LIVING ON THE LAND:
11,000 YEARS OF HUMAN ADAPTATION
IN SOUTHEASTERN NEW MEXICO

Lynne Sebastian    Signa Larralde

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Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico

An Overview of Cultural Resources in the Roswell District, Bureau of Land Management

By

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The New Mexico Bureau of Land Management is pleased to publish this overview of cultural resources within the Roswell District. The District includes approximately 18,400,000 acres in southeastern New Mexico. This volume is the culmination of efforts over the past 10 years to summarize published and unpublished data concerning cultural resources within the District. By abstracting the results of unpublished reports, this publication helps resolve the problem of so-called grey literature.

Traditionally, overview studies have constituted large-scale reviews and compilations of known cultural resources data. These studies have critiqued and synthesized existing information, and they have identified and analyzed existing site records. Recently, our agency has begun to utilize cultural overviews for somewhat broader purposes. The Bureau of Land Management in New Mexico is in the process of completing long-term planning efforts within each Resource Area. Overviews are now being used to assist with the development of land management documents which can help resolve conflicts between competing land uses and the preservation of cultural resources. Biases and gaps in existing data bases, as identified in overviews, are taken into account when making these critical decisions. The distributional analyses within these studies allow managers to anticipate the association of natural settings with cultural resource site types. Opportunities can be identified for conducting critically needed research as well as for the development and interpretation of cultural resources for the education and enjoyment of the American public.

This study accomplished many of these ambitious goals. The updated sections of this report constitute a basic source of background information useful for orienting new managers, scholars, or archeologists to the Roswell District. Contexts are presented for assessing the significance and meaning of cultural resources discovered and managed by the Bureau. Future planning efforts by both the Carlsbad and Roswell Resource Areas will benefit from this assessment of the quality and reliability of existing data bases. It is now our responsibility to ensure that the Cultural Resources Management Program takes positive steps to acquire the data necessary to enable resource specialists and managers to make more informed decisions regarding the protection, interpretation, and/or treatment of these unique resources.

Stephen L. Fosberg
LouAnn Jacobson

Series Editors
Santa Fe, New Mexico
January 1989
PREFACE

This project was originally envisioned in late 1985 as a process of updating an earlier draft overview document entitled "A Cultural Resources Overview for the Bureau of Land Management, Roswell District" assembled by Eileen L. Camilli and Christina G. Allen in 1979. It became quickly apparent that the amount of archeological information which had accumulated in the intervening six years required more than a simple update; further, much of the data was available or being entered into the New Mexico Archeological Records Management System (ARMS) files, obviating the need to present new data in the overview document itself. Thus the objectives of the "new" 1985 overview shifted from data compilation and presentation, toward analytical summary, identification of research issues and management recommendations. The structure of the new document was also altered considerably from the 1979 manuscript. The most noticeable changes involved partitioning the district into regions to facilitate discussion of variation in cultural resources for each temporal period; and the addition of a section addressing undated sites within the district. The present Roswell District overview (completed in terms of content in December 1987) is a truly new document with the following exceptions: (a) major portions of the environmental setting discussion in the present Chapter 1, pages 3–18 were taken intact or nearly so from the original Section 1, Chapter 1, pages 4–32 and (b) many of the short descriptive summaries of specific archeological sites found in Chapters 2, 3, and 5 of this publication were taken wholly or in part from the 1979 document.

In addition to major reorganizations of data summaries and the addition of cultural resources, perhaps the most significant changes reflected in the present overview concern the analytical use of ARMS data as the basis for summary discussions. For the 1979 document, Christina Allen undertook a major work effort to compile and computerize extant cultural resources from a great diversity of primary record sources. In terms of pages, fully 43% (exclusive of bibliography) of the 1979 document was devoted to data presentation. Since primary data are now available on the ARMS files, the present document has emphasized analytical summary and discussion of cultural resources variability rather than presentation. ARMS data current in November 1985 (representing an estimated 42% of known archeological and historical sites in the district) served as the basis for analytical summaries. Peter Eschman played a major role in making these summary analyses possible through creating algorithms necessary for defining resources within the Roswell District boundaries, and for distinguishing populations of resources within our analytical sub-regions. As is all too frequently the case in citing the contributions made by programmers, Pete's name shows up simply as a "coauthor" of one appendix in this volume. In fact, the volume could not have been written without his efforts.

Richard C. Chapman
Principal Investigator
Albuquerque, New Mexico
January 1989
ACKNOWLEDGMENTS

For some reason, the magnitude of the job of preparing this overview did not immediately occur to me. It was only after I had actually begun the work that I came to realize what I had agreed so blithely to do. The Roswell District of the Bureau of Land Management is immense, larger than a number of entire states, and has a history and prehistory stretching 11,000 years, from the Clovis type site to the Lincoln County War and beyond. And I had cheerfully agreed to summarize and synthesize the archeological and historical data for this entire area and period.

It was an overwhelming, fascinating, seemingly endless task, and I could not have completed it without the assistance of several people. First and foremost I want to thank Signa Larralde, whose contributions to this overview go significantly beyond the two chapters for which she is the author. She also read and synopsized innumerable contract reports and other archeological publications so that I could work from her notes rather than having to read every word of dozens of reports. Sometimes Signa’s cheerfulness in the face of drudgery was the only thing that kept this project afloat.

I also very much appreciate the contributions of Fran Levine, who responded to my plaintive cry of “What on earth do I know about the Protohistoric and Historical periods?” by offering help, advice, references, and finally writing some sections of the Historical Period chapter.

Dick Chapman, the Principal Investigator for this project, and Ann Ramage and Sam Ball of the BLM read and commented on earlier drafts of the manuscript. Ann Ramage also acted as COAR for the project and was very helpful in supplying copies of difficult-to-acquire archeological reports. Pete Eschman was responsible for the computer programming and data manipulation necessary for analyzing the ARMS files. Matt Schmader drafted the figures and Ron Stauber completed minor corrections for the final draft. June-el Piper edited the final version of the manuscript. Dick Chapman and Jeanne Schutt undertook the maddening job of tracking down bibliographic problems. Robyn Cote-Schmader assisted with printing the draft version of the overview, and Barbara Lane took charge of producing and typesetting the final version of the overview. I very much appreciate the efforts of all these people; without their attention to the mass of detail that goes into a project such as this, the overview would have been much less complete.

As mentioned in Chapter 1, this overview began as a revision of an earlier work by Eileen Camilli and Christina Allen. Although philosophical and theoretical differences between myself and Dr. Camilli prevented us from reaching a true synthesis of their work and ours and even from crediting their work as I would have wished, I do appreciate the careful scholarship in the sections of their work that we used here. They saved us a great deal of time and effort.

Finally, I would reiterate the point made in the Preface: this manuscript was completed in 1987. Several important works have been published since then that bear directly on discussions in this overview, including a major book on the Lincoln County War and a very thorough and informative National Register Nomination for Laguna Plata prepared by the cultural resources staff of the Roswell BLM District. Each of these new works has tempted me to reopen the manuscript and do “just a little more revising,” but I realize therein lies madness.

Lynne Sebastian
Albuquerque, New Mexico
January 1989
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The Roswell District of the New Mexico Bureau of Land Management comprises 18,407,164 acres in east-central and southeastern New Mexico (Figure 1.1). It incorporates all of Quay, Curry, Guadalupe, Chaves, DeBaca, Lea, and Roosevelt counties along with portions of Lincoln, Otero, and Eddy counties. The northern limits of the area are formed by the Guadalupe and Quay county boundaries; the eastern and southern limits by the New Mexico–Texas state line. The western boundary of the district consists of the Torrance–Guadalupe and Torrance–Lincoln county borders and the eastern edge of the Lincoln National Forest south through Lincoln and Otero counties. The southern portions of the Lincoln National Forest in the Guadalupe Mountains and Carlsbad National Park are contained within the district limits. In 1980 the district boundaries were changed to follow county lines; the Roswell District now includes all of Lincoln County and none of Otero County. Because the original work on this overview was done before this boundary change, we have used the earlier boundaries.

The purpose of overviews such as this one is to provide a detailed synthesis of known cultural resources and archeological and historical research in the district under discussion. The audience for such information is twofold: both professional archeologists working in the field of cultural resource management and land managers who are responsible for managing archeological and historical sites on the lands under their jurisdiction. In an effort to meet management needs and to provide background for archeological research, this overview has been designed to include not only summary information on previous research, culture history, and major sites in the district, but also information on research topics that are particularly applicable to the Roswell District, and a working bibliography of recent research that can provide an entry into the archeological literature of the region.

This overview began as a revision of an unpublished document prepared in 1979 entitled “A Cultural Resources Overview for the Bureau of Land Management, Roswell District,” assembled by Eileen L. Camilli and Christina G. Allen and edited by Linda S. Cordell and Mark E. Harlan. That document, although unpublished, has been widely circulated over the last eight years and is generally cited as Camilli and Allen (1979).

Camilli and Allen described their goal in the original document as being to provide “a review and synthesis of past archeological and historical research undertaken in the district and an inventory of known cultural resources” (Camilli and Allen 1979:4). Camilli, Allen, and other contributing authors not only performed a thorough review of the published literature and of site record files, they also carried out a limited amount of field reconnaissance in an effort to determine the nature of cultural resources in the northwestern quarter of the district, an area which was indicated by the resource inventory to be basically unknown in terms of archaeological and historical site data (Camilli and Allen 1979:4).

The results of their work included not only the original draft overview but a computerized data base containing information about all known archeological sites in the district.

This greatly revised and expanded overview is the result of a project that has had three major components. First, we reviewed as much as possible of the archeological literature relevant to the district that has been published since the Camilli and Allen manuscript was prepared. We then used the abstracted data to update the discussions of specific sites, of the culture history of southeastern New Mexico, and of relevant research questions for the Roswell District. Second, we compared the results of our literature review with the Archaeological Resources Management System (ARMS) computer files maintained by the Laboratory of Anthropology, Museum of New Mexico, in Santa Fe and attempted to update the ARMS information for the Roswell District to provide as comprehensive a data base as possible for future researchers. An estimated 42% of the known archeological sites in the Roswell District have been encoded in the ARMS files (Ann Ramage, personal communication 1985). Finally, we have expanded the culture history summaries contained in the original manuscript and discussions of a number of theoretical issues have been added.

We have used many portions of the Camilli and Allen manuscript verbatim—so many that we felt it would be distracting to the reader to mark these sections as quotations. This is particularly true of the environmental overview that follows. In addition a number of the discussions of specific archeological sites in Chapters 2, 3, and 5 are from Camilli and Allen’s original manuscript. Even though the structure of this overview has been changed and sections have been added or expanded, much of the material from the original Camilli and Allen
FIGURE 1.1  BOUNDARIES, CITIES, AND COUNTIES OF THE ROSWELL DISTRICT
INTRODUCTION

History Of Research

Archeological investigations in southeastern New Mexico during the earliest decades of the twentieth century were carried out both in open sites (Lehmer 1948; Mera 1933, 1938) and in dry caves and rockshelters in the Guadalupe Mountains (Ayre 1930, 1932, 1935a; Mera 1938, 1943). Some of the dry cave sites yielded perishables, such as textiles, basketry, and wooden weapons, while others produced limited quantities of cultural material but rich assemblages of Pleistocene fauna. The original excavations of the Paleolithic site at Blackwater Draw Locality No. 1, near Portales, New Mexico, were also carried out during the 1930s (Corley 1937, 1938; Howard 1935b; see Hester 1972 for a summary of this early work).

In the 1940s Lehmer (1948) published the first regional sequence for southern New Mexico, assigning this region to the Jornada branch of the Mogollon culture. Although his phase sequence did not actually include the portion of New Mexico lying east of the Pecos, Corley (1965) argues that this area should be considered a peripheral, eastern extension of the Jornada Mogollon. For more than 30 years, Lehmer’s work was the standard reference for Ceramic period cultures in this portion of the state, but recent research concerning the Jornada Mogollon (e.g., Beckett 1979; Beckett and Wiseman 1979) has provided new insights into this relatively little known cultural manifestation.

During the 1950s and 1960s a number of archeological projects were carried out as a result of highway construction or other salvage programs, but most of the results remain, unfortunately, unpublished. Some reports are available in manuscript form at the Laboratory of Anthropology, Museum of New Mexico. In the northern portion of the Roswell District, the 1960s saw a major project carried out by Jelinek (1967) along the middle Pecos River; this project yielded the major phase sequence used in this part of the state. Additional excavations were carried out at Blackwater Draw in 1962 and 1963 (Hester 1972). J. H. Kelley’s (1966) dissertation work in the Sierra Blanca region formed the basis of most of what is known about this part of the Roswell District. In the south, some of the most significant work during this period was carried out by regional archeological societies, especially the Lea County Archaeological Society (Corley and Leslie 1960; Leslie 1965, 1968; Runyan 1972). These efforts permitted the development of a phase sequence for the eastern extension of the Jornada Mogollon (Corley 1965). Also during the 1950s and 1960s both survey and excavations were carried out in Carlsbad Caverns National Park (Bradley 1959; Greer 1966a), including work in Painted Grotto, a National Register pictograph site of unknown age (Gebhard 1962). Greer followed his work at Carlsbad with a long-term study of ring middens, an important class of archeological manifestations in the southwestern portion of the Roswell District (Greer 1967, 1968a, 1968b). Finally, the 1965 excavations at Pratt Cave in Guadalupe Mountains National Park (Schroeder 1983) yielded important information about Archaic subsistence and especially about perishable material culture.

In the 1970s a number of major archeological projects were carried out, sponsored both by large research institutions and by cultural resource management (CRM) funding. These include Eastern New Mexico University’s excavations at Frenzel Shelter in the Sacramento Mountains (Wimberly and Eidenbach 1981), a site that was outside the boundaries of the original Roswell District but is within the boundaries established in 1980; S. M. Applegarth’s (1976) dissertation work in the Guadalupe Mountains; Southern Methodist University’s research at Brantley Reservoir (Gallagher 1976; Gallagher and Bearden 1980; Henderson 1976) and Los Esteros Reservoir (Levine and Mobley 1976; Mobley 1977, 1978a, 1978b, 1978c); and work at the Garnsey site near Roswell sponsored by the University of Michigan (Parry and Speth 1984; Speth and Parry 1978, 1980).

The late 1970s and early 1980s have seen many CRM-sponsored projects in the Roswell District. Some of the larger ones include Lauchbach’s (1979) work in the proposed Laguna Plata archeological district and archeological investigations associated with the Waste Isolation Pilot Project (WIPP) (Lord and Reynolds 1985; Schermer 1980b) and with the Haystack Mountain recreation area (Bond 1979a; Schermer 1980a). Among the many energy-related projects are the ARCO CO2 pipeline survey and excavation projects (Lent 1982; Winter 1983), the Bravo CO2 pipeline survey and excavation (Wozniak 1985), the Abo Oil and Gas fields survey (Kemrer and Kearns 1984), and the El Paso and Eastern Interconnection Project (EIIP) electric transmission corridors (Harlan et al. 1986; Wilson 1984).

As a footnote to the history of research, this overview presents information drawn from publications spanning several decades of geological, ecological, and archeological study. Many sources present measurements in English units, while others present them in metric units or both English and metric. This overview will retain the system of measurement as presented in source documents rather than imposing an artificial uniformity in one system or the other.

Environment

The remainder of this chapter will be devoted to a discussion of the environmental context of the cultural resources found in the Roswell District. Such discussions are commonly included in archeological reports and
overviews, but the reasons behind these inclusions are seldom made explicit. In fact, there are two sets of reasons why data on the environmental context are critical to our understanding and interpretation of cultural remains. The first is that if we consider culture to be the means by which humans adapt to their environment, we cannot hope to understand the nature of their adaptation unless we have some understanding of the environment in which they lived. The second set of reasons has to do with the processes by which material culture items are deposited and preserved in the ground to form what is referred to as the archeological record, and the processes by which that record is altered over time and eventually exposed to view so that the cultural remains can be discovered during archeological reconnaissance. Unless we take into account the processes by which the archeological record is formed, transformed, and differentially exposed, our interpretations of the ways in which prehistoric people used the landscape will be incomplete and potentially naive.

Physiography

Four distinct physiographic zones dominate the area (Figure 1.2): (a) the valley of the Canadian River and its tributaries in the Raton section of the Great Plains; (b) the southern extension of the High Plains, the Llano Estacado; (c) the Pecos Valley section of the Great Plains, a broad north–south depression bordering the Llano Estacado on the west; and (d) the eastern portion of the Sacramento section of the Basin and Range province, a north–south trending range of mountains lying between the Rio Grande Valley on the west and the Pecos Valley on the east. This last will be referred to as the western mountain zone.

Nearly all of the district is within the drainage system of the Pecos River, but a portion of Quay County lies within the Canadian drainage system. The easternmost geographic features of the district—the Mescalero Plain, a pediment surface sloping from the Llano Estacado westward toward the Pecos River, and the Llano Estacado itself—are characterized by interior drainage. These four physiographic zones are discussed individually below.

The Canadian River Valley. Topography in the Canadian Valley consists of undulating plains with isolated remnants of High Plains in the form of small mesas in the western portion of the area. With the exception of the Canadian River, streams in this zone flow only intermittently. The Canadian Valley is separated from the Llano Estacado on the south by an escarpment known locally as The Caprock. Elevations within this physiographic zone range from 3800 ft at the Texas border to 5000 ft on the escarpment.

