

MUSEUM OF NEW MEXICO

OFFICE OF ARCHAEOLOGICAL STUDIES

DATA RECOVERY PLAN FOR THE EXCAVATION OF FOUR SITES
AT RED LAKE TANK, ON U.S. 380, CHAVES COUNTY, NEW MEXICO

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ARCHAEOLOGY NOTES 224

ADMINISTRATIVE SUMMARY

In February of 1997, the New Mexico State Highway and Transportation Department (NMSHTD) requested that the Office of Archaeological Studies (OAS), Museum of New Mexico, conduct a data recovery program at four sites (LA 116502, LA 116503, LA 116504, and LA 116505) on U.S. 380, as part of NMSHTD Project SP-380-3(210)168, a District 2 highway improvement project. LA 116502, LA 116503, LA 116504, and LA 116505 are on New Mexico State Trust Land.

A preliminary field visit was made to the four sites in late February 1997. Observations made at that time, combined with information on previous excavations in the general area, convinced archaeologists that data recovery is warranted without further testing. Authority was granted by the NMSHTD to prepare this data recovery plan.

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INTRODUCTION

In February of 1997, archaeologists from the New Mexico State Highway and Transportation Department (NMSHTD) performed a cultural resources survey along U.S. 380, east of Roswell, New Mexico (Roxlau 1997) (Fig. 1; Appendix 1 [removed from copies in general circulation]). Four unrecorded sites (LA 116502, LA 116503, LA 116504, and LA 116505) were found within the project area.

The NMSHTD, on February 24, 1997, requested that the Office of Archaeological Studies (OAS), Museum of New Mexico, prepare a data recovery plan for the portions of LA 116502, LA 116503, LA 116504 and LA 116505 within the proposed project limits.

The *National Register of Historic Places*, the *State Register of Cultural Properties*, and the site files of the New Mexico Cultural Records Information System were consulted. No properties listed on, nominated to, or approved for submission to either inventory are located in the vicinity of LA 116502, LA 116503, LA 16504, or LA 116505.

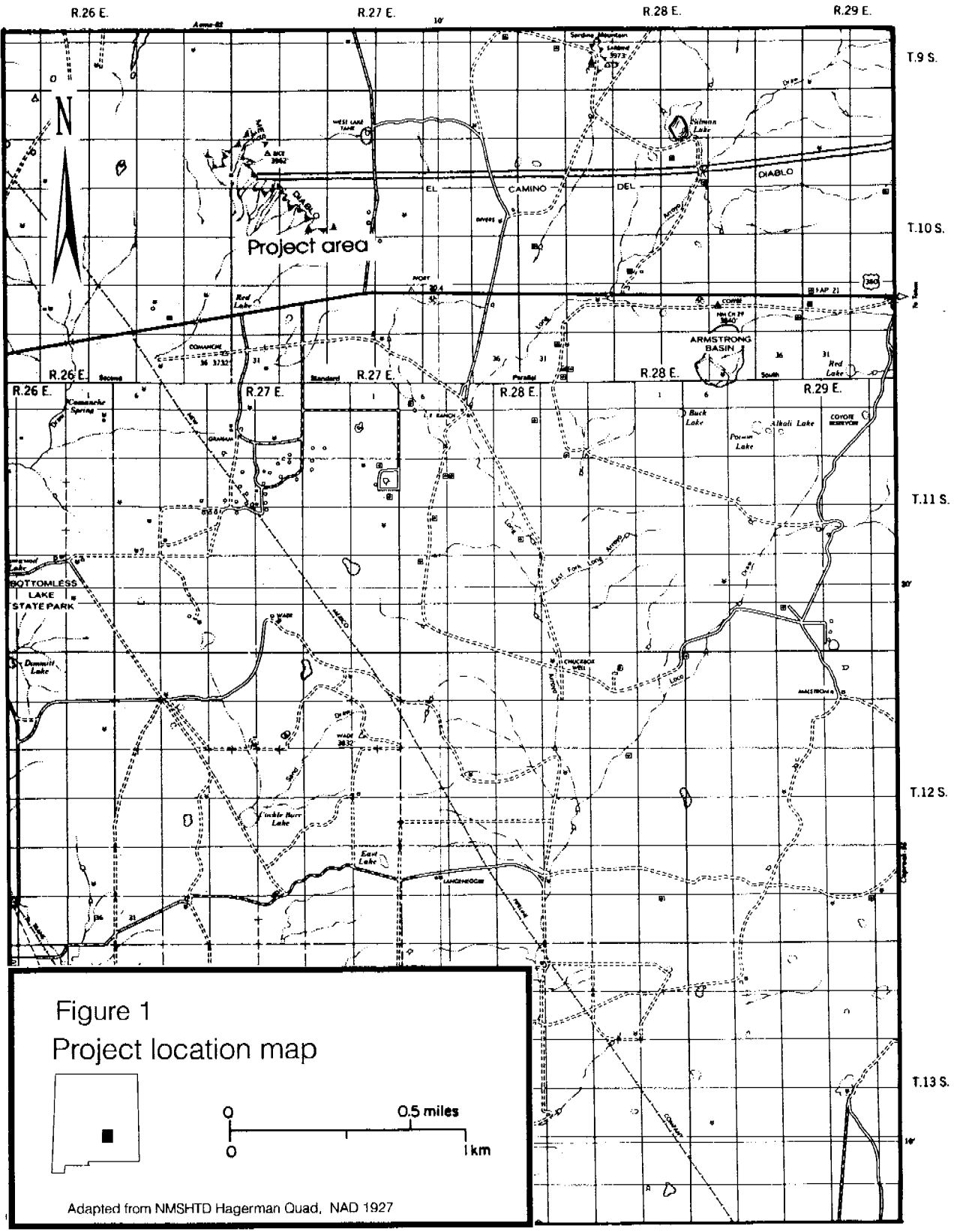
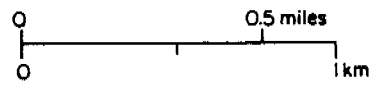
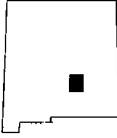


Figure 1
Project location map



Adapted from NMSHTD Hagerman Quad, NAD 1927

ENVIRONMENT

The Red Lake Tank sites are situated above the eastern escarpment of the Pecos Valley. This area, known as Mescalero Ridge (or the Mescalero Pediment), is within sight of the High Plains, or Llano Estacado, of eastern New Mexico. The landscape in this area is relatively flat, sloping toward the west. Elevation ranges from 1,128.7 m (3,703 ft) at LA 116502 in the west, to 1,148.5 m (3,768 ft) at LA 116505 in the east. Originally grassland, overgrazing has reduced the local grasses and allowed erosional duning and deflation. Invasive species, particularly sage, mesquite, yucca, and cholla, dominate the local vegetation. An indepth analysis of the environment is available in Montgomery and Shuster (1997).

Geology

The site areas are at the eastern edge of the Pecos Valley Section of the Great Plains physiographic province (Fenneman 1931). The Pecos Valley is characterized as a series of multiple pediment and terrace surfaces, with localized shallow bolson deposits, sand dunes, and exposed caliche crusts (Lovelace 1972).

Bedrock is comprised of Permian and Triassic clastic red beds and evaporates. Depressions and sinkholes, caused by the dissolution of underlying bedrock, are common (Montgomery and Shuster 1997).

This portion of New Mexico experienced alternating periods of eolian erosion and deposition in the Late Quaternary. Three periods of duning have been identified, the first occurring at approximately 13,000 B.C., the second occurring between 13,000 and 3000 B.C., and the third forming since 3000 B.C. (Melton 1940; Nials et al. 1977; Reeves 1965). The origin of dune material within the project area is the Pecos Valley (Montgomery and Shuster 1997).

The soils within the project area reflect this series of erosional cycles. Soils are predominantly shallow, gravelly Paleorthids-Haplargids, varying widely in color and texture. These are underlain in most areas by strongly cemented caliche layers. Angular caliche fragments are common. Fine silty sandy soil deposits are present in areas of duning, the lower portions of which usually contain filaments and flecks of lime (Maker et al. 1974). Soils of this type are usually utilized as grazing for livestock.

Climate

The climate of the project area is semiarid continental, with hot days and cool nights. Precipitation averages between 30.5 and 35.5 cm (12-14 inches), with most occurring as summer rains (Gabin and Lesperance 1977; Maker et al. 1974; Tuan et al. 1973). Frost free days average 190 (Tuan et al. 1977), while the potential growing season for domesticated crops averages 260 days (Smith 1920). Prevailing winds are from the south and west (Montgomery and Shuster 1997).

