to be Late Prehistoric in age. However, contemporaneity of the concentrations needs to be established through absolute dating methods or by the presence of diagnostic artifacts. Excavation procedures will concentrate on the visible features and artifact clusters in search of hearths or pits that may contain charcoal for dating. Flotation and pollen samples will aid in determining the subsistence items utilized on the site and the season of site use.

The presence of possible residential pit structures is very important because such features are rare in the Carlsbad area and would constitute a major step toward understanding residential mobility patterns during the Formative period. Possible roasting pits could provide much needed subsistence data and information on seasonality of use of the area. Surfaces around these and all excavated features will be carefully traced to recover all associated components.

While it is assumed that all ceramics are intrusive to the Carlsbad region, petrographic analysis of a sample of the recovered sherds should determine the presence of local or exotic tempers and help to resolve the issue of whether all ceramics are intrusive. Recovered ceramics will also be used to evaluate the validity of placing the site within the Globe phase (or Formative period; Katz and Katz 1993).

Ground stone in several discrete locations on the site indicates the processing of subsistence items, possibly mesquite products or grasses. It is also possible that corn was grown nearby and processed on the site. Pollen washes from ground stone and soil samples may provide information on the potential use of domesticates.

We also need to determine if the site is characterized by a single use-episode or is a result of multiple occupations. If the site represents a palimpsest of activities over time, any retrieved dates may exhibit a relatively wide rather than narrow time frame. Our understanding of Late Prehistoric mobility patterns in the region is poor. If these peoples are fully mobile, we would expect expedient investment of labor in hearths, storage facilities, and dwellings. The presence or absence of exotic materials will also tell us considerably about their mobility and exchange networks. Domestication of cultigens is possible. If site occupants maintained a seasonal round between the site area, riverine environment of the Pecos River, and the Guadalupe Mountains, only seasonal subsistence resources should be present in the archaeological record. In addition, a highly mobile group would not be expected to produce long-term storage facilities (as stated above). However, temporary facilities for the gathering and holding of specific food items while awaiting processing might be present.

LA 120945 may represent a base camp locale, possibly used repeatedly over time by Late Prehistoric populations. Hearths may be located within structures and, thus, indicate a winter occupation, although many hearths may be scattered over the site. These could also be evidence of some specialized activity at the site, such as rock quarrying, gathering of a specific wild food, or hunting for game.

Areas of the site will be surface stripped next to features exposed in the cable trench to the prehistoric surface to recover any hearth or pit areas. Soil found in these features will be taken for macrobotanical and palynological analyses. Dating of features is a priority. In the absence of absolute datable materials, the ceramic artifacts will be used for cross-dating purposes. Eighth-inch screen will be used to retrieve any small lithic items.

# FIELD AND ANALYSIS METHODS

Yvonne R. Oakes

LA 120945 has been damaged by the cutting of a fiber-optic cable through the site. At least 15 cultural features have been exposed or damaged by this activity. The following procedures provide the means for recovering the remaining data.

The following standard field and analysis techniques will be used to extrapolate the specific structural and temporal data required by the research design. These include an accurate chronometric dating of the site through radiocarbon analysis and, possibly, archaeomagnetic sampling or dendrochronology. The data recovery plan also commits us to examine site structure in terms of expedient versus reuse or long-term use. Sufficient macrobotanical and palynological samples will be collected to assess subsistence adaptations. These will be taken from the fill and floors of structural units and from surfaces of ground stone. The chronometric data will be taken from burned structural material, hearths, and pit fill, if possible. Ceramic artifacts will also be used assign a date to the site and to assist in assessing site function.

## Field Methods

A primary datum will be established, and north-south and east-west baselines will be run from it with a transit or alidade and stadia rod. These will provide the coordinates for a 1 by 1 m grid system to be imposed over the site. Elevations will be taken from the same designated corner of each grid to maintain horizontal and vertical control. Surface collections and excavation units will be made from within this grid system. Hand tools such as trowels, shovels, picks, brushes, and dental picks will be used for the excavation of cultural material and features. Mechanical equipment will be used after hand excavations have uncovered all possible cultural features and prehistoric use-surfaces within or near the cable-line cut. Surrounding dunal overburden will be removed in increments from portions of the site adjacent to the exposed cultural features in the trench cut. If needed, the work will be performed by a backhoe operator experienced in archaeological excavation.