The Llano Estacado. The Llano Estacado is an extensive flat landscape, broken only by shallow drainage depressions and playas. The northern escarpment, The Caprock, continues south to separate this zone from the Pecos Valley on the west. This western escarpment, termed Mescalero Ridge, ranges from low, sand–drifted hillylides to steep cliffs 450 ft high (Reeves 1972). A gentle southeasterly slope of the land surface in this zone results in a drop in elevation from 5000 ft on the northern escarpment to 3600 ft near Hobbs in Lea County.

The Pecos Valley. The upper Pecos Valley north of Alamogordo Reservoir is bordered on the east by rolling uplands, valleys and basins, and some areas of rough and broken terrain. Small, isolated mesas and hills occur north and east of the Pecos River. West of the river the country is dominated by level to undulating topography (Maker et al. 1973). Areas of steep escarpments and breaks occur adjacent to major Pecos tributaries.

The middle Pecos Valley begins at Alamogordo Reservoir and extends to the Texas–New Mexico state line. In the northern reaches of the middle Pecos, relatively large, extensive drainages enter the valley from the west; eastern tributaries include smaller draws and arroyos draining from the escarpment divide at the Llano Estacado. Farther south, principal west–bank tributaries originate in the Capitan, Sierra Blanca, and Sacramento mountains. Some of these drainages are as much as a hundred miles in length and are perennial in their upper reaches, but they are generally intermittent in the lower portions of their courses. The tributaries that head in the Guadalupe Mountains are shorter and carry less water.

The Western Mountains. West of the Pecos Valley the Roswell District encompasses the Capitan Mountains, the eastern foothills of the Sacramento Mountains, and the Guadalupe Mountains. Elevations rise from 2800 to 3400 ft at the Pecos River to between 6800 and 7400 ft in the Guadalupe Mountains, near 8000 ft in that portion of the Sacramentos that lies within the Roswell District, and up to 10,200 ft in the Capitan Mountains.

Geomorphology and Geology

The Canadian River and its tributaries are entrenched in a thick section of Jurassic and Triassic rocks that extend from the southern margin of the Raton Basin near Springer eastward into Texas (Spiegel 1972). These deposits, which consist of alternating fluvial sandstones and mudstones and are exposed in the canyons of the Canadian River from above Conchas Lake to Bravo Dome in the Texas Panhandle, have been assigned to the Trujillo and Chinle formations (Spiegel 1972). Jurassic and Cretaceous sediments form much of the caprock escarpment that extends from the Guadalupe–Quay county line to just north of Amarillo, Texas (Reeves 1972).

In the High Plains much of the surface is the remnant of a Tertiary fluvial plain that once extended from the eastern edge of the Rocky Mountains to the present eastern border of the Great Plains (Figure 1.3). This formation is well preserved on the Llano Estacado; it covers the
FIGURE 1.2 PHYSIOGRAPHIC ZONES WITHIN THE ROSWELL DISTRICT
FIGURE 1.3  SURFACE GEOLOGY WITHIN THE ROSWELL DISTRICT
INTRODUCTION

eastern third of the Roswell District. The uppermost Tertiary formation over most of this area is the Pliocene Ogallala formation, which is important to the prehistory of the region as a major source of knappable stone (see discussion of lithic raw materials at the end of this section). In addition, aquifers within this formation are a major source of groundwater (Kunkler 1972). The Ogallala formation extends from the Pecos Valley to beyond the Texas–New Mexico state border and consists mainly of sandy alluvium.

Massive carbonate concentrations found within the upper part of the Ogallala form the caprock of Mescalero Ridge. This caprock is from 10 to 30 ft thick and consists of an irregular accumulation of caliche (Bretz and Horberg 1949). West of Mescalero Ridge, outliers of the High Plains Ogallala formation occur in the vicinity of Fort Sumner and in the Santa Rosa area.

The Pecos Valley lies west of the Llano Estacado. This drainage originally headed in the Sacramento Mountains, but by late Pleistocene times it had become integrated with the Upper Pecos–Brazos system headed in the Sangre de Cristo range (Landis et al. 1985). The rocks outcropping in the Pecos Basin range in age from Permian to recent, but the major portion of the bedrock underlying the Pecos lowland dates to the Triassic, Permian, and Quaternary. Castille anhydrite, Salado halite, and the Rustler limestone of the Ochoa Permian series are the formations that have most influenced the topography (Morgan and Sayre 1942; Thornbury 1967).

Upland portions of the Pecos Valley consist of extensive pediments. Five cyclical erosional surfaces have been recognized (Figure 1.4; Morgan and Sayre 1942). The uppermost, an erosional surface called the Sacramento Plain, corresponds to the Ogallala formation of the Llano Estacado (Fiedler and Nye 1933).

Below the Sacramento Plain is the Diamond A Plain, an early Pleistocene surface that is confined to the eastern portion of the Sacramento Mountain foothills and is located 400–1300 ft below the level of the Sacramento Plain. This pediment is covered by thin deposits of gravel and appears to be correlated with an alluvial plain to the east in the Roswell Basin (Fiedler and Nye 1933).

The corresponding surface on the east side of the Pecos River, between the river and the escarpment of the Llano Estacado, is the Mescalero Plain (Thornbury 1967). This surface is much more extensive than that of the Diamond A Plain; it runs from Fort Sumner to a few miles beyond the Texas state line. The westward grade of this surface ranges between 50 and 80 ft per mile, with the greatest slope occurring near its western extreme. Much of the erosional surface is covered by dune sand and includes the area referred to by Darton (1928) as Mescalero Sands. Reeves (1972) does not consider these sand dune areas to be older than late Pleistocene. Nials et al. (1977) state that the dune stratigraphy indicates multiple periods of eolian activity and surface instability.

Below the Diamond A and Mescalero surfaces along the Pecos River are three gravel-capped pediments (Figure 1.4): the Blackdom, Orchard Park, and Lakewood terraces. Most of the irrigated land in the Roswell Basin is on a 6–10 m strip of the Orchard Park terrace. The Lakewood terrace is too swampy for agriculture in most places, and the Blackdom is too high above the water table for well irrigation (Morgan and Sayre 1942).

Structural subsidence coupled with deflation have produced a number of both large and small depressions in the Pecos Valley and on the Mescalero Pediment and Llano Estacado. These sinkholes and playas appear to have been important prehistorically as water sources and hunting and plant–collecting areas.

The Capitan Mountains in the west–central portion of the district rise 3000 ft above the surrounding terrain and are dominated by igneous rocks. The Sacramento Mountains to the south are formed by steep fault escarpments on their west side; their eastern flanks slope more gently to the Pecos River. The Sacramentos are composed mainly of Paleozoic sedimentary rocks. The Guadalupe Mountains form a 40–50 mi long eastward–tilted block bounded on the southeast by the Reef Escarpment. The western edge of the Guadalupes is outlined by a steep escarpment broken by numerous faults. The Permian and Quaternary deposits of the Guadalupe Mountains are dissected by deeply incised canyons (King 1942). The Capitan Reef, the youngest of the Permian barrier reefs in this region, runs 45 m between Carlsbad and El Capitan Peak. Quaternary deposits include gravels of Pleistocene age and alluvium and calcarceous tufa deposits of recent age.

One important aspect of the geology of the Roswell District as it concerns archeologists is the availability of lithic materials suitable for the manufacture of stone tools. The lithic materials of the Mescalero Pediment, for example, are characterized by Oakes (1982:13) as being relatively poor in quality and distribution. Landis et al. (1985:10) and Kemmer and Kearns (1984:42), on the other hand, describe the Pecos Valley as having suitable lithic raw materials distributed throughout the redeposited terrace gravels and in the San Andres limestone formation to the west of the river. Lambergh (1979:33) describes the immediate area of the Laguna Plata Archaeological District as being largely devoid of lithic materials, but notes that the Ogallala formation, a major source of lithic raw material throughout much of the Roswell District, is exposed in the caprock of the Llano Estacado some 15 m to the north and east of his study area.

In general, the presence or absence of suitable lithic materials in a particular portion of the district is determined by the presence or absence of suitable gravels in the bedrock and/or by the presence or absence of drainages in which gravels may accumulate. Another important aspect of these gravels is that, as Holliday and
FIGURE 1.4 GEOLOGIC CROSS SECTION OF THE PECOS VALLEY
Welty (1981) report, they often contain materials that are macroscopically identical to well-known sources in Texas, such as the Edwards Plateau chert and Tecovas jasper sources.

Flora

Vegetation cover types within the modern environment of the Roswell District can be classified into five vegetation zones described by Castetter (1956): desert grassland, mixed grassland, woodland, petran montane forest, and petran subalpine forest (Figure 1.5).

The desert grassland association, which covers much of the central, southwestern, and southern portion of the Roswell District, is characterized by the occurrence of black grama (Bouteloua eriopoda) and tobosa (Hilaria mutica) grass. Several species of dropseed and sacaton (Sporobolus spp.) also occur, along with bush muhly (Muhlenbergia porteri) and a lesser abundance of other grass species. The association ranges in elevation from 2850 ft where the Pecos River crosses the state line into Texas to approximately 5500 ft (Castetter 1956). Heavy stands of creosote bush (Larrea tridentata), common mesquite (Prosopis juliflora), tarbush (Flourensia cernua), Mexican tea (Ephedra trifurca), and other shrubs dominate lower elevations, along with various species of cactus.

The mixed grassland association covers the Llano Estacado, the Canadian Valley, and the rolling plains west of Fort Sumner. Blue grama (Bouteloua gracilis) and galleta (Hilaria jamesii) grasses characterize this association. Little bluestem (Andropogon scoparius) is a common associate on sandy loams. In the lower Canadian Valley near Tucumcari buffalo grass (Buchloe dactyloides) enters the association. Common shrub species in this association include snakeweed (Gutierrezia spp.), rabbitbrush (Chrysothamnus spp.), soapweed (Yucca glauca), saltbush (Atriplex spp.), black greasewood (Sarcobatus vermiculatus), and mesquite. Various species of cactus are also common. Southern portions of the mixed grassland are transitional with northern areas of desert grassland, and species characteristic of this latter association are present in the former areas as well.

Woodland cover ranges from about 4500 to 7500 ft in elevation, occupying mountain foothills, ridges, knolls, breaks, dissected mesa edges, escarpments, and rock outcrops. The woodlands in the district contain juniper (Juniperus spp.), pine (Pinus spp.), and oak (Quercus spp.). Shrub species are common within the woodland association include mesquite, sumac (Rhus spp.), yucca (Yucca spp.), and mescal (Agave spp.). Woodland vegetative zones within the Roswell District are presently restricted in distribution to the western mountain, extreme northern Pecos Valley, and Canadian Valley physiographic locales.

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The coniferous forest biome in New Mexico has been subdivided into two associations, both of which cover only very small portions of the Roswell District (Figure 1.5). The petran montane forest association ranges from approximately 7000 to 9500 ft in elevation and includes ponderosa pine (Pinus ponderosa), Douglas fir (Pseudotsuga menziesii), and white fir (Abies concolor), with a lesser abundance of limber pine (Pinus flexilis) and aspen (Populus tremuloides). Within the Roswell District, this association is limited to the Capitan Mountains and the lower Sacramentos near Ruidoso. The petran subalpine association ranges in elevation from 8500 to 12,000 ft and reaches from timberline to the upper limits of the petran montane forest association. Stands of spruce, fir, and aspen; open grassy slopes; small parks; and wet mountain meadows are typical of this association (Castetter 1956). Dominant species are Engelmann spruce (Picea engelmannii) and subalpine fir (Abies lasiocarpa). Within the Roswell District this association is limited to a small area in the Capitan Mountains.

For discussions of the prehistoric patterns of vegetation see the references cited in the Paleoenvironment section below. For distribution information on native vegetation prior to major impacts of grazing and agriculture see Gross and Dick-Peddie (1979).

Discussions of potential native food plants within the district can be obtained from Castetter (1936), Castetter and Opler (1936a, 1936b), Castetter et al. (1938), Hough (1912), and Matson and Schroeder (1957). Major food plant species include mescal, mesquite, shin oak (Quercus havardii), some of the cacti, various grasses, and piñon (Pinus edulis) where available. See Oakes (1982:12-13) and Laumbach (1979:22-27) for ethnobotanical discussions in an archeological context.

Fauna

Descriptions of fauna native to southeastern and east-central New Mexico can be found in Bailey (1913), Findley et al. (1975), and Merriam-Bailey (1928). In addition, Findley et al. (1975) briefly discuss mammalian distribution patterns during the Pleistocene and list extinct and modern mammalian species found in New Mexico during the late Pleistocene. Nine of the 142 species of mammals native to New Mexico during historical times are now extinct as a result of competition with man (Findley et al. 1975:342).


During the Paleoindian period very large prey species (many of them, such as mammoth and Bison antiquus,
FIGURE 1.5  DISTRIBUTION OF MAJOR VEGETATION ZONES WITHIN THE ROSWELL DISTRICT
now extinct) formed an important part of the diet. During later prehistoric and historical periods smaller animals (e.g., modern bison, pronghorn antelope, mountain sheep, Merriam’s elk, and deer) became the major prey species. But during all prehistoric and historical periods a wide range of small mammals found in woodland and grassland communities throughout the district were included in the diet. These include rabbits (both cottontail and jackrabbit), prairie dog, pocket gopher, pocket mouse, vole, harvest mouse, cotton rat, wood rat, and beaver.

The modern range of mule deer and white-tailed deer includes both forest and woodlands within the district as well as areas of shrubland along the western escarpment of the Llano Estacado (Findley et al. 1975; Fig. 128 and 129). The suitable range for mountain sheep includes areas along the northern Canadian, in the Guadalupe Mountains, and in small portions of the Sacramento Mountains (Lignon 1927). Prehistorically, pronghorn antelope and bison could have been hunted throughout the grassland environments that are common within the district.

Climate

The individual parameters of the climate of the Roswell District are discussed separately below, but in general this portion of New Mexico has a continental, semiarid climate characterized by dry winters and a mid- to late-summer rainfall maximum. The climate is primarily dependent on the distance to large bodies of water capable of supplying moisture and on the area’s latitude. The uniformity of the land surface results in a uniform climate over a wide area.

Precipitation. The Pecos River Valley below Santa Rosa, which constitutes a major portion of the Roswell District, receives a moderate amount of annual precipitation—from 12 to 17 inches of rainfall per year (Figure 1.6; Maker et al. 1973; Maker, Link, Anderson, and Hodson 1971; Maker, Link, Gallman, and Anderson 1971). Higher levels of precipitation, from 16 to 18 inches, occur on the southwestern segment of the Canadian escarpment and on the Llano Estacado (Maker, Link, Anderson, and Gallman 1971). Approximately 75–85% of the annual moisture falls between April or May and October (Maker et al. 1970b). The primary source of moisture during this period is warm, moist air that pushes inland from the Gulf of Mexico. The combination of gulf moisture and surface solar heating results in an upslope movement of air, bringing localized thunderstorms accompanied by hail.

Winter is the driest season, and February is often the driest month. The source of winter precipitation is the Pacific Ocean, and the mountains bordering the western edge of the Pecos Valley shut out most of the storms. Southeastern New Mexico receives snow from November to April, but the average annual snowfall varies greatly from place to place. The upper Pecos Valley receives from 12 to 24 inches of snowfall annually (Maker et al. 1973). In the Canadian Valley average snowfall ranges from 12 inches in the northeast to as much as 18 inches in the central and western portions (Maker, Link, Anderson, and Gallman 1971). The southern part of the Roswell District generally receives from 3 to 8 inches of snow per year, while as much as 20 inches of snow may fall in the mountains (Maker et al. 1970a).

Relative humidity averages from 40% to 55% over the area. Average evaporation, as measured by a Class A pan, is from 96 to 106 inches per year, with lower temperatures in the mountains reducing average evaporation by 10% (Maker et al. 1970a). Spring winds from the south and southwest average 10–15 mi per hour. Wind speed decreases to 8–10 mi per hour in the late summer and fall.

Temperature. July is normally the warmest month and January the coldest (Figure 1.7; Tuan et al. 1973). A north–south temperature gradient is characteristic of the Roswell District: in Guadalupe County the average annual temperature ranges from 59° to 53° F. Farther to the south in the Carlsbad area, average annual temperatures range from 60° to 64° F. Temperatures also decrease with increasing elevation, so that the average annual temperature in the Guadalupe Mountains west of Carlsbad is 54° F. Throughout the district, freezing temperatures are recorded on more than two-thirds of the days from November to March. From one-half to two-thirds of the days in June, July, and August exhibit temperatures of 90° F or more.

The frost–free season (Figure 1.8) ranges from 180 days in the north to 220 days in the Carlsbad area, with an average growing season of only 160 days on the lower flanks of the Sacramento Mountains. The frost–free period begins earliest and ends latest in the Pecos Valley, which has a 200–day growing season as far north as Santa Rosa. The March 30 date for average last frost at Carlsbad is one of the earliest average dates for the beginning of the frost–free season in New Mexico. First frost occurs in mid–October, on the average, in the northern portion of the district and between October 30 and November 5 in the south (Tuan et al. 1973).