The current pattern of summer rains and cool, dry winters first appeared in the middle Holocene at the end of the Tahoka Pluvial (11,000 B.C.)(Brunswig 1992; Wendorf and Hester 1975). Although fluctuations have repeatedly occurred (wetter periods are suggested for 1000 B.C. to A.D. 1000) the overall trend has been toward a dryer climate through time (Davis 1989:21; Haynes 1993:232-233). The most obvious result of this drying trend has been a gradual change in biotic communities, with a shift from park woodland dominated by pine and spruce to mixed grassland (Brunswig 1992; Elias 1990; Sebastian and Larralde 1989:16, fig. 1.9; Van Devender and Spaulding 1979).

Flora and Fauna

The project area is in the mixed grassland biome. This is an area of both short grass and tall grass prairie species. Black grama and bush muhly are present, as well as both little and big bluestem, and galleta.

The grazing of livestock has modified the vegetation of the general project area (Castetter 1956:261-262). Previously heavy grass cover has been largely eliminated. Mesquite, yucca, prickly pear, cholla, and sagebrush now dominate the existing local vegetation (Castetter 1956:266-267; Jelinek 1967:37, 40). Yucca and cholla also occur in areas of disturbed or broken ground (Castetter 1956:264-268; Sebastian and Larralde 1989). To the east of the project area occur low stands of shinnery oak (Wiseman 1993).

The general project area supports the plains complex of fauna. This includes pronghorn antelope, jack rabbits, cottontail rabbits, coyote, and fox. A variety of small mammals and birds are also present. Historically, bison was also present in the general Roswell area. Various fish and shellfish live in the Pecos River to the west (Jelinek 1967:40).

A byproduct of project location within an ecotone (adjacent to the Pecos River) is a range of environmental zones presenting an increased variety in available plant and animal resources. While the resources of the plains ecosystem appear limited, they are complemented by the riverine ecosystem of the Pecos River floodplain. This serves as a distinct linear oasis, providing habitat for plant and animal communities not normally associated with the steppe landscape. This added variety of plant and animal communities puts more species into closer proximity although some species (such as migrating birds) utilize this area only in a transitory manner.

CULTURAL HISTORY

A complete cultural history of the area is beyond the scope of this report. More indepth history of the area is available in Montgomery and Shuster (1997), Sebastian and Larralde (1989), and Stuart and Gauthier (1981). The historic period of the area is available in Harlan et al. (1986) and Adams (1983).

Paleoindian Period

The Paleoindian period (10,000-5500 B.C.) was first recognized in 1926 at the Folsom site in northeastern New Mexico (Wormington 1947:20). A series of paleoindian traditions have since been defined, beginning with Clovis and continuing through Plano (Stuart and Gauthier 1981:294-300). Originally defined on the plains of eastern New Mexico, the paleoindian cultural area has since been expanded to include virtually all of North America. Although originally believed to be dependent on big-game hunting, the importance of plant-gathering and small animal hunting to paleoindian subsistence is now recognized (McGregor 1965:120; Willey 1966:38; Jennings 1968:78-79; Judge 1973; Wilmsen 1974:115; Frison 1978; Cordell 1979:19-21; Stuart and Gauthier 1981:31-33).

Paleoindian sites of any period are rare, but paleoindian sites are recorded in the region, including the Clovis type site of Blackwater Draw, Locality No. 1, and Blackwater Draw, El Llano. Few sites have been recorded in the Pecos River area. Distinctly shaped paleoindian projectile points have been found, but usually as isolated finds. One isolated Clovis projectile point base has been recorded for the Pecos River Valley, just to the southeast of Santa Rosa (Bullock 1995).

Folsom projectile points are recorded along the Pecos River north of Roswell (Jelinek 1967). Other Late Paleoindian sites have been recorded near Kenna in Roosevelt County (Sebastian and Larralde 1989) and in Guadalupe County to the north (Bullock 1994). Other Paleoindian sites are probably present, buried under alluvial or eolian deposits (Cordell 1982).

Archaic Period

The Archaic occupation of the upper Pecos River Valley appears to have lasted quite late. Levine and Mobley (1975) define the Archaic occupation of northeastern New Mexico as lasting from 5000 B.C. until about A.D. 1000, but a local chronology has not been developed for this area. Projectile points in eastern New Mexico have been identified under a number of different schemes, including those of the Oshara Tradition (Irwin-Williams 1973), and chronologies used in central and western Texas (Johnson 1967).

The Archaic period is best defined in northwestern New Mexico where it is generally referred to as the Oshara Tradition (Irwin-Williams 1973). This period is distinguished by distinctive projectile points and lithic artifact scatters, including grinding implements, fire cracked rock, and a lack of ceramics. Archaic subsistence adaptations are based on a highly mobile broad-

based economy characterized by a combination of seasonally scheduled hunting and gathering activities. The Oshara Tradition is divided into five phases: Jay (5500-4800 B.C.), Bajada (4800-3200 B.C.), San Jose (3200-1800 B.C.), Armijo (1800-800 B.C.), and En Medio (800 B.C.-A.D. 400)(Irwin-Williams 1973). Although centered in the northwestern area of New Mexico, Oshara Tradition projectile points do occur as isolated occurrences as far east as the Pecos Valley.

A sequence of projectile points for central and western Texas was developed by Johnson (1967) based on stratified sites yielding radiocarbon dates. This sequence is divided into five overlapping periods: Period I (8350-4800 B.C.) characterized by Luna and Plainview projectile points; Period II (6810-1315 B.C.) characterized by Early Barbed, Pandale, Nolan, Travis, and Bulverde projectile points; Period III (4850 B.C.-A.D. 110) characterized by Shumla, Almagre, Langtry, Pedernales, and Montell projectile points; Period IV (350 B.C.-A.D. 1245) characterized by Ensor, Frio, Darl, Figuero, and Godley projectile points; and Period V (A.D. 50-1710) characterized by Scallorn, Livermore, Bonham, and Perdiz projectile points. In a number of cases the same projectile point morphologies have been given different names based on location. A revised localized sequence for this section of the Pecos River Valley has recently been developed by Shelley (1994).

Pueblo Period

Evidence of Puebloan use of the Roswell area is abundant, and several Pueblo sites with residential architecture have been recorded. A local Pueblo traditional sequence is documented for the middle Pecos River Valley by Jelinek (1967). This tradition seems to develop in the late A.D. 800s out of the Jornada Mogollon. Anasazi, or Anasazi-derived, ceramics appear in the middle Pecos River Valley after A.D. 900 with the development of the Mesita Negra phase (Jelinek 1967:64-65). The presence of these structural sites suggests the gradual spread of sedentary subsistence based on maize agriculture east from the centers of both the Mogollon and Anasazi traditions. The eastern limits of this probably marginal area appear to have been the Pecos Valley (Jelinek 1967:145-147). These developmental sequences continue until the termination of the Crosby phase in the lower middle Pecos Valley between A.D. 1250 and 1300, and the termination of the Late McKenzie phase in the upper middle Pecos Valley about A.D. 1300 (Jelinek 1967:65-67).

A number of Pueblo sites are present in the area, however, that do not fit into Jelinek's chronology. Some of these sites fit better in the Jornada Mogollon sequence (Corley 1965; Leslie 1979). These include Bloom Mound located to the southwest of Roswell, generally assigned to the Lincoln phase (Kelley 1984), the Henderson site (Rocek and Speth 1986), and Rocky Arroyo (Wiseman 1985). Other structural sites that also contain ceramics are harder to assign to any of the existing chronologies (Wiseman 1981, 1991).

The occasional occurrence of other ceramic types indicates both regional trade and possible use of the area by Pueblo groups from western New Mexico, northern Mexico, the Glorieta Mesa, and Galisteo Basin areas. Although a variety of Pueblo sites have been found (Speth 1983), most Pueblo occupation of the area appears to end with the Ochoa phase (A. D. 1350-1450)(Leslie 1979).

Plains Indian Period

Both Kiowa and southern Athapaskan groups appear to have moved into the eastern portion of New Mexico during the late protohistoric period. Apachean sites are scattered throughout southeastern New Mexico as well as the central plains, and may date anywhere from the late 1400s to the late 1800s (Harlan et al. 1986:52).

Questions exist concerning Kiowa origins. These center on their language, a version of the Tanoan language, Towa, spoken by Puebloan peoples of both Jemez and Pecos pueblos (Jelinek 1967:162-163). Estimate for the time of separation between these languages is placed by Trager (1951) at approximately A.D. 1000. This suggests that the Kiowa may be descendants of the Puebloan colonizers of the Pecos Valley.