Excavation will begin by identifying and marking all exposed cultural features. Stripping of loose soil around these manifestations will follow until potential outlines are revealed. The features will be dug in 10 or 20 cm arbitrary levels unless natural or cultural stratigraphic breaks are evident. If natural breaks are defined, excavations will continue in levels determined by the depth of the strata. The excavations will be expanded out from the cultural features for a reasonable distance, following the prehistoric use-surface if possible, to ensure that all subsurface features are found.

Soil recovered from all excavation and surface stripping procedures will be screened through 1/8-inch mesh hardware cloth, and all artifacts will be bagged by level. Material removed from the dunes by backhoe will not be screened, and only diagnostic artifacts will be collected. Artifacts recovered from use surfaces or floors will be mapped in place and bagged separately. Pollen and flotation samples will be collected from all middens, floors, cultural fill, or other use-surfaces.

Soil augers will be used at systematic 2 m intervals to investigate areas of the sites where artifact densities are very low. Any artifacts collected in this manner will be bagged by depth and saved for later analysis. Subsurface cultural deposits encountered in any auger tests will be further examined through grid excavations or trenched mechanically to determine their depth.

We will attempt to locate all site features within and near the impacted zone with the above methods. Field forms will be filled out for each level excavated, detailing depth of level, type and

amount of artifacts recovered, and soil type and color based on the Munsell scale.

All feature cross sections will be drawn along with plan views of each feature. Features will be photographed before and after excavation. The site will be mapped with a transit and stadia rod.

If human remains (including any associated burial goods) are encountered, excavation of the immediate area will cease, and their disposition will be based on consultations with the Mescalero Apache Tribe carried out in accordance with the Native American Graves Protection and Repatriation Act of 1980 (NAGPRA) through cooperation with the Bureau of Land Management. The Museum of New Mexico Rule 11, as amended April 2, 1991, ("Collection, Display, and Repatriation of Culturally Sensitive Materials") will also be followed. No disposition of the remains will be completed until the wishes of the Mescalero Apache Tribe are known. Unless an alternative disposition is established through the consultation process, the remains will be submitted to the Museum of New Mexico Archeological Repository for physical storage at the Department of Anthropology, University of New Mexico. Remaining artifacts will be submitted to the Archeological Repository for physical storage.

## Laboratory Analysis

Laboratory analysis will be conducted by the staff of the OAS and specialized professional consultants. When brought in from the field, artifacts will first be washed, sorted, and catalogued. Any remains that do not appear to be stable will be treated in consultation with the Museum's conservation department.

## Ceramic Artifacts

To assign dates, function, and cultural affinity to the ceramic artifacts, a detailed analysis of morphological attributes will be undertaken. Artifacts will be identified by existing type name, vessel and rim form, vessel diameter, paste texture and color, temper material, surface color and finish, slip, design style, thickness, presumed function, and presence of attributes such as burning, smudging, mending, or reworking. A binocular microscope will be used to facilitate the analysis. Depending on assemblage size, a sample of sherds of each type will be submitted for petrographic analysis to determine the origin of the sherds. The clay and temper sources for pottery production will be sought during the field excavations and matched with sherd samples in the laboratory to determine the locus of production for ceramics because of the possibility of their having been produced locally. Ceramics from dated sites in the nearby region will be compared with recovered ceramics from this project to gain a finer resolution of dates.