Paleoclimate

Most paleoclimatic reconstructions relevant to the Roswell District concern either the Llano Estacado specifically (Oldfield and Schoenwetter 1975; Wendorf 1961a, 1961b); the southern High Plains in general (Hall 1982; Reeves 1972; Stafford 1981), or the northern Chihuahuan Desert (Van Devender and Worthington 1977). Several studies are available for the Guadalupe Mountains (Roney 1985; Van Devender 1980; Van Devender et al. 1979), but almost nothing is available for the western, central, and northern portions of the district. There is a great need for additional paleoclimatic research in all ar-
Isohyets represent the average annual precipitation in inches.

FIGURE 1.6  AVERAGE ANNUAL PRECIPITATION WITHIN THE ROSWELL DISTRICT
Average January and July temperatures within the Roswell District

Isotherms represent the average January or July temperature in degrees Fahrenheit.

FIGURE 1.7  AVERAGE JANUARY AND JULY TEMPERATURES WITHIN THE ROSWELL DISTRICT
Isorymea represent the average number of days in a year without killing frost.

FIGURE 1.8  AVERAGE ANNUAL FROST-FREE PERIOD WITHIN THE ROSWELL DISTRICT
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eas of the district. Inferences concerning paleoclimate have been based on studies of pollen, sediments, packrat middens, and the remains of vertebrates and invertebrates.

This portion of Chapter 1 is intended to provide a general environmental background for the cultural developments discussed in Chapters 2 and 3. The climatic setting for developments in more recent periods has been virtually the same as the modern conditions outlined earlier in this chapter. Paleoclimatic trends are discussed in terms derived from the pluvial/interval sequences suggested by Wendorf (1961b) and Oldfield and Schoenwetter (1975). The sequence outlined in Figure 1.9 is simply a heuristic, useful for structuring this discussion but not offered as a scientifically supported Late Pleistocene sequence for the area. Terms derived from the sequences suggested by Wendorf and by Oldfield and Schoenwetter have been used because they are familiar to many researchers in the Roswell District area and because these pluvial/interval events have suggested correlations with the more widely known Wisconsin glacial terminology.

The earliest human occupation of the Roswell District took place during what Wendorf (1961b:Fig. 45) terms the San Jon Pluvial. This pluvial dates from approximately 13,000 to 6000 BP and was the last Wisconsin pluvial in the Southwest, corresponding to the end of the Mankato readvance, the Two Creeks recession, and the Valders and Cochran readvances in those parts of North America that experienced glaciation.

The first subdivision of the San Jon Pluvial is what is called the Blackwater or Tahoka Subpluvial. This period ended between 12,000 and 11,000 BP and was generally a time of markedly greater effective moisture than what is seen presently in the area. This increased moisture was probably a result of both greater precipitation and lower temperatures. Wendorf (1961a) suggests that temperatures were as much as 10° F lower in the summers than they are today. Winter temperatures appear to have been no lower than modern readings; indeed, Late Pleistocene winters may have been somewhat milder than those of the present (Van Devender and Spaulding 1979; Wendorf and Hester 1975). Not all researchers agree with this assessment of climate during the earliest documented Paleoenvironmental occupation of the Southwest; Mehringer and Haynes (1965), for example, argue that temperatures were no more than 3–4° F cooler and rainfall no more than 3–4 inches greater than modern conditions.

Pollen analysis and radiocarbon dating of a series of bore profiles from the southern High Plains indicate warm steppes conditions with grassland mixed with boreal woodland from about 14,000 BP to 10,000 BP (Hafsten 1961). On the Llano Estacado there appears to have been an open savanna with stands of pine and spruce (Irwin–Williams 1979) and a multitude of both small and large playas (Reeves 1972; Wendorf 1961a). There is no evidence either from the Plains or from the Llano Estacado of forested conditions like those that prevailed in the Northern Plains during this period (Reeves 1972). Even during the periods of greatest effective moisture there appear to have been only scattered stands of pine and spruce (Hoffman and Jones 1970). Evidence from pollen analysis of deposits from Paleoenvironmental sites on the southern High Plains indicates fluctuation of the open pine/spruce woodland with prairie phases, yielding pollen rain indistinguishable from that of the present (Oldfield and Schoenwetter 1975). In the Guadalupe Mountains there was a gradual transition during this period from the subalpine forests of 13,000 BP to the xeric woodland that prevailed by 11,000 BP.

The Tahoka Subpluvial was followed by the Scharbauer Interval, a period ending ca. 10,500 BP during which there was a marked decrease in moisture relative to the previous period. Climate during this time was probably increasingly continental, with warmer summers but cooler winters (Bryson et al. 1970). Van Devender and Spaulding (1979) suggest that this was the beginning of a period of winter–dominant precipitation. On the Southern Plains, pollen data indicate that the park woodland was succeeded by a prairie phase from 10,000 BP onward (Hafsten 1961). On the Llano Estacado during this period the vegetation shifted to a grasslands association (Irwin–Williams 1979), while in the Guadalupe Mountains the woodland zones were withdrawing to higher elevations and first grasslands, then desert shrubs began moving into the vacated zones (Van Devender 1980). Wendorf (1961a) suggests that it was during the Scharbauer Interval that many of the large Pleistocene faunal species, such as mammoths and Bison antiquus, became extinct.

The succeeding period, the Lubbock Subpluvial, lasted until approximately 9500 BP. Although there was some rebound in the amount of moisture during this period, this was still a drier time than the earlier subpluvial. From the beginning of the Lubbock Subpluvial through the end of the Yellowhouse Interval at ca. 8500 BP there seems to have been considerable short–term fluctuation in moisture conditions, but the overall trend was one of increasing desiccation (Irwin–Williams 1979; Van Devender and Spaulding 1979). Spruce disappeared from the Llano Estacado entirely (Wendorf 1961a), and following a brief resurgence in woodland cover at the beginning of the Lubbock Subpluvial, the pine woodland disappeared as well. By the end of the Yellowhouse Interval the Llano Estacado was entirely grasslands. On the Southern Plain the woodlands never returned, and the gradual drying trend through the Yellowhouse Interval led to a drying up of all but the largest playas; only those in areas with high water tables and those that were spring fed still held water. In the Guadalupe Mountains, the desert shrub species had completed their colonization of the lower flank area abandoned by the retreating xeric woodlands (Van Devender 1980). The final subpluvial period in the
YEARS BEFORE PRESENT

PLUVIAL PERIOD

CLIMATE

VEGETATION

EFFECTIVE MOISTURE

CULTURAL PERIOD

(after Tainter and Gillon 1988:Table 3)

FIGURE 1.9 PALEOCLIMATE, PALEOENVIRONMENT, AND CULTURAL CHRONOLOGY
INTRODUCTION

Roswell District area, the Portales Subpluvial, has been dated to ca. 8500–7000 BP, and Irwin–Williams has suggested that this last known episode of increased moisture in the Paleoindian period "may have had an important influence on the distribution of game species and human populations" (Irwin–Williams 1979:32; see also Irwin–Williams and Haynes 1970). The effects of this brief amelioration in the moisture regime were short lived, and once it was over the gradual evolution toward modern vegetation patterns and climatic conditions in the region continued. Van Devender and Spaulding (1979) suggest that after ca. 8000 BP the rainfall regime shifted from a pattern of winter dominance to one of summer dominance.

There is a lack of consensus among paleoclimatic researchers about the nature of climatic developments in the Southwest during the period from 7000 to 5000 BP. This is the period identified by Antevs (1955) as the Altithermal, an episode of warm, dry climatic conditions originally identified in the Great Basin. Although some researchers maintain that a period of warm, dry conditions corresponding to the Altithermal can be identified in the Southwest (e.g., Bryant and Larson 1968; Irwin–Williams 1979; Reeves 1972), many others maintain that there is no evidence that the period from ca. 7000 to ca. 5000 BP was a time of "Altithermal" conditions anywhere but in the Great Basin (Mehringer et al. 1967; Van Devender and Spaulding 1979; Van Devender and Worthington 1977; Van Devender et al. 1984).

Data for the period following 5000 BP are sketchy, but they yield a more consistent pattern than the conflicting interpretations relating to the earlier time. Moisture curves derived for the Southwest (Martin 1963; Mehringer 1967) indicate gradually increasing levels of effective moisture for the period beginning at 5000 BP (Figure 1.9). Pollen data from west Texas indicate that a period of markedly greater moisture began at approximately 2500 BP (Bryant and Shafer 1977). Data from analysis of pollen and land snail remains (Hall 1982) indicate that these conditions of increased moisture continued until ca. 1000 BP, at least in the Southern Plains, and that subsequent to that time moisture conditions approaching those of the present prevailed. These interpretations are supported by data from southern Arizona for the same period. Pollen records from deposits at the Lehner site (Mehringer and Haynes 1965) and the Murray Springs locality (Martin 1963; Mehringer and Haynes 1965) indicate a peak of increasing effective moisture in that area between 2400 and 1400 BP, and Martin (1963) notes a summer precipitation peak at about 1000 BP.
Chapter 2
THE PALEOINDIAN PERIOD
Lynne Sebastian

As the title of this chapter implies, the term Paleoin
dian is used here as if it were a temporal designation. This
term is better used to designate a particular hunting-and-
gathering adaptation, but our limited temporal and
subsistence information for the late Pleistocene and early
Holocene populations of the New World make this use of
the term risky at best. For this reason, Paleoindian will be
used here as if this adaptation had begun with the first Ice
Age inhabitants of the New World and come to an end
with the beginning of the Archaic period at approxi-
mately 7000 years ago. In many ways this use of the term
does not do terrible violence to its definition because the
adaptation of the Paleoindians was a response to envi-
nronmental conditions that had ceased to exist by the end
of the temporal period assigned to them.

Another definitional note is important here. For the pur-
poses of this project we took all authors and survey-
ors/explorers at their word. If they called a site Paleoind-
ian (or Archaic) in published reports or in the ARMS
file, we accepted that classification. As will be discussed
in the section Problems of Identification and Interpreta-
tion in Chapter 3, there is a great deal of vari-
ability in methods of identification and even in criteria for
site identification within the literature.

The first human inhabitants of the Roswell District were,
as discussed in Chapter 1, adapted to a climate with
greater effective moisture, cooler summers, and greater
equability (that is, less variability from season to season
and from year to year) than the modern climate. A num-
ber of now-extinct animal species, including mammoths
and the huge Bison antiquus, were available for hunting
and scavenging. The vegetation would have been more
lush than it is today owing to the greater effective mois-
ture; eastern New Mexico appears to have been an open
savanna environment dotted with shallow lakes and
stands of pine and spruce. As the Pleistocene came to an
end, the climate became drier, warmer, and more vari-
able; a number of animal species became extinct and the
distribution of plant resources changed radically as vege-
tation zones shifted upward by anywhere from 350 to
1000 m (Van Devender and Spaulding 1979; see note
concerning English and metric units of measurement in
History of Research, Chapter 1). The adaptational re-
sponses of early Holocene people to these changing
environmental conditions (see discussion of the Paleo-
indian Adaptation below) are reflected in the Paleoindian
archeological remains found in the Roswell District to-
day.

The Paleoindian period is one of special significance in
the history of archeology in eastern New Mexico. The
first documented find of remains of extinct animals in as-
sociation with human-manufactured tools in the New
World took place in northeastern New Mexico near Fols-
som in 1926 (Figgins 1927). Subsequent discoveries at
Blackwater Draw in the Clovis/Portales area have meant
that the Roswell District has figured prominently in the
Paleoindian literature (see discussion of the Blackwater
Draw site for citations). This led to a perception of the
eastern plains as the “heartland” of Paleoindian culture in
New Mexico. Stuart and Gauthier (1981:262-263) have
pointed out that as researchers have begun to look for Pa-
leoindian materials in other parts of the state, many more
Paleoindian components have been identified, especially
in northwestern New Mexico (Stuart and Gauthier 1981:Table VI.1). When the numbers of known sites in
northwestern and southeastern New Mexico are taken
into account, however, the relative proportion of
Paleoindian sites in southeastern New Mexico is still
quite high compared with the proportion found in the rest
of the state. Clearly sites of this time period have been
and will continue to be an important research focus in the
Roswell District area.

In general, the identified Paleoindian sites in the Roswell
District are located either on the Llano Estacado in the
eastern third of the district or in the Guadalupe Moun-
tains at its southwestern extreme (Figures 2.1 and 2.2).
Two major studies of Paleoindian remains on the Llano
Estacado (Broilo 1971a; Wendorf and Hester 1975) have
been done using survey data. The information presented
in these studies comes from surface finds of individual
artifacts and surveyed localities containing campsite and
kill site debris.

Broilo (1971a) describes and analyzes Clovis, Folsom,
and Midland projectile points from Blackwater Draw and
other localities in Roosevelt County. A majority of the
points analyzed occurred as isolated finds without
textual association with either Paleoindian campsites
or kill sites (Broilo 1971a:2). Of the 94 projectile points
analyzed by attributes, 32 were identified as Clovis
points, 32 as Folsom, and 30 as Midland. This sample
was obtained from the collection of James Warnica of
Portales, New Mexico, and from a survey carried out by
Clifton and Broilo (Broilo 1971a:31). The sample of
points was described with regard to known material
sources and specific morphological and contextual
attributes.
FIGURE 2.2 LOCATIONS OF PALEOINDIAN COMPONENTS RECORDED IN THE ARMS FILE (NOVEMBER 1985)
Wendorf and Hester (1975) summarize data from 80 Paleoindian sites recorded in the north-central portion of the Llano Estacado. Information about sites was recovered through interviews with amateur archeologists in the area (Wendorf and Hester 1975:247). Using the site data collected in these interviews, the authors classified the sites into functional categories (e.g., campsite, kill site, isolated projectile point) and period(s) of occupation (Llano or Clovis horizon, Folsom horizon, and Parallel- Flaked or post-Folsom horizon).

Two useful general discussions of the Paleoindian period in the Roswell District can be found in Stuart and Gauthier (1981) and Judge (n.d.). Even though Stuart and Gauthier are concerned with the entire state of New Mexico and with all periods of prehistory, they provide general information and describe the broader context within which the Paleoindian occupation of southeastern New Mexico can be understood. Judge (n.d.) provides an excellent overview of the Paleoindian period in the Plains and Southwest, which was written for inclusion in Volume 3 of the Handbook of North American Indians (Smithsonian Institution). The manuscript was prepared in 1974, but unfortunately publication of this volume has been delayed repeatedly. Some of the material in this paper is now out of date, and when a press date is finally set Judge plans to revise the manuscript (personal communication 1985). Despite the outdated sections and the limited availability of the manuscript, however, this paper is still one of the best general sources of information on the Paleoindian period in the Southwest. Among other discussions included in his paper are treatments of the paleoenvironment, projectile point morphology, chronology, and subsistence. Summaries of Judge’s discussions will be presented throughout the rest of this chapter.

Problems Of Identification And Interpretation

There are a number of problems involved in the identification and interpretation of Paleoindian remains. Some of them are methodological and theoretical concerns that are common to all archeological research, while others are specific to or especially critical in Paleoindian studies.

Paleoindian remains are extremely rare. An important question in Paleoindian research is whether this is a true reflection of sparse human occupation in the New World during this time or whether Paleoindian remains are rarely found simply because the land surfaces on which they were deposited subsequently experienced some 7000 to 11,000 years of alluvial andolian deposition and are exposed only in relatively rare erosional situations. While it is certainly true that exposed land surfaces of the required age are relatively rare and that there is an association between Paleoindian remains and eroded landforms, other factors may also help to account for the relative rarity of Paleoindian remains.

As Cordell (1979:17) points out, Paleoindian remains may also seem to be more rare than they actually are because of the small number of artifact types, specifically projectile points and end scrapers, that have been defined as being diagnostic of this period. Many of the large number of “unknown lithic” sites and components in the Roswell District (Chapter 4) could be Paleoindian sites that lack diagnostics because those particular tools were not used in the activities carried out at these locations, or the tools were used at the site but taken away rather than being discarded, or they were used and discarded but subsequently removed from the site by later prehistoric occupants or modern collectors. Another aspect of the problem of identifying Paleoindian sites largely or solely on the basis of projectile points is that, as Stuart and Gauthier (1981:266) point out, in the absence of ethnographic or ethnoarcheological information on the numbers of projectile points used and lost or discarded by hunters using a stone tool technology, it is nearly impossible to infer the intensity of human use of an area based on the number of recovered points.

Another factor that should be considered is the various ways that hunter-gatherers use the landscape. Without a better understanding of the resources that the Paleoindians depended on, the tools they used to acquire and process those resources, and the ways in which they moved about their territories in the course of exploiting those resources, it is difficult to formulate any realistic expectations about the quantity and distribution of the material remains that should be left behind. A frequently overlooked point made by Stuart and Gauthier in their discussion of the scarcity of Paleoindian remains is worth repeating here: even though we know from historical documents that the Mescalero Apache occupation of southern-central and southeastern New Mexico was substantial, the Mescaleros are nearly invisible archeologically. Until we know more about the nature of the Paleoindian adaptation, it will be very difficult to interpret the scarcity of Paleoindian remains in the archeological record.