Shoshonean-speaking Comanches moved in the southern plains about 1700-1715. Most other Native American groups were driven from the area by these horse-mounted buffalo hunters, except for the closely politically allied Kiowas. Extermination of the buffalo herds combined with American military campaigns removed the Comanches, Kiowas, and other "Plains Indian" groups from the southern plains by 1875 (Schermer 1981). Sites identified as possibly Apache, Comanche, or other "Plains Indian" have been identified north of Santa Rosa at Los Esteros Lake (Levine and Mobley 1975).

SITE DESCRIPTIONS

LA 116502

LA 116502 is a lithic artifact scatter on the south side of U.S. 380 (Fig. 2). The site area measures 15 m north-south by 75 m east-west, and is flat but not level, sloping gently downward toward the west.

Lithic artifacts and a hearth occur as part of a single cultural deposit 10 cm below the modern ground surface. This deposit is exposed as a single stratum of material in a low road cut, suggesting that this material represents a still intact use surface. There is a high probability that additional features associated with both this use surface and hearth may be present.

LA 116503

LA 116503 is a large ceramic and lithic artifact scatter bisected by U.S. 380 (Fig. 3). The site is situated on a small rise on the west side of a playa (or dry lake bed). The site measures 190 m north-south, and 170 m east-west. Most of the cultural deposit is 20 cm below the modern ground surface.

Artifacts appear across the site in blowouts between small dunes. Artifacts, burned rock, and charcoal-stained soil is present as a single stratum within a road cut on the north side of U.S. 380. This suggests that both an intact use surface and features may also be present within the proposed project limits.

Surface artifacts indicate that two components are present at LA 116503. The site has a Late Archaic component, indicated by the presence of Marcos, Scallorn, and Williams projectile points. Both *Jornada Mogollon Brown Ware* and *Chupadero Black-on-white* ceramics are also present at LA 116503. These ceramics, with the additional presence of several Mogollon projectile points, indicates that a separate early *Jornada Mogollon* component is also present at the site.

LA 116504

LA 116504 is a ceramic and lithic artifact scatter located on the south side of U.S. 380 (Fig. 4). The site is on the west-facing slope of a low ridge that overlooks the Red Lake Tank. LA 116504 measures 12 m north-south by 60 m east-west.

Artifacts are present as a single stratum, 20 cm below the modern ground surface, within a road cut along U.S. 380. This suggests that an intact use surface may be present. Thus, there is good probability that intact features associated with it may also exist within the project area.

LA 116504 may have two cultural components. One Late Archaic Maljimar projectile point is present on the site, suggesting the presence of a Late Archaic component. LA 116504 is also believed to be a *Jornada Mogollon* site, based on the presence of brown ware ceramics.

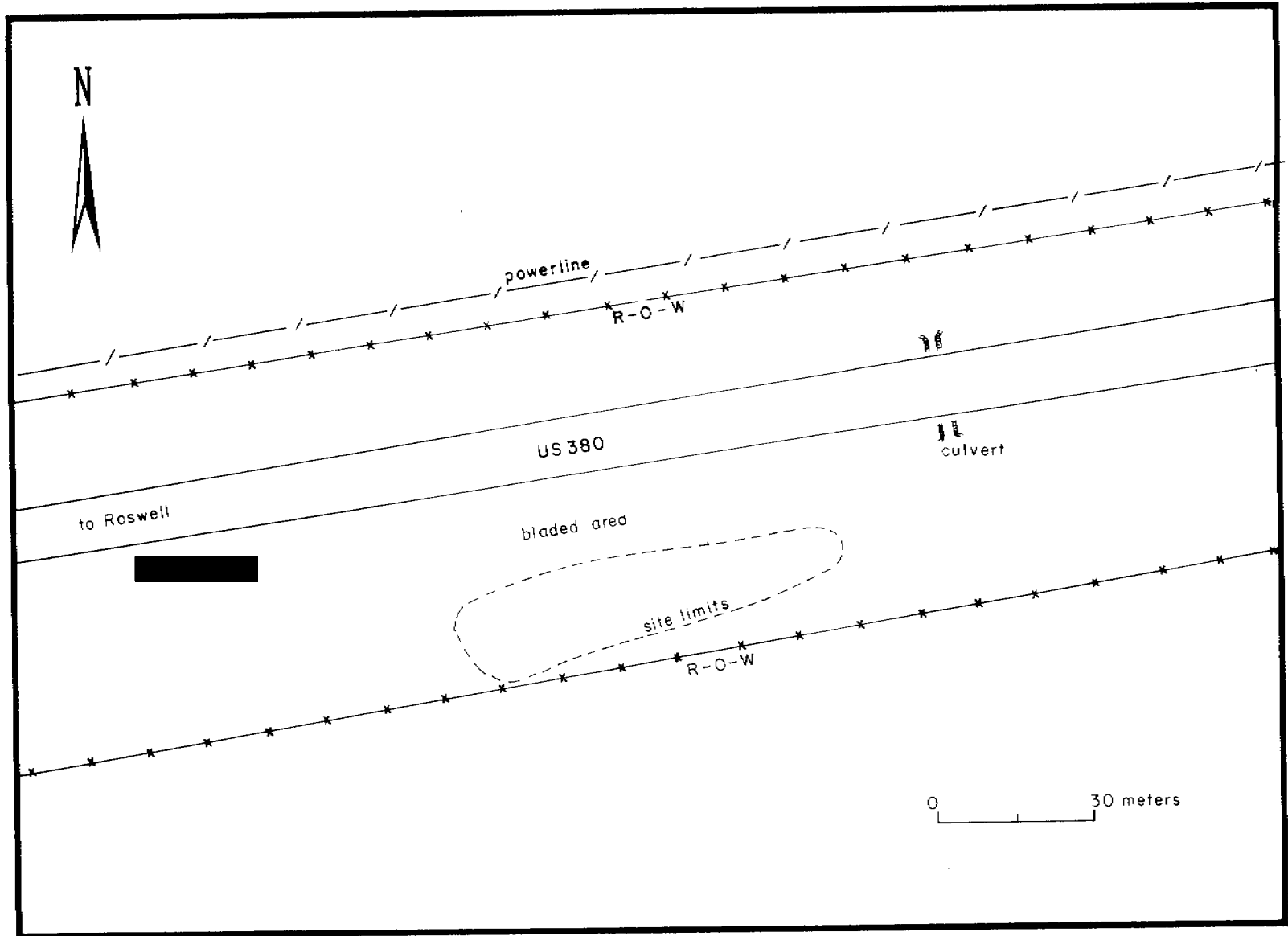


Figure 2. LA 116502, site map.