## Lithic Artifacts

Lithic artifacts will be analyzed for material type and texture, artifact type, breakage patterns, use, and presence of thermal treatment. Attributes to be monitored with the formal and informal tools include edge angle and shape, and type of modification and/or wear. A binocular microscope will be used to identify retouch and wear patterns. Because there may be differences between this site and others in the way local materials were reduced, debitage will be examined for evidence of reduction strategy, reduction stage, platform type, percentage of dorsal cortex, platform lipping, artifact portion, direction of dorsal scarring, and size. These studies should allow an evaluation of reduction technology, tool production and use, and raw material procurement strategies. For example, an expedient reduction strategy should be evident in the assemblage if the site is of the Formative period. Material type and percentage of cortex are of particular importance in determining whether the lithic materials on the site were locally obtained or represent movement of

goods or people to or from nonlocal resource areas. For LA 120945, determining the degree of mobility by site occupants is critical to our general understanding of Late Prehistoric adaptations in this region. The frequency and type of tools present on the site will provide information on technologies used (expedient or curated) and allow for some additional assessment of mobility. Specific tasks often require specialized tools; however, in the presence of greater mobility, multifunctional tools can be expected.

Comparison of lithic artifact data with other recently excavated sites in the Carlsbad area may assist in the identification of specific manufacturing techniques and use-patterns that may provide information on varying subsistence strategies of different cultural groups. For example, if the site is a limited-duration field camp for the gathering and processing of specific resources, then the lithic assemblage should reflect usage of limited but specific tool types.

Ground stone will be analyzed for material type, morphology, size, manufacture, breakage patterns, evidence of reuse, and evidence of specific processing activities. Grinding implements may indicate, through analysis, whether they were used for wild seed, nut, or fibrous plant processing or used to process corn. Size of the artifacts and material types used may assist in determining the mobility patterns of the groups and what resources were exploited.

## Faunal Remains

The faunal analysis will focus on the identification of species, age, and bone elements to assist in determining species used as food resources and portions used by the occupants of the site. The season of death will be determined for young species, if possible. Butchering and processing methods will also be examined. We will also investigate the use of faunal materials as tools. Information from the faunal analysis will be used to aid in the determination of season of occupation on the site, hunting patterns and dependency, and subsistence strategies pursued.

If the site is of limited duration, faunal resources sought by site occupants should be focused on specific species available in the region, which should be reflected in the recovered assemblage. Comparisons with faunal material from nearby sites should provide information on types of species available in the region prehistorically and assist in determining patterns of species utilization over time.

## Floral Remains

We will be seeking to determine which floral resources were utilized by occupants of the site, with a particular emphasis on cultigen use. The use of cultigens in southeastern New Mexico has been poorly understood, and little data has been produced in past archaeological endeavors. One focus will be on obtaining and processing samples that may aid in assessing the role of cultigens in prehistoric dietary regimens in this region.

Floral remains will be identified by specific species when possible and compared with plant data from other sites to determine floral resources used by the various groups. It will also be used to help determine the season of use and subsistence strategy employed at the site. Plant types will identify whether domestication of cultigens was practiced.

Macrobotanical samples will be taken from lower levels within all excavated features, and several nonfeature control samples will also be obtained. A pollen column will also be taken from larger structures or facilities encountered. Buried ground stone will be washed to obtain potential pollen residue. Both macrobotanical and palynological samples will analyzed by specialists. They will specifically look for the presence of cultigen remains within the samples. Pollen analysis will employ Intensive Systematic Microscopy (ISM), developed by Dean (n.d.), to look for possibly rare marker grains of corn pollen.

## Human Remains

The main goal of the skeletal analysis, if any, will be a nondestructive study of remains to add to the sparse data base on prehistoric populations from southeastern New Mexico. The analysis will include standard metric studies, aging and sexing of the remains, and documentation of pathologies, particularly those related to food stress. If bone tissue samples are present, these will be submitted for carbon isotope studies to determine the relative proportion of maize in the diet of site populations.

## Report Preparation

The final data recovery and analysis report will be published in the OAS Archaeology Notes series. The report will present the results of the excavations, analysis, and interpretation of the data. It will include photographs, site and feature maps, and data summaries. Field notes and maps, analytic data sheets, and photographs will be deposited with the Archeological Records Management Section of the State Historic Preservation Division, located at the Laboratory of Anthropology in Santa Fe.

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