A second major problem in interpreting Paleoindian archeological remains is common to studies of all preceramic cultures: the use of projectile point types as markers of temporal and social boundaries is problematic. Even though the complex and heated arguments about the best means of formulating typologies and of interpreting typological data that raged throughout the archeological literature in the 1950s and 1960s seem to have all but disappeared from the literature of the late 1970s and 1980s, the problem still remains. Although we have sophisticated statistical techniques for dividing projectile points into groups that are morphologically homogeneous within groups and morphologically distinct between groups, we are not on sound footing when we attempt to assign chronological, social, or functional meaning to those groupings.
THE PALEOINDIAN PERIOD

One line of reasoning that has been used to address this problem argues that basal morphology is closely related to hafting technology and thus to the function of the tool (Judge n.d.:7; Thomas 1978). Since differences in basal morphology are the attributes that are most often used to establish point typologies, serious questions can be raised as to the amount of temporal change or cultural difference represented by typological differences. Cordell (1979:15) points out that there is no reason to assume that similarities of attributes that are probably related to artifact function have temporal implications. She goes on to note that instead it must be demonstrated that the function being monitored is one that can be expected to change through time. The same thing is true of using potentially function–related attributes of projectile points to suggest cultural group affiliation; such a suggestion is only warranted if it can be demonstrated that no differences in hunting strategies and/or prey species existed between cultural groups.

An equation of morphological differences in projectile points with cultural or temporal differences must be supported not only by evidence of similar hunting techniques and prey species but by independent evidence, such as distinct distributional boundaries in the first case and association with dated materials in the second. There is some evidence of north/south spatial segregation of point types in the later Paleoindian complexes. To the extent that the groups involved were preying on the same animal species and using similar hunting techniques, this may indicate some cultural differentiation. The question of the chronological placement of the various Paleoindian projectile point styles is complex and will be discussed in detail in the next section of this chapter.

A third major interpretive problem in studies of Paleoindian materials is shared with all archeological interpretations. This is the complex issue of reoccupation of sites and the effects of such reoccupations on assemblage variability and on our interpretations of site function and settlement systems. Even with painstaking excavation techniques it is difficult and often impossible to determine which features and artifacts in an archeological site result from a single occupation episode; with survey data such determinations are even more difficult. These concerns about our ability to distinguish between single occupations and palimpsests of contiguous and overlapping occupations of a single locale must be taken into consideration in our attempts to address demographic, social organizational, or subsistence– and settlement–related questions.

For example, soil cores taken recently at the Blackwater Draw site indicate that the deposits continue for at least a quarter mile down the wash from the original excavation area (C. V. Haynes, personal communication 1985). Was Blackwater Draw one large encampment where many animals were processed in the course of a single large hunt? Or was this a favorable area used many times by small groups of hunters? Evidence indicates that the latter was true, since projectile points of many different Paleoindian complexes as well as points dating into the Archaic period have been recovered. But we lack techniques for separating these overlapping temporal components into their constituent assemblages, much less for identifying single or multiple uses within a given component. This is far from a trivial question, for it affects not only our interpretations of the Blackwater Draw site itself, but our understanding of changes and continuities within the settlement and subsistence system throughout the Paleoindian period. We need both to understand the ways in which hunter–gatherers used the landscape and to develop methods for interpreting the remains left by hunting–and–gathering groups.

Chronology

The number of available absolute (radiocarbon) dates from Paleoindian sites in the Southwest is extremely small. In her chronology discussion for the Rio Grande Valley cultural resources overview, Cordell (1979:15) reports only 46 Paleoindian period radiocarbon dates for all of the Plains and Southwest. All of the known Paleoindian period radiocarbon dates from the Roswell District area are shown in Table 2.1. This is a retype version of the original table that appeared in the 1979 draft of the Roswell District overview; no new dates were discovered in the course of updating the overview, and the only new radiocarbon samples that were reported to be in the processing stage are from Blackwater Draw (C. V. Haynes, personal communication 1985), which already has more dates than any other Paleoindian site in the region.

Clearly this small number of dates is insufficient to build a chronology for the Paleoindian period, and this is where the problem of assigning temporal meaning to projectile point typologies discussed above comes into play. In order to provide some temporal framework within which to discuss Paleoindian archeological remains, most researchers have depended on sequences of projectile point types (Figure 2.3). One of the most commonly used and straightforward classification systems is that suggested by Judge (n.d.:4–5). His classification uses two criteria: the techniques of thinning employed to reduce the basal portion of the preform and the direction of lateral edge smoothing in the final steps of the manufacturing process.

Judge classifies points into four series: fluted, laterally thinned, constricted base, and indented base. The fluted point series contains points in which basal thinning is achieved through removal of a vertical flute, or multiple flutes, resulting in a biconcave cross section. Abrasion to smooth the edges is parallel to the edges of the basal section of the point. Laterally thinned points have a thin convex or planoconvex cross section resulting from thinning by lateral flaking. Smoothing is parallel to the lateral edges of the point. The constricted base series comprises...
points in which thinning was accomplished by lateral flaking in combination with purposeful tapering to produce a relatively narrow but thickly convex base. Smoothing is parallel to the lateral edges. The indented base points are also thinned by lateral flaking, which produces a cross section ranging from relatively thin convex to a thick diamond shape. Smoothing is perpendicular to the lateral edges of the base; the basal indentation is produced by lateral flaking, perpendicular smoothing, or both. In some cases the basal indentation is very slight.

Judge believes that both criteria for assigning points to these series are related to hafting technology, making this a functional typology. He notes that the term series was chosen to designate these groupings "in an effort to note a similar functional context, yet avoid any developmental or 'evolutionary' implications" (Judge n.d.:4). These series are used both by Judge and by others, however, as if they were temporally sequential rather than functionally distinct. This temporal connotation of these point series is clear from the chart that Judge provides showing how the traditionally recognized Paleoindian point types fit into his series; this chart is reproduced here as Table 2.2. Judge notes that the traditional types are listed in order of the radiocarbon dates where available, and stratigraphic position where not. In all instances, the C-14 dates are based on mean values, and the range of variation of dates is omitted (Judge n.d.:5).

In her discussion of the small number of radiocarbon dates available for the Paleoindian occupation of the Southwest, Cordell (1979:15) notes that suggested chronological orderings of Paleoindian projectile points are based on both technological criteria (such as those used by Judge) and stratigraphic relationships among recovered point types. As Cordell points out, however, there are only two multicomponent Paleoindian sites in the Southwest and Plains which contain "diagnostic" points...Blackwater Draw and Hell Gap...[and] at both sites the stratigraphy is not only complex, but the various Paleoindian points do not always occur within the same locality at each site. The chronological ordering of types, therefore, is based on interpretations of both horizontal and vertical stratigraphy (Cordell 1979:15, emphasis original).

In an attempt to provide a firmer chronological basis for the traditionally suggested order of Paleoindian points, Cordell includes a chart showing the available dates for specific point types, plotted at one standard deviation...
FIGURE 2.3  EXAMPLES OF PALEOINDIAN PROJECTILE POINTS
(Cordell 1979:Fig. 1; reproduced here as Figure 2.4). In reference to this figure Cordell says:

These radiocarbon determinations, except for the temporal priority of Clovis, are insufficient for even minimal interpretation. There is no evidence for the sequential appearance of specific projectile point types (Cordell 1979:13).

### TABLE 2.2

**PALEOINDIAN PROJECTILE POINT TECHNICAL SERIES**

<table>
<thead>
<tr>
<th>Technological Series</th>
<th>Included Points</th>
<th>Mean Radiocarbon Age (Years BP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluted Point Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clovis</td>
<td>Clovis</td>
<td>ca. 11,000</td>
</tr>
<tr>
<td>Folsom</td>
<td>Folsom</td>
<td>ca. 10,500</td>
</tr>
<tr>
<td>Laterally Thinned Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midland</td>
<td>Midland</td>
<td>ca. 10,300</td>
</tr>
<tr>
<td>Plainview Complex</td>
<td>Plainview</td>
<td>ca. 10,000</td>
</tr>
<tr>
<td></td>
<td>Meserve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minesand</td>
<td></td>
</tr>
<tr>
<td>Frederick Complex</td>
<td>Frederick</td>
<td>ca. 9000</td>
</tr>
<tr>
<td></td>
<td>Lusk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jimmy Allen</td>
<td></td>
</tr>
<tr>
<td>Constricted Base Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agate Basin</td>
<td>Agate Basin</td>
<td>ca. 9800</td>
</tr>
<tr>
<td>Hell Gap</td>
<td>Hell Gap</td>
<td>ca. 9800</td>
</tr>
<tr>
<td>Indented Base Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firstview Complex</td>
<td>Firstview</td>
<td>ca. 9500</td>
</tr>
<tr>
<td></td>
<td>San Jon</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Portales</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complex Points</td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
<td>Alberta</td>
<td>ca. 9000</td>
</tr>
<tr>
<td>Cody Complex</td>
<td>Eden</td>
<td>ca. 8500</td>
</tr>
</tbody>
</table>

(After Judge n.d.:5)

In response to this statement by Cordell, Tainter and Gillio (1980:29-33) present a provisional chronological framework for the Paleoindian period that uses weighted averages of the available dates (the weighting being based on the apparent accuracy of the determination as reflected in the size of the standard deviation) and t-tests for significant differences in age to evaluate the possible chronological relationships among the traditional point types. Their results are shown here in Table 2.3, and the t-test scores are shown in Table 2.4. They point out that the number of radiocarbon dates used is very small, so that the weighted averages in Table 2.3 provide a tentative chronology at best. They also note that a lack of significant differences between the dates for two complexes does not mean that the two complexes were wholly contemporaneous any more than the presence of significant differences in age means that there was no overlap between the complexes in question. Nevertheless, the results of Tainter and Gillio's analyses do suggest that the situation is not quite as bleak as Cordell indicates, and that the currently available radiocarbon dates can provide a usable working chronology based on seriation of Paleoindian projectile point complexes. These complexes will be discussed in the Paleoindian Cultural Complexes section below in the order suggested by this working chronology.

One other chronological question that should be discussed here is the so-called pre-Clovis problem. No one knows when human beings first entered the New World. The land bridge by which they are believed to have crossed out of Asia has long since been inundated. The Alaskan and Canadian areas through which these people migrated were in the midst of a major glacial episode, and the aftermath of this glaciation has greatly altered the
FIGURE 2.4 PLOT OF PALEOINDIAN RADIOCARBON DATES
<table>
<thead>
<tr>
<th></th>
<th>Clovis</th>
<th>Folsom</th>
<th>Midland</th>
<th>Plainview</th>
<th>Frederick</th>
<th>Agate Basin</th>
<th>Hell Gap</th>
<th>Firstview</th>
<th>Alberta</th>
<th>Cody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clovis</td>
<td>—</td>
<td>3.5</td>
<td>4.6</td>
<td>9.8</td>
<td>24.4</td>
<td>14.5</td>
<td>6.3</td>
<td>3.4</td>
<td>10.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Folsom</td>
<td>—</td>
<td>—</td>
<td>0.6</td>
<td>2.0</td>
<td>9.5</td>
<td>4.5</td>
<td>1.5</td>
<td>0.9</td>
<td>4.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Midland</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.2</td>
<td>9.4</td>
<td>4.1</td>
<td>1.0</td>
<td>0.4</td>
<td>4.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Plainview</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>11.9</td>
<td>4.0</td>
<td>0.2</td>
<td>0.5</td>
<td>3.8</td>
<td>9.0</td>
</tr>
<tr>
<td>Frederick</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>7.7</td>
<td>8.8</td>
<td>6.5</td>
<td>4.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Agate Basin</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>3.1</td>
<td>2.6</td>
<td>1.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Hell Gap</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.4</td>
<td>3.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Firstview</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2.9</td>
<td>4.7</td>
</tr>
<tr>
<td>Alberta</td>
<td>—</td>
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<td>—</td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.6</td>
</tr>
<tr>
<td>Cody</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Values of $t \geq 1.96$ are significant at the .05 level; values of $t \geq 2.58$ are significant at the .01 level.

(After Tainter and Gillio 1980:Table 3)
landscape through which they passed. We know with some certainty when the Bering land bridge was exposed, and we have some idea of the periods during which an ice-free corridor between the great glacial epicenters of western Canada would have made it possible for the Paleoindians to enter North America, although there is some disagreement about the latter (see Jennings 1978; Judge n.d.:1). But we do not know which of the periodic conjunctions of an exposed bridge and an open corridor permitted people to move into the unglaciated parts of North America.

Various sites throughout North and South America have been suggested as being part of a "pre-projectile point stage" that predates the secure association between fluted points, Pleistocene fauna, and radiocarbon dates in the 11,000 BP range. Some of these sites consist of surface finds that cannot be dated. Other sites have early dates, often in association with now-extinct faunal species, but yielded no artifacts or only items that are classed as "possibly man-made." Lithic assemblages from those sites in this group that have yielded artifacts usually consist of extremely crude and generalized tools. In some cases these crude tools have been recovered from quarry sites, where crudeness cannot be accepted as definite proof of great antiquity.

Given the widespread distribution of Clovis materials in North America, it is not only possible but likely that eventually an indisputably "pre-Clovis" horizon will be identified. But for the moment, Thomas Lynch's assessment of the pre-projectile point stage in South America would appear to be equally applicable to North America.

I conclude that the very number of poor sites that have been put forward, in the context of a total lack of convincing cases, speaks against the notion of preprojectile point man rather than for it. Taken as a whole, the evidence from radiocarbon dating, river terrace successions, stratigraphic associations, and intercontinental climate correlations does not support the presence of man in South America before terminal Pleistocene times (Lynch 1978:460).

The only sites in New Mexico for which pre-Clovis antiquity has been suggested are the Sandia Cave and Lucy sites, in the north-central portion of the state, and Hermit's Cave, which lies within the Roswell District. Sandia Cave, near Albuquerque, has been the subject of a great deal of controversy (see Stevens and Agogino 1975 for a summary and for a detailed bibliography). Since the cave deposits have been largely destroyed and since the excavation records and published materials are both incomplete and contradictory in places, it is unlikely that the question of whether the cave was indeed the site of a very early prehistoric occupation can ever be resolved. The Lucy site, in Torrance County, yielded artifacts like those that have been claimed to be part of the pre-Clovis occupation at Sandia Cave. Unfortunately, this site has been subject to wind erosion and deflation that has produced a mixed assemblage including not only Sandia points but Clovis, Folsom, and Archaic materials as well (Cordell 1979:10), so the claimed antiquity of Sandia points cannot be assessed on the basis of the findings at this site.

Hermit's Cave is located in the Guadalupe Mountains on the middle course of Last Chance Canyon, a tributary of Dark Canyon. The cave is situated on the inner wall of a meander of the canyon in a deposit of Middle Permian limestone. The cave faces east at the top of the talus, 65 ft above the dry streambed. The cave measures 36 ft wide at its opening and 47 ft at its greatest width and has a depth of 24 ft. The shelter ceiling is 11.5 ft high at the center of the cave.

Excavations at the cave were first carried out during the summer of 1938 by the University of Nebraska and the School of American Research in conjunction with the University of New Mexico. Work was done under the general supervision of C. B. Schultz and E. N. Ferdon, Jr. The cave contains three superimposed strata of cultural material, the lowest of which has been identified as a pre-Clovis occupation. The upper strata are associated with Archaic and Puebloan uses of the cave and have not been the subject of any controversy.

The proposed pre-Clovis occupation level ranges in thickness from a few inches to a foot and is located in the center of the cave, lensing out completely near the side and rear cave walls. Organic remains in this level consist of small twigs and leaves mixed with animal feces. This level contains the remains of Pleistocene fauna, charred and uncharred logs near the mouth of the cave, and a hearth near the center of the cave. This hearth consists of an ash lens 3 ft wide and slightly more than 1 inch thick. The organic deposits appear to lens out on top of a sand layer near the south edge of the hearth; the Pleistocene fauna were recovered from a rock-filled stratum below this sand. No artifacts were recovered from the stratum containing the faunal remains.

Subsequent excavations in 1955 by the University of Nebraska and the West Texas Museum of Texas Technical College in Lubbock recovered fossil mammal remains in association with hearths (Schultz and Martin 1970). The date of 12,900 ± 350 shown in Table 2.1 is from one of these hearths; the other dates shown in the table are from charcoal found in association with remains of mammoth and dire wolf (Haynes 1967).

This proposed pre-Clovis occupation, like that of Sandia Cave, has been disputed. Ferdon, the original excavator, stopped short of inferring a direct association between the hearth and the Pleistocene fauna (Ferdon 1946:6), and Haynes (1967:278) has questioned the validity of the association of the dates with human occupation of the cave. Schultz and Martin (1970), however, are very definite about the association among the dates, human use of the
cave, and the presence of the Pleistocene fauna. The best
course would seem to be to count Hermit’s Cave among
those possible but not undisputed cases of very early hu-
man occupation of the New World.

**Paleoindian Cultural Complexes Of The Roswell District**

The following discussion of the Paleoindian remains from
the Roswell District relies on data from excavated or
thoroughly recorded sites. Many of the known Paleoin-
dian projectile points were recovered as isolated finds,
however, or are in private collections for which no
provenience data are available.