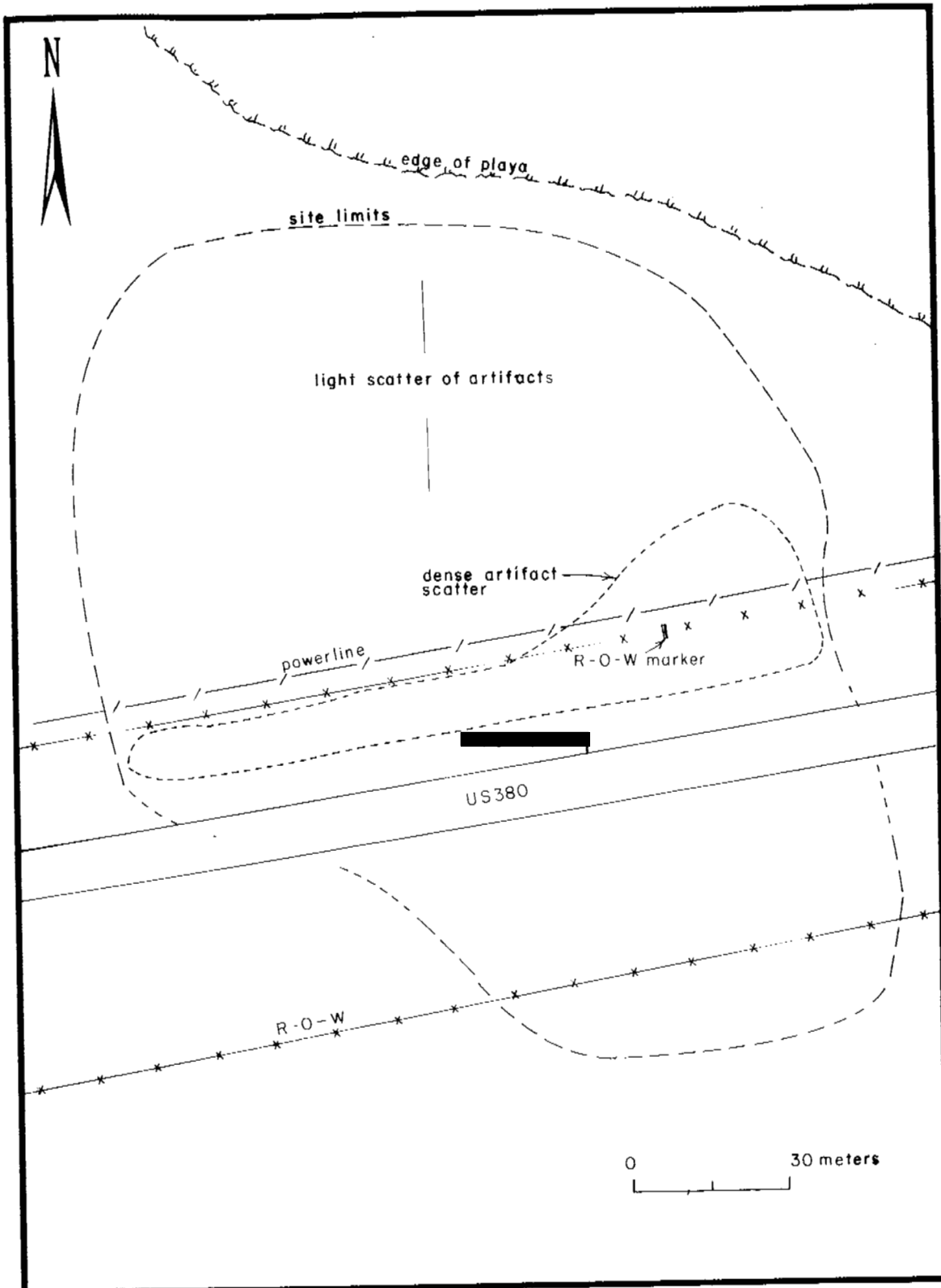


Figure 3. LA 116503, site map.

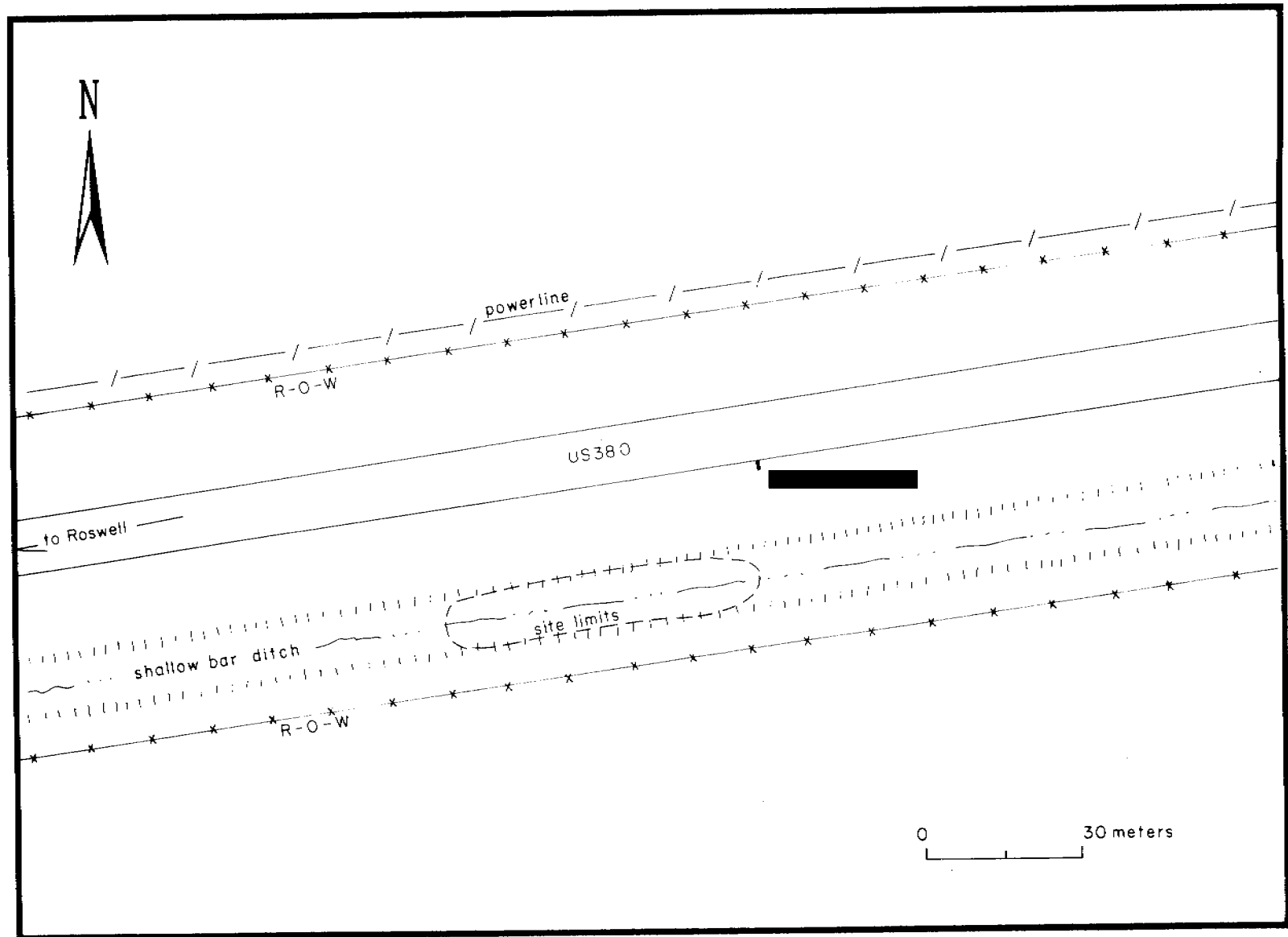


Figure 4. LA 116504, site map.

LA 116505

LA 116505 is a lithic artifact scatter measuring 60 m north-south and 90 m east-west. The site is on top of a low ridge, south of U.S. 380 (Fig. 5).

Cultural material is present on the modern ground surface. The intact nature of the site area and the lack of surface modification suggests that intact features and use surfaces may be present. Burned rock is also present at LA 116505, but not as discernable features.

Artifacts present at LA 116505 suggest that the site was utilized repeatedly through time, possibly as a hunting station. Projectile points observed at the site range in age from late Paleoindian to late prehistoric. These include a possible Folsom fragment, both Middle and Late Archaic point fragments, and a late prehistoric Toyah point.

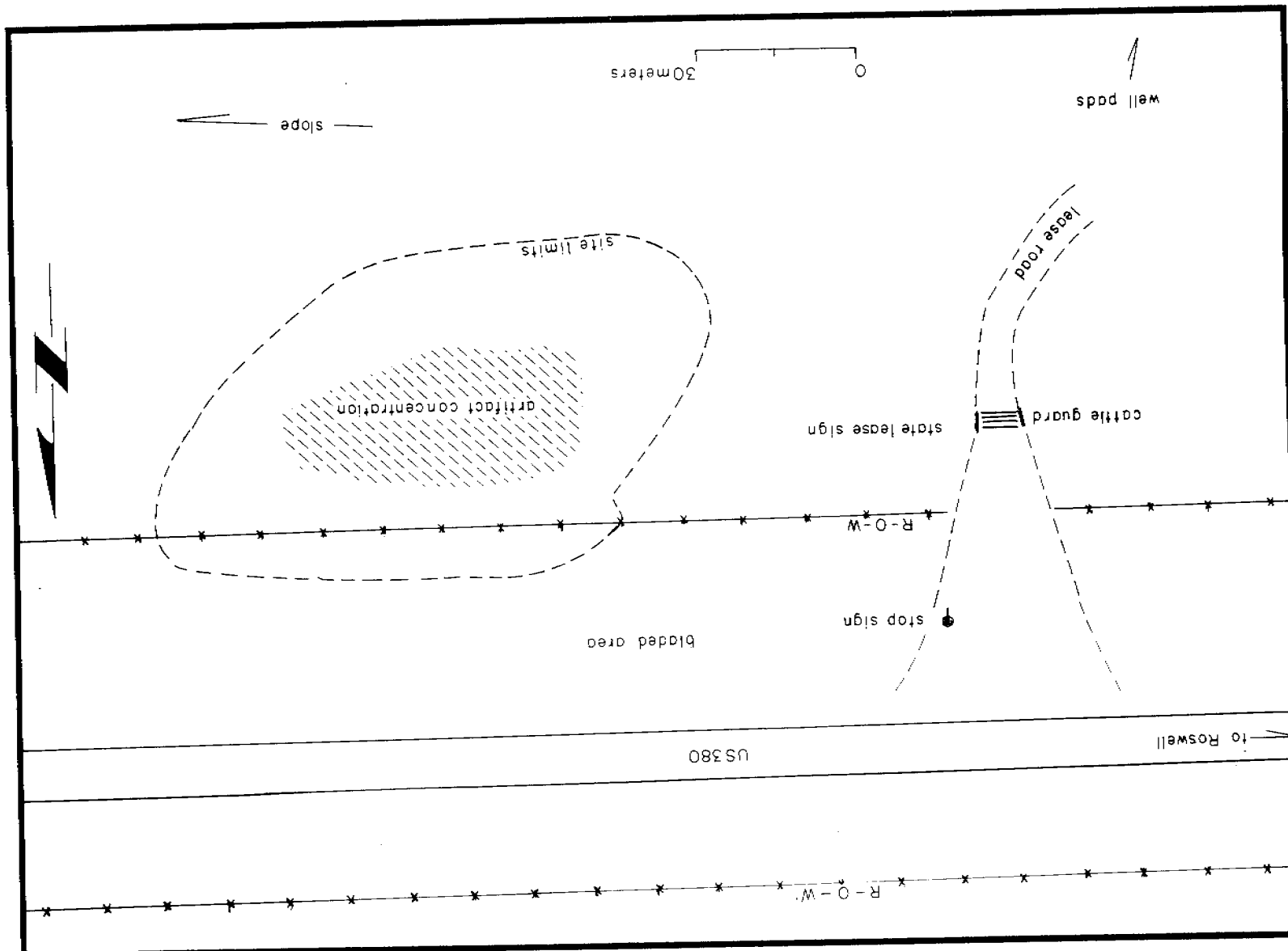


Figure 5. LA 116505, site map.

DATA RECOVERY RESEARCH ORIENTATION AND GOALS

The portions of four archaeological sites (LA 116502, LA 116503, LA 116504, and LA 116505) within the proposed project area of planned improvements to U.S. 380, have the potential to yield important information about the prehistory of central Chaves County. A data recovery plan is provided that addresses the data potential of the sites. Determination of the site data potential is based on an inspection of the sites, in combination with the known results of other excavations conducted in the general area.

The OAS data recovery plan will focus on research questions that can be dealt with using site-specific data. Intersite comparisons and interpretations on a regional level will be offered given the data that are recovered.

This data recovery plan will be divided into research questions, data needs, and specific field and laboratory methods. General excavation and laboratory methods will also be provided.

Previous Research

Two distinct bodies of data have been created by previous research in the Roswell area; (1) an Jornada Mogollon cultural sequence that encompasses the entire Sacramento Mountains-Roswell area based primarily on large habitation sites, and (2) a broad understanding of regional site variability.

The main focus of inquiry in the Roswell area has been on Puebloan occupation in the region. Jelinek's (1967) work was directed toward understanding the prehistoric cultural sequence of the Middle Pecos Valley, particularly the later Puebloan developmental sequence. The development of a Jornada Mogollon cultural sequence for the Sierra Blanca area by Kelley (1984) demonstrated that Jelinek's cultural sequence was part of this upland cultural continuum centered in the Sacramento Mountains to the west. This late Jornada Mogollon occupation of the Roswell area was further defined by excavations at the large pueblo sites of both the Henderson (Rocek and Speth 1986) and Rocky Arroyo site (Wiseman 1985). Additional insight into Jornada Mogollon social organization is represented by the discovery of an oversized pit structure with painted murals at Fox Place (Wiseman 1991). Nonlocal lithic material was used to determine Jornada Mogollon regional interaction and residential mobility at the Bob Crosby site (Wiseman 1993).

Other projects in the area have had a regional focus not limited to the Jornada Mogollon. A nonculturally-specific analysis of prehistoric site variability was a main research goal of both Schermer's excavations at Haystack Mountain (1980) and Hannaford's (1981) testing program west of Roswell. In both projects, site differences were recorded based on terrain and site placement, regardless of cultural affiliation. In contrast, the Two Rivers Reservoir survey (Phillips et al. 1981) restricted its scope to physical descriptions and the environmental settings of the recorded sites. Meanwhile, both the Garnsey Bison Kill (Speth 1983) and the Townsend site (Maxwell 1986) provided data on a single specific form of specialized faunal procurement--hunting bison.

Thus, previous research in the general Roswell area has focused on either site-specific or regional problems. While each of these lines of inquiry has contributed to an understanding of the region in its own way, it is the integration of both that has the most potential for understanding the regional subsistence and procurement patterns represented by the Red Lake Tank sites.

All four of the Red Lake Tank sites appear to be subsistence resource procurement sites representing a number of cultural affiliations. This use of the general area by a number of cultural groups suggests that while these sites may represent different activities or use of the landscape depending on the culture represented, they may also reflect a similar general subsistence approach shared by various cultural groups operating within this single ecotone.

It has been demonstrated (Bullock 1996) that temporally unknown sites (sites without diagnostic artifacts) can be assigned cultural affiliations based on the lithic artifact assemblage and its similarity to temporally known sites in the general area. In this manner, the cultural affiliations of individual components may be determined, enabling a greater degree of comparison of site structure through time and space.

The focus of the data recovery efforts should, therefore, be to examine the Red Lake Tank sites as examples of limited resource procurement areas, and then compare their site structure at the cultural level. Because of the multicomponent nature of at least some of these sites, this comparison should be based on components rather than sites. Of particular interest are the contrasts in site structure and use that may be exhibited by the Jornada Mogollon components at LA 116503 and LA 116504.

Research Questions

Data recovery at the four Red Lake Tank sites (LA 116502, LA 116503, LA 116504, and LA 116505) will address questions of cultural affiliation, site structure, and resource procurement. The number of sites, including sites with multiple components, should enable comparisons to be made regarding similarities and differences in land-use patterns.

Cultural Affiliation

What are the cultural affiliations of the people who utilized these sites? What is the relationship between cultural affiliation and lithic artifact use?

The cultural affiliations of the people who utilized these sites provide important baseline information for comparisons of site utilization and structure. Cultural affiliation is usually determined on the basis of diagnostic artifacts or ceramics. In this manner, three of the four sites (LA 116503, LA 116504, and LA 116505), show obvious evidence of more than one cultural component. Two cases (LA 116503 and LA 116504) have evidence of a Jornada Mogollon component.

Although many of the components on these sites do have diagnostic artifacts, a number of them are temporally unknown. When diagnostic artifacts or ceramics are not present, cultural affiliation can be determined based on the characteristics of the rest of the lithic artifact assemblage. A model for the cultural and temporal differentiation of lithic artifact assemblages,

in the absence of diagnostic artifacts, has been developed by Schelberg and Akins (1987). This model combines hunter-gatherer subsistence (Binford 1980) and early and late Archaic subsistence (Irwin-Williams 1984) with observations of prehistoric and historic Pueblo subsistence patterns (Akins and Bullock 1992:32). Based on the concept that different cultures will utilize the same lithic resource in different ways, this model tracks four 'marker' attributes within lithic artifact assemblages. The ratio of debitage to tools (including utilized debitage), and the percentages of flakes, cores, and bifaces within an assemblage, will be monitored.

Two trends are found to occur through time. Both the ratio of debitage to tools, and the percentage of flakes within lithic assemblages, increase through time. Conversely, the percentages of both cores and bifaces within assemblages decrease. Thus, through a comparison of these four attributes, cultural affiliation can possibly be determined when diagnostic artifacts are not present. This is accomplished by plotting each assemblage's position within a progression between well-dated sites (Bullock 1996).

The excavation strategy will focus on the systematic recovery of lithic artifacts for the spatial analysis of artifact and attribute distributions at the component level to determine cultural affiliation. Lithic artifact concentrations, features, and activity areas will be excavated. Analysis will stress artifact type and attribute comparisons between the Red Lake Tank sites and their components.

Site Structure

How did these sites function, and what is the relationship between function and cultural affiliation? Do differences in site structure reflect differences in function, or simply culturally based differences in the execution of similar activities?