**Clovis**

Clovis is the earliest archeological complex for which we
have clear evidence in the Roswell District; it is defined
on the basis of an assemblage of chipped stone tools that
are typically derived from large primary flakes struck
from prepared cores (Lent 1982:33). The major diagnos-
tic artifact is a bifacially worked lanceolate projectile
point with a concave base (Figure 2.3). Ideally, basal
thinning for these points was accomplished by removing
a single long flake from each face of the point, begin-
ing at a prepared platform on the base and running toward
the tip of the point along its midline. Generally these points
are quite large (average length = 7 cm). Other common
artifact types in Clovis assemblages are transverse end
scrapers made on flakes, side scrapers with converging
edges, “ear form” side scrapers, bifacially flaked knives,
gravers, perforators, utilized flakes, and hammerstones
(Cordell 1979:11; Tainter and Gillio 1980:27). Recovered
faunal remains from Clovis sites include mammoth, bi-
son, horse, tapir, camel, cervids, canids, antelope, and
jackrabbits (Cordell 1979:11). Although Clovis people
have traditionally been viewed as specialized mammoth
hunters, Judge (n.d.:32–34) and others have suggested
that such a focal economy is unlikely, given the diversity
of most late Pleistocene environments. This topic will be
discussed in greater detail in the section on Paleoindian
subsistence below.

Major reported Clovis period sites from the Roswell Dis-
trict are Blackwater Draw Locality No. 1, Blackwater
Draw—El Llano, and Burnet Cave. Beck and Schermer
(1981) note that Clovis materials were recovered from the
McCullum site near Blackwater Draw, but apparently no
published descriptions are available.

**Blackwater Draw Locality No. 1.** Research at
Blackwater Draw began with investigations by E. B.
Howard (1935b) in 1932 and 1933 at an open gravel pit
situated on an old lake bed 14 mi south of Clovis and 7
mi north of Portales. Research was continued at the
gravel pit by Cotter (1937, 1938) in 1936 and by the
Texas Memorial Museum, University of Texas at Austin,
in 1949 and 1950 (Sellards 1952). Hester (1972) presents
detailed description of excavations conducted between
1932 and 1962 and describes collections made during that
time. Because gravel mining operations were continuing
at Blackwater Draw, portions of the gravel pit were pur-
buchased by Eastern New Mexico University to preserve
parts of the site for future research. An M. A. thesis from
Eastern New Mexico University (Boldurian 1981) pro-
vides an excellent overview of the lithics recovered from
Blackwater Draw, although the collections that were ana-
alyzed were generally unprovenienced.

The artifacts from the Clovis levels at Blackwater Draw
represent the largest Clovis assemblage studied to date.
Hester (1972) has characterized the Clovis lithic assem-
blage as one of stone implements manufactured from
primary flakes of fine-grained cherts. The presence of a
core-blade industry is inferred because most of the flakes
used in manufacturing these tools were struck from pre-
pared cores (Hester 1972). Edges of the finished tools
show evidence of both percussion flaking and pressure
retouch. Flakes are the most common artifacts in the
Clovis assemblage (42.6% of the total artifacts) and cores
are the least common (0.4%). Hester suggests that either
cores were highly curated (retained until they were used
up) among the Clovis inhabitants of the site or flakes
were struck off at quarries and transported to the loca-
tions where they were used while the cores were left be-
hind.

The remains of three mammoths and other megafauna
were found in the Clovis level of the site (Hester 1967:Table 2); these remains were directly associated
with ten lithic and nine bone artifacts (Judge n.d.).

Hester (1972:164) notes that the matrix of the stratum
in which the Clovis artifacts and the faunal remains appear
may be older than the artifacts themselves. The artifacts
and faunal remains, it is suggested, may have sunk into
the fluidized sand from the stratum surface (Hester
1972:164). See Table 2.1 for information about the ra-
diocarbon dates from this level at Blackwater Draw.

**Blackwater Draw—El Llano.** During 1962 and 1963
excavations were conducted on a redeposited Clovis
campsite at Blackwater Draw by the El Llano Archaeo-
logical Society of Portales, under the direction of James
M. Warnica, and by the Museum of New Mexico, under
the direction of James J. Hester. This site is located along
the west and northwest edges of a pond that was a
permanent waterhole during the period from 15,000 to
6000 BP (Hester 1972). The excavators hypothesized that
this waterhole was visited periodically by Paleoindian
hunters in search of game. Excavations in a bone bed
near the northwest margin of the pond produced the arti-
culated remains of four mammoths and one bison along
with scattered remains of mammoth, horse, camel, ant-
aploge, deer, wolf, peccary, turtle, rodents, and birds.

Hester (1972) believes that at least three of the mam-
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moths were butchered. Artifacts representing campsites debris were found throughout the excavation area. A large portion of the campsites area adjacent to the mammoth kill was tested by the Museum of New Mexico. No artifacts were located in situ, but the excavation exposed the edge of a tributary arroyo running through the campsites area and into the pond. The interpretation offered is that the arroyo was responsible for the distribution of campsites debris in the mammoth bone bed. Thus, artifacts present in the bone bed may not be associated with butchering activities and may instead represent material redeposited from the nearby campsites.

The bone bed yielded 166 artifacts (Warnica 1966:349); many of them were found lying on edge or on end, which supports the suggestion of deposition by rapidly moving water. Both large and small Clovis points were recovered. Other tools in the Clovis level are primarily bifacial and were manufactured from blades and primary flakes (Warnica 1966:335). One recovered stone shows evidence of grinding.

No radiocarbon dated material was recovered.

Burnet Cave. Burnet Cave is located west of Carlsbad on South Rocky Arroyo. The cave mouth is some 70 ft above the dry creek bed. Excavations were first undertaken by E. B. Howard of the University Museum of Philadelphia in 1930 and 1931. The cave yielded a single Clovis point in apparent association with bison bones, the remains of a "musk ox-like" animal, and charcoal. Judge (n.d.) notes that the cave deposits show evidence of considerable mixing so that the association of the point with particular faunal remains is uncertain.

The cave deposits include the remains of 21 four-horned antelope, 16 bison, 1 camel, and 62 horses (Hester 1967:Table 2). It is impossible to be certain without more detailed information about the faunal remains, but this large collection of species and individuals from a cave with limited and difficult access suggests the possibility that the cave served as a carnivore lair. This fact, in conjunction with the noted mixing of the deposits, makes it difficult to interpret the presence or determine the associations of the single projectile point.

The single radiocarbon date from this site listed in Table 2.1 (7432 ± 300 BP) is from the deepest deposits of charcoal and ash in the cave, materials that were recovered at a slightly lower level than the single projectile point found by Howard in 1937.

Folsom and Midland

The temporal relationship between the Folsom and Midland projectile point complexes is uncertain: as Table 2.4 shows, there is no significant difference between the two in terms of available radiocarbon dates. Folsom and Midland points are quite similar morphologically (Figure 2.3), but Judge (1970) argues convincingly that they were produced using very different manufacturing steps. Folsom points are smaller than Clovis points (average length = 5 cm), and the former points often exhibit remarkable craftsmanship both in the fluting process and in the fine pressure retouch used to finish the edges. Midland points are similar to Folsom in shape, size, and finishing, but basal thinning was accomplished by lateral flaking rather than by fluting. Folsom assemblages include a variety of end scrapers, perforators, knives, and denticulates, and fewer side scrapers than Clovis assemblages (Cordell 1979:12; Tainter and Gillio 1980:28). Midland assemblages appear to contain a similar variety of tools. The most common species in Folsom and Midland faunal assemblages is Bison antiquus, but elk, antelope, and rabbits are also reported.

Major reported Folsom sites in the Roswell District are Blackwater Draw Locality No. 1, Frank’s Folsom Campsite, and the Elida site. In addition, Beck and Schermer (1981) indicate that Folsom points were recovered at the otherwise unreported McCullum site near Blackwater Draw, and one point identified as Folsom was recovered from the San Jon site (Roberts 1942).

Blackwater Draw Locality No. 1. Eleven lithic implements associated with at least ten bison have been recovered from the Folsom levels at Blackwater Draw (Hester 1967:Table 2). In addition, Hester (1972) defined 23 stone tool types for the Folsom complex on the basis of material recovered from within the pond and on the pond margins. He notes that flake scrapers, flake knives, and projectile points occur relatively more frequently in the Folsom levels than in the Clovis levels, while core-struck blades (implements with both the tip and the base missing) and bone implements are less common in the Folsom levels (Hester 1972). Most tools in this Folsom complex assemblage were manufactured on primary flakes struck from prepared cores.

Table 2.1 shows the radiocarbon dates available for Folsom complex materials from Blackwater Draw.

Frank’s Folsom Campsite. Stanford and Broilo (1981) discuss lithic materials recovered by Broilo over a 10-year period from a site in a dune blowout across Blackwater Draw from the Clovis excavations. The collection comprises 3613 items, mostly debitage. The site yielded Folsom and Midland points along with unidentified Late Plains and Archaic point types and one late prehistoric knife. Stanford and Broilo (1981) describe the collection as containing a wide variety of tool types but a very narrow range of high-quality cryptocrystalline lithic material types. They also note that a number of the projectile points exhibit evidence of resharpening.

Elida. The Elida site is a Folsom campsite (Hester 1962; Judge n.d.) located in a blowout in the center of an active dune field 27 mi south–southwest of Portales, New Mexico. The recovered artifacts were originally deposited in two fossil dune layers; subsequently they were rede-
posited on a nearby caliche formation by wind erosion (Hester 1962). The age of the dune layers has not been determined, but one of them contains fossilized mammoth teeth.

The 573 artifacts recovered in surface collections from this site include a high proportion of utilized and unutilized flakes along with fluted points, channel flakes from the manufacture of such points, knives, gravers, and cores. Material types include local cherts; chert from Edwards Plateau; Tecovas jasper from outcrops near Quitaque, Texas; and quartzite from outcrops near Fort Sumner and Tucumcari.

**Late Paleoindian**

The temporal placements for the later Paleoindian complexes are even less certain than those of the earlier ones, and there are suggestions that many parts of the New Mexico were abandoned during the period between Folsom and the latest Paleoindian complex (Cody). In the Roswell District there is evidence for occupation at least through the period dominated by the Plainview complex.

**Plainview.** The Plainview complex is identified on the basis of laterally thinned Plainview, Milnesand, and Meserve points (Figure 2.3). Judge (n.d.:20) suggests that Plainview and Milnesand points are simply variants of a single type and that Meserve points are probably re-worked or resharpened Plainview points. Associated artifacts include knives, side and end scrapers, and drills. By far the dominant faunal species associated with this complex is bison, which often occurs in large numbers. Plainview complex sites give the earliest clear evidence of mass kills of bison (Judge n.d.:21–22).

Reported Plainview complex materials in the Roswell District include those from the Milnesand type site along with points recovered during a powerline survey (Wilson 1984) and a private research project (Anderson n.d.). In addition, Paul Katz (1978) reports Plainview and Meserve components from sites in portions of the Guadalupe Mountains that are outside the district.

**Milnesand.** The Milnesand site is located 25 mi from the western edge of the Llano Estacado on the southern edge of Sulphur Draw. This drainage was probably a perennial stream during the Pleistocene, and at one time it was a tributary of the Colorado River of Texas (Warnica and Williamson 1968:16). Sand dunes and blowout areas cover the site. Excavations carried out during the summer of 1953 by the Texas Memorial Museum under the direction of E. H. Sellards uncovered a bone bed measuring 800 sq ft and containing portions of at least 27 bison. Sellards (1955) recovered 28 tools during the excavation, 23 of which were projectile points that he described as a new type—Milnesand. Wheat (1972) notes that these points resemble San Jon, Plainview, Agate Basin, and Firstview points. Point assemblages similar to that recovered at Milnesand are reported from sites on the Southern and Central Plains—the Scottsbluff Bison Quarry in Nebraska and the Lone–Wolf Creek, Bonfire Shelter, and Plainview sites in Texas (Wheat 1972). The points illustrated by Sellards (1955:Figs. 98, 99) have a “stubby” shape and appear to have been resharpened.

During a 1965 reconnaissance of the Milnesand site Warnica and Williamson (1968) noted the presence of a hearth containing charred bison bones. They also collected 125 artifacts from the site surface, bringing the total artifact assemblage to 153 items, 81 of which are whole or fragmentary projectile points. Other artifacts in this collection include knives, side and end scrapers, a drill fragment, gravers, and flakes.

**Materials Recorded During Surveys.** Anderson (n.d.) notes the presence of a Meserve point on a site in the Rio Bonito drainage in Lincoln County. There is very little documentation available for this site; the nature of the associated assemblage is unknown. Wilson (1984) reports a possible Plainview component on a site at the north end of the Guadalupe Mountains in Chaves County. This site also contains middle and late Archaic points and a flake assemblage exhibiting a great deal of retouch and utilization.

**The Frederick Complex.** The Frederick complex, which includes the diagnostic laterally thinned Frederick, Lusk, and Jimmy Allen points (Figure 2.3), has not been identified in the Roswell District except for materials from the Portales complex level at Blackwater Draw that Agogino and Rovner (1969) classify as Frederick and Judge (n.d.) classifies as Firstview. Most of the known sites are in the north–central High Plains, although Frederick complex materials have also been identified at the Levi site near Austin, Texas (Alexander 1963).

**Agate Basin and Hell Gap.** As with artifacts from the Frederick complex, materials from the Paleoindian complexes in Judge’s constricted base series—the Agate Basin and Hell Gap (Figure 2.3)—are extremely rare in the Roswell District. Agogino and Rovner (1969) identified an Agate Basin assemblage in the Portales level at Blackwater Draw, but this assemblage consisted only of butchering tools, which were recovered in situ with bison remains. Beck and Schenmer (1981) mention an Agate Basin point or points from the otherwise unreported McCullum site near Blackwater Draw. In general, the distribution of the Agate Basin and Hell Gap complexes seems to be largely restricted to the Northern Plains.

**Firstview, Alberta, and Cody.** Of the Paleoindian complexes in Judge’s indented base series—Firstview, Alberta, and Cody—only the first and last are definitely represented in the Roswell District. Alberta (Figure 2.3), like Agate Basin and Hell Gap, appears to be limited to the Northern Plains.

The diagnostic points of the Firstview complex are the
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Firstview point and the San Jon point (Figure 2.3), both of which exhibit lateral smoothing that is perpendicular to the axis of the point. The indentation of the base on these points is almost always a result of abrasion rather than flaking. The Firstview complex sites contain very large numbers of bison, again implying mass kill techniques and exploitation of large aggregates of the animals.

Judge (n.d.), following Wheat (1972), classifies as Firstview all of the material from Blackwater Draw defined by Sellards (1952) as diagnostic of the Portales complex. Wheat notes that most of the points recovered by Sellards that resemble Eden, Scottsbluff, and Plainview are within the range of variation for his Firstview and Roberts’s (1942) San Jon types. Judge supports this classification because these points exhibit distinctive basal indentations formed by abrading. Agogino and Rovner (1969) identify materials excavated from the Portales complex level by the Paleoindian Institute of Eastern New Mexico University as Agate Basin (the butchering assemblage described above), Frederick, and Cody, but again Judge (n.d.) classifies these artifacts as Firstview complex materials.

See Table 2.1 for information on radiocarbon dates associated with the Portales complex at Blackwater Draw.

The other Roswell District site classified by Judge (n.d.) as belonging to the Firstview complex is the San Jon type site. The San Jon site is situated on the edge of the 700 ft high escarpment that forms the northern boundary of the Llano Estacado. Investigations at the site were first carried out by a Bureau of American Ethnology–Smithsonian Institution expedition headed by Frank H. H. Roberts, Jr., in 1941. Roberts (1942) reports the excavation of five levels at the San Jon site ranging in age from Paleoindian to Puebloan (Chupadero Black-on-white ceramics were recovered from the upper levels), but unfortunately the strata from which the described artifacts were excavated are not precisely identified.

Paleoindian points identified as San Jon, Folsom, and Scottsbluff I were recovered from a stratum that also yielded the remains of an extinct species of bison. Roberts (1942) notes that articulated bison leg bones were found upright in the bog deposits and suggests that the animals became mired in the bog and were then killed by the Paleoindians.

The Cody complex, the final Paleoindian complex in the Southwest, is almost unknown in the Roswell District, at least in terms of the beautiful and distinctive Eden and Scottsbluff points and the Cody knives that serve as diagnostics of this complex (Figure 2.3). As noted above, points resembling Eden and Scottsbluff were recovered from the Portales level at Blackwater Draw, but Wheat (1972:173) classifies most of them as Firstview, and Judge (n.d.) supports Wheat’s classifications. A point identified as Scottsbluff I was recovered from the San Jon site (Roberts 1942), but this artifact, too, may be within the range of the Firstview complex point types. The only Cody materials reported in the recent literature are two basal point fragments from the Abo project area north of Roswell described by Kemrer and Kearns (1984) and a fragmentary Eden point from a site near Big Salt Lake on the Llano Estacado in Roosevelt County (Lent 1982; Winter 1983).

The Paleoindian Adaptation

Our understanding of the nature of the Paleoindian adaptation is limited by our inability to characterize sites as belonging to this period unless they contain one or more of a very small number of “diagnostic” tools. Since nearly all of these diagnostics are projectile points or end scrapers, which were presumably associated with the hunting portion of the Paleoindian economy, there is at present no consensus concerning the means to identify assemblages containing only those tools associated with the non–hunting–related activities of these people. We do not know how important plant food resources were in the Paleoindian diet (Cordell 1979; Judge n.d.), but from a global perspective it has been proposed that in general the degree of dependence on hunting is inversely proportional to the length of the growing season (Binford 1980). That is, in warm climates plant foods constitute the greatest portion of the diet, and only in climates with very long winters does animal protein become the main food item. Given this suggestion, it is possible that many Paleoindian sites were not related to hunting; if these sites do not contain hunting–related items as a result of loss or curation of those artifacts, they will be currently unidentifiable as Paleoindian sites.