An understanding of site structure can be gained from the artifact assemblage, combined with the presence or absence of features (both formal and expedient). The attributes of any features present can also be indicators of site structure, and the types and range of activities that took place.

The common assumption has been that small ephemeral sites, similar to those at Red Lake Tank, served as short-term resource procurement areas (Schermer 1980; Hannaford 1981; Phillips et al. 1981; Maxwell 1986). However, work at both the Bob Crosby site (Wiseman 1993) and the Garnsey Bison Kill site (Speth 1983) have shown that resource procurement sites can involve relatively long-term site occupation.

Substantial differences in site structure are already apparent at Red Lake Tank. Two of the sites (LA 116503 and LA 116505) contain formal features. This suggests either long-term, or repeated site use, particularly in conjunction with a diverse artifact assemblage. In contrast, short-term use areas should have less artifact diversity, a thin cultural deposition, and few or no formal features. Observations at both LA 116502 and LA 116504 suggest they fit this site form.

Different cultural groups may utilize the same resource in different ways (White 1962; Ellis 1988). These differences in site structure may be more apparent than real, for while they may reflect differences in utilization, they may also simply reflect differences in approach at the cultural level (Adams 1978).

Answering questions of site structure will require the recovery of both flotation and pollen samples from, and the careful systematic excavation of, features. Differences in site structure through time, or by cultural affiliation, can be determined through the analysis of the artifact assemblages conducted in conjunction with the presence of features and possible use surfaces and their spatial distribution.

Resource Procurement

If the Red Lake Tank sites are resource procurement sites, do these suggest a dependence on wild foods, and if so which ones? Does the subsistence data reflect sedentary or seasonal site use? What subsistence differences are reflected by these sites, and do they reflect changes in subsistence through time?

Subsistence can be directly inferred from dietary evidence and indirectly investigated through the technology represented in the procuring and processing of food. Dietary evidence includes flora and faunal remains. Technological evidence includes the tools used in the procurement and processing of food. While dietary evidence may be collected, technological evidence will be the most abundant, particularly in the form of chipped or ground stone.

Subsistence should be reflected in the ecological zones associated with site location. The location of these four sites, between the Pecos River Valley and the High Plains escarpment, puts them near the border of two hunting and foraging strategy areas (plains grassland and riverine). This should serve to maximize the quantity of available plant and animal resources.

Differences in hunting and gathering strategies may be reflected in the artifact assemblage (Kelly 1988; Parry and Christenson 1987), even when they occur within a single culture. Abundant plant resources result in tool production and use focused on gathering and processing, with an emphasis on expedient and generalized tools. One result of plant gathering would be an emphasis on processing. A lithic artifact assemblage focused on formalized and specialized tools would be more likely if hunting, rather than plant gathering, was the main thrust of subsistence activity.

Answering questions of resource procurement and changes in subsistence strategy requires the systematic recovery during excavation of floral and fauna remains. Although floral remains are not likely to be abundant at these sites, faunal remains could be present in large quantities. Contexts likely to yield floral and fauna remains are hearths, storage pits, use surfaces, and midden deposits. The observed presence of possible prehistoric use surfaces at each of these four sites suggests that both palynological and macrobotanical remains may be present. Samples will be collected during excavation, processed, and analyzed for both pollen and macrobotanical remains. If storage pits are present, pollen samples will be collected from the pit floors. Pollen retrieval is also possible from the surfaces of ground stone artifacts and these will be sampled. Hearths have the most potential to yield macrobotanical remains. Fill from hearths will also be sampled, processed, and analyzed for both macrobotanical and remains. Both hearths and middens may also contain fragmentary faunal remains.

Lithic artifacts can be an indicator of subsistence activities based on the technological levels of lithic material reduction, tool production, and use. The level of tool technology within a culture varies according to the form of site utilization (Akins and Bullock 1992). Kelly (1988) has suggested that the level of tool technology results from the distance from residential sites and

the source of suitable raw materials for tool production. The chipped stone assemblages will be examined in terms of reduction strategy, assemblage diversity, and tool use.

The processing of food can be inferred by the presence of ground stone artifacts, such as manos and metates. The presence of manos or metates at any of these sites would be considered evidence of food processing. It could also indicate if any of the sites were habitation sites. The form of a metate may be indicative of the product to be processed. Lancaster (1984) has suggested that basin metates are more commonly associated with the processing of wild grass seeds, while trough metates are evidence for the potential grinding of maize. This functional differentiation will be used in the analysis of manos and metates that may be recovered from LA 116502, LA 116503, LA 116504, and LA 116505.

FIELD AND LABORATORY METHODOLOGY

Field Methods

The Red Lake Tank sites are primarily surface artifact scatters. In some cases, features and possible use surfaces are exposed in the sides of ditches. Several of the sites show evidence of multicomponent site use, and it cannot be assumed that other sites are single component. Therefore, the focus of field work will be on individual features and artifact concentrations that represent components, not sites.

1. Investigations at each site will be limited to the proposed project area within the existing highway right-of-way. Each site will be reexamined and surface artifacts, feature locations, and site limits will be pinflagged.
2. A 1-by-1-m grid system will be superimposed across the portion of the site located within the proposed project area, with the use of a transit, stadia rod, and 50-m tape. All grid designations will be based on the southwest corner of this superimposed grid. Each collection unit will have a south and west designation, based on its southwest corner.
3. Surface artifacts within the proposed project limits will be collected in 1-by-1-m units. All artifacts within collection units will be placed in bags with the appropriate grid designation.
4. Excavation will emphasize features and possible use surfaces exposed in the ditches, as well as artifact concentrations. The excavation methods will include surface stripping and feature excavation. All excavated dirt will be screened through ¼-inch wire mesh, and the artifacts will be collected and placed in bags with the appropriate grid designation. Vertical control will be maintained through the use of a site datum tied into the grid system. Subdatums tied to the site datum will be used as appropriate.

Surface stripping will be done by hand in 1-by-1-m units. A minimum 8-by-8-m area will be surface-stripped with the possible feature or use surface at the center. This will ensure that any associated features or activity areas within the minimum hearth-seat activity area will be recovered or exposed. Surface stripping will cease if additional features or artifacts are not found. Artifact type distribution may provide additional functional or temporal information.

Once surface stripping has been completed, any cultural deposits or features present will be defined and possible activity areas associated with them carefully uncovered by hand. As excavation proceeds, structural components of features will be mapped using the closest grid point. The mapping of features will aid in the identification of occupational levels or surfaces.

5. Feature excavation will begin by exposing the top of the feature and the immediate surrounding area. The exposed stain or soil change will be mapped and photographed (if appropriate). Once defined, each feature will be excavated as a discrete unit, regardless of its location on the grid system. The feature will be bisected, and half will be excavated in natural levels, if possible, exposing the natural stratigraphy of the feature fill. The exposed cross section will be photographed, profiled, and the stratigraphy described using a Munsell Color Chart and standard geomorphological terms. The second half of the feature will be excavated in natural layers. Soil samples, archaeomagnetic samples, and Carbon-14 samples will be collected as appropriate. All

dirt removed during excavation will be screened through ¼-inch wire mesh, and the artifacts bagged and labeled by excavation unit. Dirt from areas of the site where small artifacts are present will be screened through ⅛-inch wire mesh.

Once each feature is completely excavated, feature maps and profiles will be drawn and tied into the grid system and site elevations. Drawings will include a scale, north arrow, and key to abbreviations and symbols. Written description will be on standard forms that will include provenience, dimensions, soil matrix, artifact, construction, time frame, excavation techniques, and other data. Photographs will record each excavated feature. All photographs will be recorded on a photo data sheet.

6. Artifact concentrations occur at all sites. They may remain from single occupations and site visits. LA 116503 and LA 116505 have multiple concentrations representing temporal components. Artifact type and attribute frequency and distribution data from the sites will be compared. The limits of these concentrations will be defined and the area surface stripped until recovered artifact frequency drops significantly or ceases. Surface stripping will cover an 8-by-8-m up to a 16-by-16-m area. In addition to artifact recovery, features may be exposed providing more functional information.

Excavation documentation will consist of field notes and grid forms compiled by the excavator. The forms will contain locational, dimensional, stratigraphic, and contextual information. General notes outlining excavation strategy and rationale, field interpretations, and decisions will be kept by the project director and site assistants.