Until better identification criteria are developed, our interpretations of subsistence and settlement patterns, even our broader view of culture history, may well be distorted. For example, Tainter and Gillio (1980) point out that the perception that west–central New Mexico was abandoned by the Paleoindians between Folsom and Cody times may actually be a result of a change in the subsistence practices.

It is possible...that even if reduced moisture in the period led to reduced opportunities for hunting megafauna, other elements of a subsistence base would have remained intact, if not abundant. If so, then sizeable populations may have remained in the area following a subsistence strategy that did not concentrate on megafauna, and hence not producing the distinctive projectile points so consistently associated with megafaunal exploitation (Tainter and Gillio 1980:28).

The other major limitation on our understanding of the Paleoindian adaptation has to do with preservation. Sites of later periods often include dated assemblages from rockshelters or well–preserved architectural contexts, but our knowledge of the Paleoindians is based almost en-
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tirely on poorly preserved sites yielding only stone tools and faunal remains. We assume that the inhabitants had tools of wood, baskets, and clothing and blanket made of skins and leather, and that they built temporary shelters and prepared and ate a wide range of foods. Most likely they had ornaments, religious objects, and decorated items—presumably their material culture inventory was as varied and abundant as those of later prehistoric and ethnographically known human groups. All that we have left, however, are items of stone and bone.

In part the inventory of material remains on Paleoindian sites is limited because most of the known sites are in open settings where perishable items have long since disintegrated. In addition, many of the known Paleoindian sites have been subject to natural disturbances. Materials at Blackwater Draw, for example, have been redeposited by streamflow, items at the Lucy site have been mixed by deflation, and cave deposits are often badly churned by rodents. All of these forces serve both to destroy perishable artifacts and features and to erase structural relationships among cultural remains that might have yielded information on the nature of the Paleoindian adaptation. The character of the archaeological record of Paleoindian adaptation thus poses several challenges relative to identification and analysis of subsistence and settlement organization of those early populations.

Subsistence

As noted above, our understanding of Paleoindian subsistence is limited by our lack of knowledge about the non–hunting aspects of their economy. To a certain extent speculation concerning the organization of Paleoindian subsistence behavior has been biased by our assumption that big–game hunting was a predominant, if not focal, subsistence activity. For example, since Judge and Dawson (Judge 1973; Judge and Dawson 1972) first described the relationship between Paleoindian sites and various features of the landscape, the frequent proximity of sites to playas that they noted has most often been discussed in terms of hunting strategies, under the assumption that the water available in playas would have attracted game animals. But as Laumbach (1979:44) points out in a very interesting discussion of human use of playa environments, the playa bottoms would also have been rich in plant resources.

In her overview for the Middle Rio Grande Valley, Cordell (1979) presents an argument concerning the "appropriate" subsistence strategy for early Paleoindian groups, given the greater equability of the late Pleistocene environment. She notes that under conditions of greater equability there is no marked periodicity of resources. For this reason, plant food for animals would be generally available throughout the year and seasonal congregations of animals should not occur [other than for reasons of procreation]....[G]iven conditions of high climatic equability...the appropriate subsistence strategy for man would be a generalist strategy....[P]lant foods and small animals should have played an important role in Clovis subsistence (Cordell 1979:20).

Another argument against a big–game–hunting subsistence focus among both Clovis and Folsom populations is the relatively solitary and highly mobile adaptations suggested for the megafauna of these periods. These characteristics would have made hunting highly uncertain and would have made dependence on stored meat for overwintering very difficult. Reher (1977:21) suggests that a certain "critical number" of animals must be available in a gathering area before a successful mass kill of the size needed to provide a winter's supply of meat can be made.

Tainter and Gillio (1980:95) agree with this assessment, pointing out that it is unknown for hunter–gatherers in regions outside the Arctic to concentrate on a single faunal species or to base their diet largely on animal protein. They offer another interesting argument against the assumption that Paleoindians practiced a focal economy based on hunting of large animals. They note (Tainter and Gillio 1980:40) the very small number of known Paleoindian kill sites and argue that even taking into account the problems of rare surface exposure and low visibility, we would expect many more kill sites if big–game hunting were the mainstay of the Paleoindian diet.

Judge (n.d.) is one of the main proponents of the notion that Paleoindians were big–game hunters who derived a major portion of their subsistence from these activities. He does, however, argue convincingly against the notion that Clovis people were "mammoth hunters" (Judge n.d.:33–34), suggesting that not only does the variety of prey species found in Clovis sites imply a generalized rather than a focal hunting economy, but also that most of the recorded mammoth "kill" sites probably represent scavenging of incapacitated or already dead animals. He goes on to note that as the relative proportion of grasslands increased at the end of the Pleistocene, habitat carrying capacities relative to broad spectrum adaptations would have decreased, while at the same time faunal abundance...would have increased. Under these conditions, a transition to a low diversity habitat, focusing on a variety of megafaunal species, could be anticipated (Judge n.d.:34).

He concludes by suggesting that the Clovis subsistence adaptation was transitional between the generalized, broad–spectrum economy that he hypothesizes for the earliest human occupants of the New World and the focal, bison–based subsistence strategies of later Paleoindian groups.
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In his interpretation of Folsom subsistence, Judge argues that the “mosaic vegetational pattern interpreted for Folsom times would suggest that bison might be dispersed in small herds, rather than aggregated in large herds” (Judge n.d.:34). He suggests that the Folsom adaptation consisted of reliance on dispersed bison herds, an adaptation that would require great mobility and that would explain the modest number of bison found in Folsom kill sites (mean = 15.25, maximum = 23).

By contrast, Judge argues, the much larger numbers of bison found in post-Folsom Paleoindian kill sites (mean = 98.25) indicate an adaptation to the aggregated bison herds that resulted when the pine savannas were gradually replaced by open grasslands (Judge n.d.:34). He goes on to note that kill sites associated with the later constricted and indented base projectile point series contain even higher numbers of bison (mean = 128.8), which he interprets as evidence of an increasingly focal economy based on highly aggregated and migratory herds of bison.

Judge (n.d.) hints at a possible functional classification of Paleoindian projectile points in two places in his paper. The first occurs in his discussion of his criteria for classification.

I am assuming that basal morphology (including thickness) of a point is closely related to hafting technology, and is therefore a sensitive indicator of the function of the point as both a weapon and a utility implement (Judge n.d.:7).

This suggestion is pursued again in his summary discussion of possible changes in hunting strategies from the Folsom through the terminal Paleoindian periods.

Viewed as an association between generalized (combined knife/piercing functions) projectile points represented by the Fluted and Laterally Thinned series, and points specialized for piercing functions (Constricted and Indented Base series), it can be seen that distinctions between the subsistence strategies may be reflected in lithic technology as well (Judge n.d.:61–62).

Although Judge does not amplify or warrant these suggestions any further, Stuart and Gauthier (1981) focus on Judge’s distinction between generalized projectile points (the fluted and laterally thinned series) and specialized points (the constricted and indented base series) as if the arguments relating projectile point form to function have been established, and they amplify the argument.

The evolutionary trajectory for the Paleo-Indian period in point technology is from generalized and nondivergent (Clovis) to two distinct and divergent lines of generalized and specialized types. Whether these represent populations with differing subsistence strategies (as Judge implies) or different aspects of a total assemblage, is an important question that should be addressed (Stuart and Gauthier 1981:29).

Although their efforts to identify pairs of specialized and generalized points covering the time span between Folsom and Cody seem to be only marginally successful, the question that Stuart and Gauthier have outlined is an important one. If post-Folsom bison herds were indeed highly aggregated and were migratory, the process of bison hunting would have to have become rather specialized. As the “window of availability” for a prey species decreases, the process of harvesting and processing the animals must become increasingly efficient if the required number of animals are to be procured in the time available. The appearance of such mass kill techniques as driving the animals over cliffs is certainly evidence of a new approach to bison acquisition—an approach that requires organization and efficiency not only in hunting but in processing as well.

The appearance of specialized projectile points for use only in bison hunting could then be seen as another reflection of the need for increased efficiency in bison procurement. When hunting was a more generalized process based on an encounter strategy, each hunter would have needed to carry with him an all-purpose tool kit designed to enable him to bring down and field dress whatever game animals he happened to encounter. When bison hunting became a specialized, carefully planned and prepared for event, however, the hunters would have needed only weapons designed to dispatch the injured or cornered animals quickly and with as little danger to the hunters as possible. Butchering would have been carried out by teams with other specialized tool kits.

The questions of just how focused on bison the later Paleoindian subsistence systems were, whether formal variation in projectile points can be equated with generalized (multifunctional) or specialized usage, and whether such generalized and specialized projectile points can be considered to represent different subsistence strategies or different portions of a single strategy are all essentially unanswered at present and clearly point to directions for future research.

What is needed before we can assess the degree of dependence of the Paleoindians on bison is more information on the ecology of the free-ranging buffalo herds (e.g., Dillehay 1974; Lynott 1979; Moodie and Ray 1976) as well as information about utilization of migratory animals by people restricted to foot or dog transport. To assess their dependence on hunting in general, we need to find a means of identifying the non–hunting-related components of the settlement system—a process that will require investment in the development of models of hunting-and-gathering settlement organization and assemblage content against which the archeological record can be examined. The possibility of finding sites of the requisite age in settings where ethnobotanical remains
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will be preserved should not be underemphasized in this process.

Site Typology

Through examination of faunal and lithic assemblages of post-Clovis sites in the Southwest and Plains regions, Judge (n.d.:10–12) created a functional classification of these sites. His categories—campsite, kill site, processing site, and quarry site—were defined on the basis of the frequency of total lithic artifacts, projectile points and point fragments, and scraping tools and the character of the faunal remains. He suggests that projectile points and scraping tools were the most sensitive indicators of variations in site function (Table 2.5).

Camp sites yielded a low frequency of projectile points and a high frequency of scraping tools, while kill sites were almost exactly the reverse. Additional variables which proved useful were 1) the mean number of artifacts per site, 2) projectile point condition (complete vs. base, etc.), and 3) the presence of faunal remains (Judge n.d.:10).

The functions that Judge assigns to these site types are campsites—maintenance activities for future needs (e.g., repair and manufacture of weapons, tools, and clothing); kill sites—primary skinning and butchering ("except for minimal tool re-sharpening, the activities are almost exclusively extractive in nature"; Judge n.d.:11); processing sites—intensive butchering, and processing of meat, bone, and hides; and quarry sites—"preparation of blanks and preforms for transport, and the manufacture or renewal of specific implements and weapons" (Judge n.d.:11).

Clearly Judge’s typology deals exclusively with the hunting–associated components of the Paleoindian settlement system and in that sense is incomplete. Likewise, many things other than site function can influence the relative frequencies of tools and faunal remains on a site. Examples include multiple reoccupations, curating of tools, scavenging of usable tools by subsequent site occupants, postoccupational disturbance by natural forces, and variable degrees of preservation. Nonetheless, this typology does provide a relatively replicable means of classifying and comparing Paleoindian sites on a general level across time and space.

One of Judge’s more interesting observations is that while most Folsom–Midland and later sites could be classified successfully using this typology, Clovis sites were not amenable to classification. This difference between Clovis and later Paleoindian systems is a strong indication of differences in both subsistence strategies and the organization of mobility (see discussion of this topic in the next section of this chapter).

A second functional typology has recently been devised for all prehistoric sites in the Roswell District by Kemrer and Kears (1984:70–78). Their four major site types were defined

based on complexity and on the presence or absence of features and specific artifact classes. These major categories are further divided into a series of subtypes based on the occurrence of specific artifact sets (Kemrer and Kears 1984:70).

This typology defines multiple use locales as large, palimpsest sites (overlapping deposits from multiple re-

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TABLE 2.5

PALEOINDIAN SITE TYPOLOGY

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Lithic Artifacts</th>
<th>Projectile Points</th>
<th>Projectile Point Bases</th>
<th>Scrapers</th>
<th>Faunal Remains</th>
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<td>high</td>
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<td>high</td>
</tr>
<tr>
<td>Quarry Sites</td>
<td>low</td>
<td>low</td>
<td>•••</td>
<td>•••</td>
<td>•••</td>
</tr>
</tbody>
</table>

*High frequency of reusable points
**Low frequency of reusable points
***High frequency of large bifaces, blanks, preforms

(After Judge n.d.)
occupations) in locations providing access to a diversity of resources. Assemblage diversity is high, and there is a general scatter of cultural debris throughout the sites. Temporary camps constitute the most diverse, most common class of sites. Sites in this category are diverse both in size and content. Lithic procurement and workshop locales are sites with immediate access to lithic materials suitable for the production of flaked stone tools. Hearth, ceramics, and milling equipment are generally absent. The limited function activity locale category comprises sites resulting from a variety of specific functions. Sites in this category tend to be small; the artifact assemblages exhibit low internal diversity.

All four general types are potentially applicable to Paleoindian occupation of the Abo study area northeast of Roswell but only two sites identified as temporary camps were found to date to the Paleoindian period. One of these, a single-component late Paleoindian site (LA 45468), is discussed in the Late Paleoindian site descriptions above. The other is a site exhibiting multiple reuses that yielded a single point that may be late Paleoindian but might be early Archaic. Other sites in the Abo project area may be of Paleoindian age as well, but are simply lacking in diagnostic artifacts. If means could be found to identify these early sites, the site typology devised by Kemrer and Kearns could be very useful in studying the whole Paleoindian subsistence and settlement system. Unlike Judge's typology, the Kemrer and Kearns typology does not depend on criteria that are limited to just those aspects of the system related to hunting.

The most important thing to bear in mind when evaluating these typologies from the Roswell District literature, or any typologies derived in a similar fashion, is that they are morphological typologies. That is, they are empirical generalizations based on observed patterns of artifact assemblages. Although "functions" are often assigned to these empirically derived types, few warranting arguments are offered for these functional interpretations. Morphological typologies are useful for describing the distribution and patterning of archeological remains, but explanation of these patterns will require truly functional typologies—typologies based on a thorough understanding of how hunters and gatherers use the land and how they create, maintain, and discard items of their material culture.

Organization and Scale of Mobility

In discussing Paleoindian subsistence and mobility strategies, Stuart and Gauthier (1981:264) suggest that currently, archeological evidence for Paleoindian use of upland areas in the Roswell District (and in the Southwest in general) is limited. Spoorl (1983), in a review of the prehistory of Lincoln National Forest, notes that with the exception of rockshelters and caves in the 5000–6000 ft elevation range, Paleoindian sites in the forest seem to have clustered in the basin and at its edges. Likewise, Roney (1985:35) notes that "present evidence suggests that the Paleo-Indian use of the Guadalupe Mountains was minimal."

Given the ample evidence for Archaic period use of higher elevations (Chapter 3), a true absence of Paleoindian occupation in these areas would imply a major shift in adaptation, settlement pattern, and mobility strategies between the two periods. The small amount of evidence that we have, however, suggests that the reverse is true. In a study of the prehistory of the Guadalupe Mountains, Paul Katz (1978) notes that the few Paleoindian components found tend to be part of multiple reoccupations of the same site locations throughout the Paleoindian, Archaic, and Ceramic periods. Katz views these multiple reoccupations as indicating repetitive subsistence activities throughout prehistory (P. Katz 1978:61). There is also evidence of long-term patterns of similar land-use practices in low-elevation settings. Kemrer and Kearns (1984) suggest that there is little evidence of different spatial patterning in use of the Abo study area just north of Roswell throughout the entire prehistoric period.

It would appear, therefore, that our knowledge of Paleoindian use of higher elevations may, like our understanding of many other aspects of Paleoindian settlement and subsistence, be limited by the recognition criteria currently available for sites of this period. If the activities involving use of the distinctive projectile points were largely limited to low-elevation settings, most high-elevation Paleoindian sites would remain unrecognized under current identification criteria.

In reference to Paleoindian settlement patterns in lowland settings, Wendorf and Hester (1975) summarize data from 80 sites of this period in the north-central portion of the Llano Estacado. Information about these sites was recovered through interviews with amateur archeologists in the area. These data are used by Wendorf and Hester to formulate several generalizations about site location.

Campsites tend to occur on ridges, dunes or hills which overlook either a stream channel or a pond, at a distance of several hundred yards to a mile. Kull sites tend to occur either at the edge of former ponds or stream channels. A third site situation was present on eroded slopes on the edge of the eastern escarpment of the Llano (Wendorf and Hester 1975:249).

Judge (1973, n.d.) reaches the same conclusion about the primacy of water sources as a factor conditioning Pale-
ROSWELL OVERVIEW

Paleoindian site location and offers an explanation for the importance of this environmental variable.

[Water sources, such as playas, streams, and springs, were in all probability critical variables in the determination of Paleoindian settlement patterns. The reason for this was that the water sources were being utilized by megafauna, and sites were located to take full advantage of the animals' dependence on water. As the character of the water sources changes through time and space due to variations in climate and topography, the Paleoindian settlement pattern was altered accordingly to maintain this effective adaptation (Judge n.d.:31).

Tainter and Gillio (1980:38) agree with Judge's view that water was the critical variable in determining the organization of Paleoindian mobility. Paul Katz (1978:20), on the other hand, suggests that the currently available evidence concerning Paleoindian occupation in high-elevation settings indicates that water was a less critical factor than sheltered situation and maximum exposure to sunlight.