Although no structures are expected at these sites, any structures encountered will be approached in the same manner as features. A portion of any pit structure will be excavated in arbitrary 10-cm levels, until culturally sterile soil has been reached. The resulting profile will be drawn and photographed. The second portion of the pit structure will then be excavated in natural stratigraphic layers. Artifacts on the pit structure floor will be piece-plotted and drawn onto a scale map of the pit structure, as will any floor features encountered. All dirt from the pit structure will be screened through ¼-inch wire mesh, and the artifacts recovered, bagged, and recorded by provenience. The pit structure will then be tied into the grid and mapped.

Artifacts from each provenience will be bagged and labeled by excavation unit. A field specimen number will be assigned to all bags by provenience, and a field artifact catalogue maintained for the site. Materials necessary for immediate preservation of fragmentary and unstable faunal or macrobotanical remains will be used.

7. Human remains that may occur will be treated according to the procedures outlined by the laws and regulations of the State of New Mexico (Sec. 16-6-11.2 NMSA 1978; HPD Rule 89-1) and the Museum of New Mexico's "Policy on Collection, Display, and Repatriation of Culturally Sensitive Materials" (SRC Rule 11, adopted January 17, 1991 and modified February 5, 1991). (See Appendix 2.)

8. Carbon-14 samples will be collected from features and other possible cultural contexts as appropriate. Samples will be ranked according to their context and data potential. Preferred samples should lack sources of potential contamination such as rodent burrows and nests, prolonged exposure during excavation, and proximity to modern surfaces or disturbance. Archaeomagnetic samples and dendrochronological samples will be collected according to the processing laboratory's standards.

9. After deposits, hearths, and features are cross-sectioned, the sample potential for macrobotanical and palynological samples will be assessed. Samples will be collected when deemed appropriate (when the assessed possibility of preservation is high and the potential for contamination is low). All samples will be collected with a dry clean trowel and placed immediately into a bag or tin foil. Samples will only be collected from contexts with potential for success, such as features or use surfaces.

Sample locations will be plotted on plan and profile drawings of features and proveniences. The sample bags will be labeled with the provenience designation, feature number, location within the feature, and stratigraphic position. The samples will also be recorded on specimen forms with labeling information, environmental data, contextual information, and any other comments that may be useful to the laboratory analysis.

10. An updated map of the site will be made using a transit, stadia rod, and 50-m tape. The map will include feature locations, excavation areas, and relevant topographic features.

Site Specific Research

LA 116502

This site contains a single artifact concentration and one hearth or thermal feature. Once the 1-by-1-m grid is established across the feature and artifact concentration, surface stripping will remove the upper 10 cm of loose top soil, beginning with an 8-by-8-m area centered on the feature, and an additional 8-by-8-m area that encompasses the artifact concentration. The previously recorded feature, and any other encountered features, will be excavated and recorded as described in the previous section. A running count will be maintained of the artifacts recovered by screening. Additional units will be surface stripped until artifact density decreases. Once artifact counts decrease to below three per unit, stripping will cease. Data from the feature will be used to address site structure and subsistence activities at the site. Data from the artifact concentration will be used to address questions of cultural affiliation, site structure, and resource procurement.

Lithic artifacts may be recovered. Laboratory analysis will assess the range of functions represented, debitage to artifact ratios, flake percentages, and other aspects of the lithic assemblage that can be used to determine cultural affiliation and other adaptive behavior.

LA 106503

This site contains a number of artifact concentrations that, based on the presence of diagnostic projectile points, represent a number of distinct components. Although features are present at LA 106503, none are present within the project area. Once the grid system is established, 8-by-8-m units will be established over the densest areas of the artifact concentrations. Surface stripping will entail the removal of approximately 10 cm of loose top soil. In each area, a running count will be maintained of the artifacts recovered by screening. Additional units will be surface stripped if artifact densities remain above three per unit, or if features are exposed. If artifact densities drop below three per unit, stripping may be halted. If a feature is encountered, it will be excavated and recorded as described in the previous section. Data from the artifact concentrations will be used to address questions of cultural affiliation and site structure.

Both lithic artifacts and ceramics may be recovered. Laboratory analysis of the lithic stone artifacts will assess the range of activities, as well as the cultural affiliation represented. Laboratory analysis of ceramics will assess subsistence activities in terms of storage and food preparation, trade, and ceramic production.

LA 106504

LA 106504 contains a number of artifact concentrations that, based on the presence of diagnostic projectile points, represent a number of distinct components. Once the grid system is established, 8-by-8-m units will be established over the densest areas of the artifact concentrations. Surface stripping will entail the removal of approximately 10 cm of loose top soil. In each area a running count will be maintained of the artifacts recovered by screening. Additional units will be surface stripped in each area if artifact densities remain above three per unit, or if features are exposed. If artifact densities drop below three per unit, stripping may be halted. If a feature is encountered, it will be excavated and recorded as described in the previous section. Data from the artifact concentrations will be used to address questions of cultural affiliation and site structure.

Both lithic artifacts and ceramics may be recovered. Laboratory analysis of the lithic artifacts will assess the range of activities and the cultural affiliation represented. Laboratory analysis of ceramics will assess subsistence activities in terms of storage and food preparation, trade, and ceramic production.

LA 106505

LA 106504 contains a number of artifact concentrations representing a number of distinct components. This is based on the presence of diagnostic projectile points. Once the grid system is established, 8-by-8-m units will be established over the densest areas of the artifact concentrations. Surface stripping will entail the removal of approximately 10 cm of loose top soil. In each area, a running count will be maintained of the artifacts recovered by screening. Additional units will be surface stripped in each area if artifact densities remain above three per unit or if features are exposed. If artifact densities drop below three per unit, stripping may be halted. If a feature is encountered, it will be excavated and recorded as described in the previous section. Data from the artifact concentrations will be used to address questions of cultural affiliation and site structure.

Both lithic and ceramic artifacts will be recovered. Laboratory analysis of the artifacts will assess the range of activities and cultural affiliation represented by each component. This data will also be used to define site structure.

Laboratory Methods

Prior to artifact analysis, all artifacts will be cleaned, and any material requiring conservation will be treated. Collected samples of charcoal and macrobotanical remains will be processed and prepared for shipment to the appropriate laboratory. The specialists involved will be consulted for special preparations required before shipment. Working copies of field maps and feature drawings will be prepared and made available to the specialists.

The lithic artifact analysis will follow the guidelines of the *Office of Archaeological Studies Lithic Artifact Analysis Manual* (OAS 1991a). To aid in addressing the research goals of cultural affiliation, site structure, and resource procurement, analysis will emphasize morphological and functional attributes including material reduction, manufacture and maintenance, tool use, and attribute percentages.

Ceramic artifacts will be analyzed in the OAS laboratory by C. Dean Wilson. The ceramics present at LA 106503 and LA 106504 have tentatively been classified as Jornada Mogollon. Artifacts will be analyzed for pottery type and vessel form. The primary focus of ceramic analysis will be age, cultural affiliation, function, use-life and discard, and source of manufacture.

In the event that ground stone artifacts are recovered, ground stone analysis will follow the guidelines of the *Office of Archaeological Studies Ground Stone Artifact Analysis Manual* (OAS 1991b). Analysis will emphasize tool manufacture and maintenance, tool use, and the recovery of pollen from artifact surfaces that can be used in the study of resource procurement, subsistence, and site structure.

Faunal remains will be analyzed in the OAS laboratory by Nancy J. Akins. Specimens will be analyzed for species, sex, age, portion, condition, evidence of butchering, and evidence of taphonomic processes. Faunal remains are important indicators of resource procurement and site structure. The detail of the analysis will be dependent on the abundance and condition of the recovered faunal remains.

Macrobotanical remains from collected samples will be analyzed at the Office of Archaeological Studies by the staff ethnobotanist, Mollie S. Toll. The analysis will identify plant resources used prehistorically, and will aid in the study of resource procurement, subsistence, and site structure. Pollen samples will be analyzed by Rick Holloway, and the results integrated with other flora-derived data to study both subsistence strategies and seasonality of site use. The analysis will also identify plant resources used prehistorically.

Upon completion of the attribute data, the coded data will be computerized. Statistical manipulation will be performed geared toward examining and contrasting patterns in artifact distribution that reflect technological organization at both the site and cultural levels. Results will be illustrated with graphs, tables, charts, and maps. Artifacts with attributes important to site interpretation will be illustrated for the report.

Specialized dating techniques will be conducted by contracted specialists: carbon-14 by Beta Analytic, Inc., and dendrochronology dating by the Tree-Ring Laboratory at the University of Arizona. Archaeomagnetic analysis will be conducted by Jeff Cox, on staff at the OAS Archaeomagnetic Laboratory. The purpose of these analyses will be to obtain the most accurate range of dates possible for cultural strata and features.