It is difficult to evaluate the degree to which these patterns of site distribution are a function of differential exposure and of preferential survey in areas expected to yield archeological remains. From these limited data, however, it would appear that, once again, the patterns that have been identified as characterizing Paleoindian settlement and mobility strategies reflect an assumption that the hunting component of the subsistence system was paramount. But even given these limitations, certain hypotheses about the organization of Paleoindian mobility can be offered based on the environmental scenarios discussed previously.

As Judge has noted, the climatic changes posited to have taken place at the end of the Pleistocene may have led to major changes in the Paleoindian organization of resource procurement, and thus in the patterns of use of the landscape. During the early portions of the Paleoindian period, when the vegetation in the Roswell District was open woodland savanna, the climate exhibited considerable equability, and the many sinks and playas were dependable sources of water, the megafauna would have occurred in dispersed, largely nonmigratory herds. At this time, then, potential hunting locales may have been widely distributed and animals could have been hunted throughout much of the year. Mobility could have been organized around procurement of other resources (both plants and animals) whose availability was limited either spatially or temporally; hunting of the large species could be carried out as an adjunct to other resource procurement activities because suitable hunting locations could be found wherever those resources happened to be available.

In post-Folsom times, the playas were drying up, and hunters would have concentrated their activities around permanent water sources. Both Campbell (1976) and Broilo (1971a) note a shift in Paleoindian site locations through time from open steppe to canyon locations and from playa locations to locations near permanent water sources. At this same time the decreasing equability of the climate and the increase in grasslands may have caused the bison herds to become more aggregated and migratory.

These posited changes in the distribution of the main animal prey species would have made bison procurement much more of a specialized, carefully planned and organized activity. Because of this increasing specialization, bison hunting would no longer be casually carried out in conjunction with other resource procurement activities. Given this scenario, late Paleoindian mobility strategies are likely to have depended on a logistical organization (Binford 1980). This term describes a strategy that relies on use of specialized task groups to procure certain resources and on moving the acquired resources to the places where they would be consumed. In contrast, earlier Paleoindian groups (those of the Clovis and Folsom periods) are likely to have depended on a strategy of residential mobility, moving the entire group to an area where a particular resource was abundant.

Managing The Resource

This final section of Chapter 2 will cover two topics: the National and State Register properties that lie within the Roswell District and research topics that are of particular interest relative to Paleoindian sites within the district. In keeping with the nature of most of the cultural resource management (CRM) projects being carried out today, special emphasis will be given to research questions that can be addressed in small-scale mitigation projects.

National and State Register Properties

The only Paleoindian period site in the Roswell District that has been nominated to the National Register of Historic Places is Anderson Basin—the designation for a constellation of remains in and around Blackwater Draw. Four other concentrations of Paleoindian remains have been nominated to the state register: the Monument Springs, Rattlesnake Draw, and Taylor Peak sites in Lea County, and the Lusk Ranch Site in Eddy County. These four state register properties were nominated in the early years of the register's existence, and only minimal documentation is available for them (see Stuart and Gauthier 1981:283–288 for a discussion of these sites). Stuart and Gauthier (1981:286) note that even though southeastern New Mexico has a proportionately high representation of Paleoindian sites among the sites nominated to the state and national registers, there are still significant sites, such as Milnesand and Elida, that have not been nominated.
Research Directions

Most of the cultural resource management projects conducted in the Roswell District, as in New Mexico in general, are a result of energy-related ground-disturbing activities. One of the problems involved in designing these projects is that the choice of areas to be surveyed and sites to be excavated is made on the basis of concerns that have nothing to do with archeological research. The challenge is to design and carry out meaningful archeological research that will contribute to our knowledge of the past but that is appropriate to small-area samples like well pad surveys or to attenuated transects like pipelines or electrical transmission lines.

In the case of Paleoindian research, however, this problem is greatly alleviated. So little is known about Paleoindian chronology, settlement, and subsistence that even simple presence/absence information is valuable. Known Paleoindian sites are so few in number that any survey data on the distribution of remains of this period is of great importance, and excavations yielding data on technology or subsistence or recovering material suitable for radiocarbon or other dating techniques would be of immeasurable value.

As should be clear from the discussions in this chapter, the two most pressing needs in Paleoindian research are

(a) for greater chronological control—data from stratified sites or, even more important, absolute dates—and
(b) for means of identifying sites of Paleoindian age that do not contain diagnostic projectile points.

There are many other important questions—the nature of Paleoindian subsistence practices, for example, or the nature of their use of high-elevation areas—but all of these are dependent on an improvement in chronological control and identification criteria.

Finding stratified Paleoindian sites or sites in which datable materials are preserved is generally a matter of good fortune and not something that can be incorporated into a research strategy. The problem of finding new criteria for identification of Paleoindian assemblages is, however, one that can and should be considered in any research involving the Paleoindian period. Two approaches that promise some success and are applicable to the Roswell District designated study area are

(a) identification and examination of land surfaces of the appropriate age and
(b) discovery of details of lithic technology that are unique to the Paleoindian period but are not limited to the production of projectile points.

Much of what we think we know about Paleoindian site locations is a reflection of the erosion patterns that have exposed land surfaces on which Paleoindian remains are to be found. This can work against us in that it presents us with a false impression of Paleoindian settlement patterns, but it can also be made to work for us. If we are able to identify and map exposures of land surfaces of Paleoindian age, we may be able to find and identify components of Paleoindian period without relying wholly on "diagnostic" artifacts.

Attempts to identify hallmarks of the lithic technology employed by Paleoindians are also something of a two-edged sword. Well-supported empirical generalizations about features of lithic technology that appear to be temporarily diagnostic can be useful in the absence of more secure means of temporal classification; this is, after all, the theory behind projectile point typologies. But it is important to keep in mind that these are simply empirical generalizations—they have no explanatory power.

Even more important, lithic technology is affected by all of the myriad variables that affect human adaptations in general—climate, distribution of plant and animal species, availability of lithic raw materials, etc. These multiple variables determine subsistence and mobility strategies, and these strategies in turn determine lithic technology. What this means is that the relationship between lithic technology and time period or cultural group is by no means direct or simple. While we may be able to formulate rules of thumb for using features of lithic technology to identify or categorize archeological remains, these "rules" are not immutable or infallible, and the greater goal should always be to understand the patterning we find in the archeological record and not to accept these patterns as givens.

Attention to these two possible approaches and invention of other means of identifying currently unidentifiable Paleoindian sites would be of the greatest value to studies of this time period. Other, more general research considerations for the Roswell District have important implications for Paleoindian research as well. The need for additional information on paleoclimatic conditions during the late Pleistocene and early Holocene is clearly related to Paleoindian research questions. Another research need that is of importance to Paleoindian studies is for comprehensive information on areas that have been surveyed (Chapter 4) and for an accessible, readily usable data base containing information on all known sites in the Roswell District, including information on how sites were defined and classified both temporally and functionally.
Chapter 3

THE ARCHAIC PERIOD

Lynne Sebastian

As was the case with the term *Paleoindian*, the term *Archaic* is best used to designate a particular hunting-and-gathering-adaptation—in this case, a broad-spectrum adaptation emphasizing plant foods and the hunting of small animals with some use of larger animals, such as deer and pronghorn. Use of this term to designate a temporal period, on the other hand, is less problematic at the beginning of the proposed timespan—ca. 7000 to 6000 BP—than it is at the end of the period—ca. AD 900 to 1000. The beginning of this period corresponds to the beginning of the Sand Canyon Postpluvial (Chapter 1), a time when the generally wetter, cooler conditions of the Pleistocene epoch had been replaced by conditions approaching those of the modern climate. The Archaic adaptation was a response to an environment that was drier, warmer, and less equitable (had greater seasonal variation) than the environment that gave rise to the Paleoindian adaptation.

No such climatic event marks the suggested end of the Archaic period, however. Instead, this cutoff date is based on cultural events—the introduction of pottery and the bow and arrow into the material culture inventory of groups occupying the Roswell District. Although these cultural changes would seem to mark at least as distinctive a shift in the lifeway of the prehistoric inhabitants as the beginnings of the Holocene epoch, there is one significant difference: climate affects everyone; the introduction of new technology need not. There is no reason to believe that the beginning of the Ceramic period and the concomitant end of the Archaic period meant that the Archaic adaptation died out in southeastern New Mexico. Indeed, we have historical evidence that it did not.

The Archaic period has a long history of archeological neglect in the Southwest in general and in southeastern New Mexico in particular. Unable to offer either the mystique of the "oldest known" like the Paleoindian sites or the potential for spectacular architecture and aesthetically pleasing artifacts like the Ceramic period sites, the small, ubiquitous, unimpressive lithic and fire-cracked rock scatters of the Archaic period attracted very little archeological attention until quite recently.

For a general discussion of the Archaic period in the Southwest, the reader should consult Irwin-Williams (1979). Cordell (1979) provides a good summary of interpretations of Archaic settlement systems and subsistence practices. Kemrer and Kearns (1984) offer some detailed suggestions about important research issues in the study of the Archaic in southeastern New Mexico. Roney (1985) provides excellent summaries of what is known about the Archaic traditions in and around southern New Mexico.

If there is one statement that would receive universal agreement among those reviewing the archeology of southeastern New Mexico, it is that we know very little about the Archaic of this region (e.g., Irwin-Williams 1979:41; Stuart and Gauthier 1981:266). This is especially unfortunate since, as Stuart and Gauthier point out, more than half of the recorded sites in this part of the state are aceramic lithic scatters and thus possibly representing Archaic sites, a far higher proportion than those noted for other parts of the state. As a result of the comparative lack of research interest in Archaic sites, we have neither basic time/space systematics for this period (that is, suggested patterns of variability through time or across space) nor means of even identifying which of this multitude of aceramic scatters are in fact Archaic sites.

Problems Of Identification And Interpretation

The lack of specific criteria for identifying and dating Archaic sites makes the archeological literature difficult to interpret. Variability in the way that sites are assigned to the Archaic category makes comparisons between study areas difficult and means that generalizations about the nature of the Archaic in the region may be inaccurate.

Most researchers have taken the conservative approach of only assigning sites to this period if they yield diagnostic projectile points or radiocarbon or other absolute dates within the prescribed range; this is the reason for the large numbers of "unknown" lithic scatters, since diagnostics and/or datable material are relatively rare. Others offer possible additional criteria, such as particular constellations of artifacts (e.g., Kyte 1984a; Mobley 1979; Thompson 1980) or specifics of lithic technology (e.g., Hilley 1982; Kauffman 1983b) or changes through time in types of lithic raw materials used (Broster and Harrill 1983). Some researchers assign all aceramic sites to the Archaic (e.g., Beckett 1976, 1979), and some even argue that the introduction of ceramics and the bow and arrow into the material culture inventory does not mark the end of the Archaic but that groups using these two technologies while otherwise engaged in an Archaic (i.e., nonagricultural) adaptation "may have persisted up until
the time of abandonment of the area in approximately AD 1450" (Oakes 1982:46; see also Lord and Reynolds 1985).

The projectile points that are considered to be diagnostic of the Archaic are generally stemmed or corner-notched points that are smaller than Paleoindian points but larger than most arrow points. Because of their size, they are believed to have been dart points, attached to short shafts and thrown using an atlatl or spear-thrower (Suhr et al. 1954:47; but see Thomas 1978 for a discussion of the rather more complex relationship between projectile point size and morphology and the means of propulsion).

The practice of identifying Archaic sites on the basis of diagnostic projectile points is subject to the limitations discussed in the section of Chapter 2 on identifying Paleoindian sites. For example, sites whose function did not include the manufacture, use, or repair of projectile points are unlikely to contain such points, and even sites that originally contained points may no longer have them as a result of prehistoric scavenging or modern collectors. Thus, all such sites will be unidentifiable if projectile points constitute the only identification criterion.

For those sites that do have projectile points, assignment to the Archaic is generally based on typological similarity to artifacts of known date from areas where more chronological information is available, most often central Texas (Collins 1971; Suhr and Jenks 1962) or northwestern New Mexico (Irwin-Williams 1973). Aside from the problems of assigning temporal or cultural meaning to morphological variability that are outlined in Chapter 2, this approach has two additional drawbacks that are specific to the Archaic of eastern New Mexico and especially to the Roswell District.

The first drawback is that, by chance, the western boundary of the Roswell District is at approximately the dividing line between the Cochineal Archaic tradition of southwestern New Mexico and the Southeastern Archaic tradition, which is strongly influenced by, but may be separate from, the Archaic of central and trans-Pecos Texas (Roney 1985). The eastern extent of the Oshara Archaic tradition of northwestern New Mexico is less certain, but it is likely that the northern portion of the Roswell District is also a region influenced by at least two traditions. Given this situation, the decision as to which dated sequence of Archaic point types provides appropriate morphological analogs for Roswell District points is problematic.

Based on a review of projectile point styles, Jelinek (1967:143) suggests that early Archaic sites in the Pecos Valley were more closely affiliated with the Southwestern Archaic tradition than with the Plains Archaic, while the reverse was true of later Archaic sites. Bond (1979a), on the other hand, believes that throughout the Archaic projectile point styles indicate a consistently closer affiliation with the cultures of northern and western New Mexico than with the cultures of western and central Texas. And Laumbach and Beckett (1980) note that the Archaic sites in southeastern New Mexico have produced projectile points diagnostic of the Southwestern or "Desert" Archaic, of the Plains Archaic, and of the Archaic of southwest Texas and northern Mexico. The choice of an analog Archaic tradition is obviously not a clear-cut one.

Laumbach (1979) also discusses the other problem involved in assigning points to a chronological period based on their morphological similarity to dated points, regardless of the Archaic sequence chosen. He notes that not only does southeastern New Mexico appear to be the interface between Southwestern "Desert" cultures and "Plains" archeic groups...[but] to further confuse the issue, morphologically similar projectile points may have been produced by both groups but during different temporal periods (Laumbach 1979:45).

He offers several examples, including the Bajada points of the Oshara tradition, dated by Irwin-Williams (1973) to 4800-3200 BC, and the very similar Hanna points from the Plains tradition, dated by Suhr and Jenks (1962) to the period between 2500 and 500 BC. Likewise the Oshara San Jose points and the Plains Fairland or Darl points are dated 3000-1800 BC and 1000 BC-AD 1000, respectively.

More will be said about the problems of projectile point-based chronologies below in the section on chronology, but it should be clear from the preceding discussion that the presence or absence of diagnostic projectile points is not a sufficient criterion for identifying Archaic sites. Of the other approaches to identification suggested above, use of a constellation of artifacts certainly has advantages over dependence on a single tool type, but this approach will probably be most successful if the artifact constellation is defined deductively rather than on the basis of inductive generalizations, since the latter tend to be rather circular. An approach based on changes through time in lithic material type selections like that employed by Broster and Harrill (1983) is interesting, but probably applicable only to rather limited spatial areas.

Recent research into the possibility of identifying Archaic sites using characteristics of the lithic technology, however, have proved to be not only successful but, in some cases, applicable to regions beyond the confines of the original study area as well. A series of studies of lithic assemblages from the northern San Juan Basin (Chapman 1977; Kerley and Hogan 1983; Moore 1982; Schult 1980; Simmons 1982) have focused on debitage analysis as a means of identifying Archaic and Puebloan sites. These studies evaluate by means of an analysis of debitage assemblages the proposition that in the original study area (the San Juan Basin of northwestern New Mexico) Archaic tool-manufacturing technology was much more
THE ARCHAIC PERIOD

dependent than Puebloan technology on bifacial reduction. Debitage attributes that have shown particular promise for defining these technological differences are percent of cortex present, platform preparation, and flake size.

This approach cannot be applied piecemeal, however. It depends on a quantitative analysis of the entire debitage assemblage or at least a representative sample thereof. More important, as discussed in Chapter 2, many factors involved in the mobility and subsistence strategies of hunting—and—gathering groups affect the lithic technology. As changes in demography or environment, for example, bring about changes in mobility or subsistence organization, the structure of the lithic technology will change as well. Recent work by the Public Service Company of New Mexico (Harlan et al. 1986) has revealed that the differences between Archaic and Anasazi lithic assemblages that have been demonstrated for the San Juan Basin are not characteristic of assemblages encountered east of the Sangre de Cristo and Manzano mountains. The authors suggest that the very different resource distribution on the eastern plains led to greater mobility among Puebloan groups and less mobility among Archaic groups relative to populations in northwestern New Mexico, and that these differences in mobility are reflected in the lithic technology.

Empirical generalizations about temporal or spatial patterning in aspects of lithic technology can be useful, especially in the absence of absolute dates. It is necessary to keep in mind, however, that these generalizations have no explanatory content, and that because they are describing the results of a particular adaptation to a particular place and time, they cannot be applied outside the area for which they are formulated without extensive testing and evaluation.

Most of the problems of interpretation discussed for the Paleoindian period also apply to the Archaic. The problem of reoccupation of sites, for example, and of the effects of such reoccupations on assemblage variability and on our interpretations of site function and settlement systems is as acute for the Archaic period as for the Paleoindian. As will be discussed below in the section on mobility, our inability to differentiate between multiple reoccupations of a single site area and large—scale single occupations may have had an unfortunate effect on our perceptions of Archaic settlement systems.

Likewise, reliance on projectile points as diagnostic criteria for assigning sites to a specific period has limited our knowledge of the Archaic subsistence and settlement systems as well as of Paleoindian systems. Finally, our understanding of the settlement patterns of both periods would be greatly enhanced by large—scale geomorphic studies designed to identify areas in which land surfaces of Paleoindian and Archaic age are exposed or are deeply buried.