Research Results

A final report will be published in the Office of Archaeological Studies' *Archaeology Notes* series. The report will present all important excavation, analysis, and interpretive results. Included will be photographs, maps, and tables. Raw data such as field notes, maps, photographs,

and artifact categories will be given to the State Historic Preservation Division, Archeological Records Management Section, currently located at the Laboratory of Anthropology in Santa Fe. The artifact collection will be curated in the Museum of New Mexico's Archeological Research Collection.

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APPENDIX 2.

Office of Cultural Affairs
 Museum Division
 (Museum of New Mexico)
 P.O. Box 2087, 113 Lincoln Ave.
 Santa Fe, New Mexico 87504

Rule No. 11 **POLICY ON COLLECTION, DISPLAY Adopted: 01/17/91**
AND REPATRIATION OF CULTURALLY
SENSITIVE MATERIALS

I. INTRODUCTION

The policy of the Museum of New Mexico is to collect, care for, and interpret materials in a manner that respects the diversity of human cultures and religions.

Culturally sensitive materials include material culture as well as the broader ethical issues which surround their use, care, and interpretation by the Museum. The Museum's responsibility and obligation are to recognize and respond to ethical concerns.

II. DEFINITIONS;

- A. "Culturally sensitive materials" are objects or materials whose treatment or use is a matter of profound concern to living peoples; they may include, but are not limited to:
1. "Human remains and their associated funerary objects" shall mean objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later;
 2. "Sacred objects" shall mean specific items which are needed by traditional religious leaders for the practice of an ongoing religion by present-day adherents;
 3. Photographs, art works, and other depictions of human remains or religious objects, and sacred or religious events; and

- 4. Museum records, including notes, books, drawings, and photographic and other images relating to such culturally sensitive materials, objects, and remains.
- B. "Concerned party" is a museum-recognized representative of a tribe, community, or an organization linked to culturally sensitive materials by ties of culture, descent, and/or geography. In the case of a federally recognized indian tribe, the representative shall be tribally-authorized.
- C. "Repatriation" is the return of culturally sensitive materials to concerned parties. Repatriation is a collaborative process that empowers people and removes the stigma of cultural paternalism which hinders museums in their attempts to interpret people and cultures with respect, dignity, and accuracy. Repatriation is a partnership created through dialogue based upon cooperation and mutual trust between the Museum and the concerned party.
- D. The Museum of New Mexico's Committee on Sensitive Materials is the committee, appointed by the Director of the Museum of New Mexico, that shall serve as the Museum of New Mexico's advisory body on issues relating to the care and treatment of sensitive materials.

III. IDENTIFICATION OF CONCERNED PARTIES

- A. The Museum shall initiate action to identify potentially concerned parties who may have an interest in culturally sensitive material in the museum's collections.
- B. The Museum encourages concerned parties to identify themselves and shall seek out those individuals or groups whom the Museum believes to be concerned parties.

- C. The Museum's sensitive materials committee shall review all disputed individual claims of concerned-party status in consultation with the tribe, community, or organization which the individual(s) claims to represent. The Museum's sensitive materials committee shall assist, when necessary, in designating concerned parties who have an interest in culturally sensitive materials contained in the collections of the Museum of New Mexico.
- D. The Museum shall provide an inventory of pertinent culturally sensitive materials to recognized concerned parties.
- E. The Museum shall work with concerned parties to determine the appropriate use, care and procedures for culturally sensitive materials which best balance the needs of all parties involved.

IV. IDENTIFICATION AND TREATMENT OF CULTURALLY SENSITIVE MATERIALS

- A. Within five years of the date of adoption of this policy, each Museum unit shall survey to the extent possible (in consultation with concerned parties, if appropriate) its collections to determine items or material which may be culturally sensitive materials. The Museum unit shall submit to the Director of the Museum of New Mexico an inventory of all potentially culturally sensitive materials. The inventory shall include to the extent possible the object's name, date and type of accession, catalogue number, and cultural identification. Within six months of submission of its inventory to the Director of the Museum of New Mexico, each Museum unit shall then develop and submit, a plan to establish a dialogue with concerned parties to determine appropriate treatment of culturally sensitive items or materials held by the unit.

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- B. As part of its treatment plans for culturally sensitive materials, the Museum reserves the right to restrict access to, or use of, those materials to the general public. The Museum staff shall allow identified concerned parties access to culturally sensitive materials.
- C. Conservation treatment shall not be performed on identified culturally sensitive materials without consulting concerned parties.
- D. The Museum shall not place human remains on exhibition. The Museum may continue to retain culturally sensitive materials. If culturally sensitive materials, other than human remains, are exhibited, then a good-faith effort to obtain the advice and counsel of the proper concerned party shall be made.
- E. All human skeletal remains held by the Museum shall be treated as human remains and are de facto sensitive materials. The Museum shall discourage the further collection of human remains; however, it will accept human remains as part of its mandated responsibilities as the State Archaeological Repository. At its own initiation or at the request of a concerned party, the Museum may accept human remains to retrieve them from the private sector and furthermore, may accept human remains with the explicit purpose of returning them to a concerned party.

IV. REPATRIATION OF CULTURALLY SENSITIVE MATERIALS

- A. On a case-by-case basis, the Museum shall seek guidance from recognized, concerned parties regarding the identification, proper care, and possible disposition of culturally sensitive materials.

- B. Negotiations concerning culturally sensitive materials shall be conducted with professional discretion. Collaboration and openness with concerned parties are the goals of these dialogues, not publicity. If concerned parties desire publicity, then it will be carried out in collaboration with them.
- C. The Museum shall have the final responsibility of making a determination of culturally sensitive materials subject to the appeal process as outlined under section VII A.
- D. The Museum of New Mexico accepts repatriation as one of several appropriate actions for culturally sensitive materials only if such a course of action results from consultation with designated concerned parties as described in Section III of this policy.
- E. The Museum may accept or hold culturally sensitive materials for inclusion in its permanent collections.
- F. The Museum may temporarily accept culturally sensitive materials to assist efforts to repatriate them to the proper concerned party.
- G. To initiate repatriation of culturally sensitive materials, the Museum of New Mexico's current deaccession policy shall be followed. The curator working with the concerned party shall complete all preparations for deaccession through the Museum Collections Committee and Director before negotiations begin.
- H. Repatriation negotiations may also result in, but are not limited to, the retention of objects with no restrictions on use, care, and/or exhibition; the retention of objects with restrictions on use, care and/or exhibition; the lending of objects either permanently or temporarily for use to a community; and the holding in trust of culturally sensitive materials for the concerned party.

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- I. When repatriation of culturally sensitive materials occurs, the Museum reserves the right to retain associated museum records but shall consider each request for such records on an individual basis.

VI. ONGOING RECOVERY OR ACCEPTANCE OF ARCHAEOLOGICAL MATERIALS

- A. In providing sponsored archaeological research or repository functions, the Museum shall work with agencies that regulate the inventory, scientific study, collection, curation, and/or disposition of archaeological materials to ensure, to the extent possible under the law, that these mandated functions are provided in a manner that respects the religious and cultural beliefs of concerned parties.
- B. When entering into agreements for the acceptance of, or continued care for, archaeological repository collections, the Museum may issue such stipulations as are necessary to ensure that the collection, treatment, and disposition of the collections include adequate consultation with concerned parties and are otherwise consistent with this Policy.
- C. In addition to the mandated treatment of research sites and remains and in those actions where treatment is not mandated, defined, or regulated by laws, regulations, or permit stipulations, the Museum shall use the following independent guidelines in recovering or accepting archaeological materials:
 1. Prior to undertaking any archaeological studies at sites with an apparent relationship to concerned parties, the Museum shall ensure that proper consultation with the concerned parties has taken place.

2. When so requested by concerned parties, the Museum shall include an observer, chosen by the concerned party, in the crew of an archaeological study.
3. The Museum shall not remove human remains and their associated funerary objects or materials from their original context nor conduct any destructive studies on such remains, objects, and materials, except as part of procedures determined to be appropriate through consultation with concerned parties, if any.
4. The Museum reserves the right to restrict general public viewing of in situ human remains and associated funerary objects or items of a sacred nature and further shall not allow the public to take or prepare images or records of such objects, materials, or items, except as part of procedures determined to be appropriate through consultation with concerned parties. Photographic and other images of human remains shall be created and used for scientific records only.
5. The Museum reserves the absolute right to limit or deny access to archaeological remains being excavated, analyzed, or curated if access to these remains would violate religious practices.