The lack of time/space systematics for the Archaic of the Roswell District makes it difficult even to describe the results of previous archeological research in the district, much less to discern patterns of variability or change evident in the archeological record. In the original draft overview Camilli and Allen (1979) organized their discussion of the Archaic around a series of physiographically defined regions (Figure 3.1). They explain this choice by noting the immense size of the study area which results in relatively localized investigations by individual researchers and a greater variety in the types of archeological remains. The [regions] utilized here attempt to define areas which contain relatively similar types of cultural remains thus facilitating integration of previous research and field reconnaissance within each [region] or description (Camilli and Allen 1979:63).

We have retained this general approach because we feel that display of the data by physiographic zones may also provide valuable insights into land and resource use during the Archaic period. The specific regional boundaries used in this study are not the same as those employed by Camilli and Allen (1979), however. They have been redefined as follows: Region 1 (Plains Region) includes the plains along the eastern boundary of the Roswell District; Region 2 (Pecos Valley Region) is the Pecos Valley; Region 3 (Canadian River Region) is the Canadian River drainage; Region 4 (Sierra Blanca Region) designates the upland areas along the western boundary of the Roswell District; and Region 5 (Guadalupe Mountains Region) is the Guadalupe Mountains.

Chronology

Table 3.1 presents a fairly comprehensive but almost certainly not exhaustive list of Archaic period radiocarbon dates for the Roswell District. Two very interesting comments can be made about this table. The first is that the radiocarbon date table from the 1979 Camilli and Allen draft overview contains only seven dates, three of them from Blackwater Draw. All of the other dates in Table 3.1 are from work reported since 1979, a clear and encouraging indication of the increase in volume of research concerning the Archaic.

The other interesting observation about this table is that most of the dates are very late; more than half are AD dates, and of the BC dates only seven are earlier than 2950 BP (1000 BC). In part, this pattern may be a result of variable preservation of organic carbon; recent sites and features are more likely to yield datable material than older sites, and thus there will be a disproportionate number of recent dates. Additionally, as the "region" information in the table indicates, most of the available dates come from Region 2, the Pecos Valley. It is possible, for example, that the other regions in the Roswell
FIGURE 3.1  ARCHEOLOGICAL REGIONS WITHIN THE ROSWELL DISTRICT
### TABLE 3.1

**ARCHAIC PERIOD RADIOCARBON DATES FROM THE ROSWELL DISTRICT**

<table>
<thead>
<tr>
<th>BP</th>
<th>BC/AD</th>
<th>Reference</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>6300 ± 150</td>
<td>4350 BC</td>
<td>Brannon et al. 1957</td>
<td>Plains</td>
</tr>
<tr>
<td>6230 ± 150</td>
<td>4280 BC</td>
<td>Brannon et al. 1957</td>
<td>Plains</td>
</tr>
<tr>
<td>5984 ± 290</td>
<td>4034 BC</td>
<td>Gallagher and Bearden 1980</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>4959 ± 130</td>
<td>3009 BC</td>
<td>Brannon et al. 1957</td>
<td>Plains</td>
</tr>
<tr>
<td>4540 ± 100</td>
<td>2590 BC</td>
<td>Fifield 1984a</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>3090 ± 190</td>
<td>1440 BC</td>
<td>Lord and Reynolds 1985</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2930 ± 60</td>
<td>980 BC</td>
<td>Bender et al. 1973</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2880 ± 110</td>
<td>930 BC</td>
<td>Schermer 1983a</td>
<td>Plains</td>
</tr>
<tr>
<td>2830 ± 140</td>
<td>880 BC</td>
<td>Lord and Reynolds 1985</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2690 ± 80</td>
<td>740 BC</td>
<td>Lord and Reynolds 1985</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2640 ± 420</td>
<td>690 BC</td>
<td>Thompson 1980</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2530 ± 70</td>
<td>580 BC</td>
<td>Schermer 1983a</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2520 ± 120</td>
<td>570 BC</td>
<td>Fifield 1984a</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2270 ± 80</td>
<td>320 BC</td>
<td>Lord and Reynolds 1985</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2120 ± 270</td>
<td>170 BC</td>
<td>Lord and Reynolds 1985</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2006 ± 56</td>
<td>56 BC</td>
<td>Gallagher and Bearden 1980</td>
<td>Pecos Valley</td>
</tr>
<tr>
<td>2000 ± 120</td>
<td>50 BC</td>
<td>Schermer 1983a</td>
<td>Pecos Valley</td>
</tr>
</tbody>
</table>

(continued)
District were the scene of most of the early Archaic occupation and that the Pecos Valley was not extensively occupied until the late Archaic. This seems somewhat unlikely, however, since the early Archaic was a period of greater desiccation than the late Archaic: we would expect the permanent water and riverine resources of the Pecos Valley to have been even more important to early Archaic groups than they were to late Archaic people. The skewed distribution is more likely to be a reflection of the predominance of energy development and other land-disturbing activities in this region—the types of activities that have resulted in most of the CRM-funded archeological projects being carried out in the district.

Despite these possible contributing factors, then, it appears that there is a real scarcity of evidence for early Archaic occupation of the Roswell District. We will suggest in the Research Directions portion of this chapter that evaluating this apparent pattern of minimal use of the district in the early Archaic should be an important priority, and we will offer some possible explanations for this pattern in the Archaic Adaptation section.

An ancillary approach to achieving chronological control of the Archaic period makes use of radiocarbon dates to build a chronology based on Quaternary stratigraphy. The study by Nials (1980c) discusses attempts to identify recurring soil horizons that may potentially be used to date archeological remains of unknown age. While this is an interesting and appropriate technique for assigning sites to broad temporal categories, such as the Paleolndian period or the Archaic period, the utility of geomorphic data for providing more fine-grained chronological information is limited at this point (e.g., Schermer 1983a).

As pointed out in the discussion of site identification, most attempts to achieve temporal control over the Archaic data from the Roswell District have depended on projectile point chronologies. As noted in that discussion, so few associations between Archaic points and absolute dates have been available for southeastern New Mexico until recently that projectile point–based chronological assignments have depended on morphological similarities between recovered points and dated projectile point types from other areas. One of the difficulties has been to determine which dated point types to use as analogs. Although some researchers use Cochise or Oshara point types as analogs, most of the archeologists working in southeastern New Mexico tend to draw analogies with points that have been dated in assemblages from Texas, the major source being Suhm and Jelks (1962) although the typology devised by Johnson (1967) is also used.

There are several problems with using the Texas typologies as analogs. As discussed in Chapter 2, the morphology of a projectile point is largely determined by its function and to a lesser extent by the nature of the lithic material. The assumption that similarities of form and size are a reflection of cultural or temporal affinity rather than simply of similar function is one that must be supported rather than taken as a given. Another problem arises from the large size of the Roswell District. An argument based simply on proximity could conceivably be made for using the Texas point types as analogs for the southeastern and eastern portions of the district (although many of the types commonly used are from central Texas), but such an argument is less convincing for the northern and western areas. Finally, temporal spans for Suhm and Jelks’ point types are often very long or uncertain, and they are assigned on an individual point basis. If the point types could be assigned to complexes of frequently associated types or if information about characteristics of the assemblages in which the points are often found were available, it might be possible to evaluate the appropriateness of analogies between points of unknown date and the dated Texas point types.

A point typology specific to the Roswell District area has been formulated by Leslie (1978). There is less question
about the appropriateness of Leslie's types as analogs, but this typology is based on material from the extreme southeastern corner of the district, so the utility of the typology for ordering collections for the northern and western portions of the district needs evaluation. The major problem with Leslie's typology, from a chronological perspective, is that almost no absolute dates for Archaic sites in southeastern New Mexico were available at the time that the typology was formulated. This means that the temporal information for the various types is minimal. A review of projectile points associated with recently published radiocarbon dates and a comparison of those points with Leslie's types would be a useful addition to the archeological literature of the Roswell District.

Another approach to using formal variability in projectile points as a temporal indicator has been used most recently by Roney (1985). In this approach, no attempt is made to define formal types; rather, a single attribute of the points is measured and the distribution of the measurements is inspected to identify modes—that is, clusters of similar measurements. Roney chose to measure stem width of the points because of the results achieved by previous researchers in southeastern New Mexico (e.g., Henderson 1976; Jelinek 1967; Katz and Katz 1974; Mobley 1978a). His measurements on points from the Guadalupe Mountains yielded a bimodal distribution, and Roney was able to assign the points exhibiting smaller stem widths to the period after AD 850 while points in the larger size category are assigned to the pre–AD 850 period.

Another issue that is related to Archaic chronology should be discussed here, especially in light of the apparently sparse early Archaic occupation of the Roswell District indicated by Table 3.1. Irwin–Williams (1979) maintains that the northwestern portion of New Mexico was largely or wholly abandoned for a time between the end of the Paleolithic period and the beginning of the Archaic. She suggests that the Cody population of the area moved north and east, following the bison herds as their distribution was affected by the climatic changes at the end of the Pleistocene. Approximately 6500 years ago, she continues, this part of New Mexico was reoccupied by broad-spectrum hunter–gatherers related to groups in Arizona and southern California.

On the basis of lithic typology Irwin–Williams argues for this scenario of abandonment, hiatus, and reoccupation and against the notion that Archaic culture evolved in situ from the earlier Paleolithic culture. She points to resemblances between the earliest Archaic assemblages from northwestern New Mexico (the Jay phase assemblages) and assemblages of the Lake Mohave complex, especially to resemblances between Jay projectile points and Lake Mohave points, and notes that there is no particular resemblance between the Jay materials and the Cody materials of the preceding period.

The potential application of this argument to the Archaic period in the Roswell District is clear. As discussed in Chapter 1, we know that the climate and vegetation zones underwent marked changes at the end of the Pleistocene. It has been suggested (Dillehay 1974) that bison, the main large-bodied prey species of the late Paleolithic period, were absent from the southern High Plains between ca. 7000 or 8000 BP and ca. 4500 BP (see Lynott [1979] for some difference of opinion). It is tempting to explain the lack of early Archaic sites in the district by envisioning the Paleoindians as having abandoned the area, following the receding bison herds to the north.

There are two possible problems with Irwin–Williams's argument, however. The first is that if the Archaic represents a new adaptation, there is every reason to expect the new tool kit to resemble the tools used by other groups with the same adaptation and little reason to expect the tool kit to resemble that of earlier populations with a different adaptation. But more important, this argument depends on the assumption that the Paleoindian economy was highly focused on bison hunting. As was discussed in Chapter 2, this perception of the Paleoindians as big-game hunters seems to be largely a result of our lack of criteria for recognizing Paleoindian sites produced by activities not related to hunting.

If the Paleoindians were, indeed, highly dependent on bison hunting, then it is conceivable (but by no means certain) that they would have gradually abandoned the area as the animals did. If, on the other hand, the Paleoindians had a more broadly based subsistence economy of which bison formed only a part—albeit an important part—the results of an abandonment of the area by the bison would be less dramatic. In this case we would expect that as the availability of bison waned the Paleoindians would have responded by shifting to greater dependence on other resources that were already part of their diet and probably by adding additional resources that had previously been little used. This possibility will be discussed in greater detail below in the section on the Archaic Adaptation. The important point to be made is that in order to evaluate either the "in situ development" hypothesis or the "abandonment and migration" hypothesis of early Archaic occupation adequately, considerable refinement in methodology of observation and dating of the archeological record of that era must take place.

One other chronology-related problem has already been mentioned: the logical ending date for the Archaic period in the Roswell District is probably AD 1873, the year in which the Mescalero Apache, the last practitioners of an Archaic lifeway, were confined to a reservation. Even if we discount these late immigrants into the Southwest, a number of researchers (e.g., Oakes 1982 and especially Lord and Reynolds 1985) argue that Archaic groups continued to occupy the district up until historical times, trading with the Mogollon and other agricultural, largely sedentary peoples but maintaining their own mobile

Cabeza de Baca’s narrative covering his experience in southern and west Texas from ca. 1529 to 1535 is an excellent first-person account of an Archaic-level existence for an area where this persisted into the historical period.

Archaic Sites Of The Roswell District

Figure 3.2 is a plot of the locations of all Archaic site components in the Roswell District that are recorded in the ARMS data file as of November 1985. The discussion of Archaic sites below is organized by the physiographically based regions shown in Figure 3.1. The specific sites discussed below are part of the ARMS data base, but it is important to note that many small projects carried out in the Roswell District have yielded information that has not been encoded in the ARMS file. In 1985 BLM Roswell District Archaeologist Ann Ramage estimated that 42% of the known sites in the district were included in the ARMS data.

Plains Region

Three of the four earliest dates in Table 3.1 are from Blackwater Draw Locality No. 1 (the three dates attributed to Brannon et al. 1957). The 4959 BP date is from charred bone recovered during 1954 excavations by Warnica and Shaw. Hester (1972) assigns the artifacts collected during those excavations to the Archaic on the basis of the resemblance between the projectile points and points identified by Suhm et al. (1954) as belonging to the Edwards Plateau Aspect. Numerous bison bones of unidentified species were also recovered. There is some question about the associations among the date, the bone, and the artifacts since no maps, profiles, or photographs exist for these excavations and since some of the artifacts are believed to have been redeposited (Hester 1972:143).

Thirteen prehistoric wells discovered during the course of detailed mapping of the exposed strata at Blackwater Draw Locality No. 1 may also date to the Archaic period (Evans 1951). These features range in depth from 5 to 6.5 ft; at the top they range from 2.5 to 5 ft in diameter, and at the bottom from 1 to 2 ft. Their point of origin is a buried, wind-eroded surface that Evans suggests indicates a period of increased aridity.

Warnica (1965) reports four aceramic sites near Portales that contained a variety of ground and chipped stone tools, including projectile points that he types as Paisano, Edgewood, and Ellis, using the Suhm et al. (1954) typology.

Recently reported Archaic remains from the Plains region include one site discovered on a proposed MX missile base near Clovis (Beck and Schermer 1981). Projectile points from this site are identified as Shumla and Scallorn types (Suhm and Helks 1962), which would indicate an occupation dating ca. 1500–2000 BP.

Pecos Valley Region

The only reported Archaic sites in the upper Pecos Valley were recorded as part of the mitigation activities associated with the dam and reservoir at Santa Rosa (Mobley 1978a). Winter (1987:668–671) and Winter and Levine (1987:755) report the remains of an Archaic component at Site 48 with a radiocarbon date of 3070 BP. Stratum III at Old Coyote Shelter yielded a radiocarbon date of 1890 BP, and the artifact assemblage is devoid of ceramics but contains gouges, which are considered indicative of an Archaic occupation (Shiner 1975).

During mitigation activities by the Center for Anthropological Studies, large areas of nearly continuous lithic scatter were reported. The abundance of lithic artifacts and the presence of projectile points similar to points dating to the Archaic in Texas were taken as evidence that the Archaic occupation of the upper Pecos Valley was heavier than had been previously recognized (Jim Rogers, personal communication, cited in Camilli and Allen 1979:67).

The earliest work with the Archaic of the middle Pecos Valley was in conjunction with Jelinek’s survey of this region (Jelinek 1967). He notes the occurrence of “J” points in sites reported by Campbell and Ellis (1952) and of San Jose points in sites described by Agogino and Hester (1956). As these sites reportedly also contained Navajo sherds along with Mesita Negra and post-McKenzie phase materials, however, the temporal classification is open to question.

Jelinek also describes an aceramic flake industry, designated the Dunahoo complex, identified on sites located in the northern portion of the Bitter Lake Wildlife Refuge west of the Pecos River. Both thin elongated flakes and flakes exhibiting bifacial retouch were noted; points and point fragments were reported to be rare, but Jelinek (1967:142–143) states that they indicate a late Archaic context. These points are described as being larger than materials from later contexts in the area and as occurring in association with artifacts resembling those of Archaic sites in west Texas.

Hurst (1976) reports an Archaic site, located by the Agency for Conservation Archaeology, Eastern New Mexico University, in the Maroon Cliffs area. Assignment to the Archaic was based on the presence of a dart point.

Excavations by the Lea County Archaeological Society and Eastern New Mexico University at Rattlesnake Draw (Smith et al. 1966) revealed an aceramic site that has been assigned to the Archaic. The basal portion of a Clo-
FIGURE 3.2  LOCATIONS OF ARCHAIC COMPONENTS RECORDED IN THE ARMS FILE (NOVEMBER 1985)
vis point and an Archaic point were recovered from a deteriorated caliche surface at the edge of a playa. The excavators believe that Archaic artifacts had become mixed with earlier material as a result of heavy erosion and redeposition.

Henderson (1976) describes the Archaic period in the southern middle Pecos Valley as being largely hypothetical. Undated burned rock middens in the Brantley Reservoir area believed to have been used as mescal baking pits are attributed to the Ceramic period occupation. From subsequent work at Brantley Reservoir, Etchieson (1983) reports a single site yielding an unclassified corner-notched, expanding stem dart point. Ceramics were also recovered from this site, however. In other Brantley Reservoir work, Gallagher and Bearden (1980) discuss several sites yielding radiocarbon dates in the Archaic range (Table 3.1), including one very early date of 5984 BP.

Laumbach (1979) reports on a Class III cultural resources inventory conducted by New Mexico State University. This survey was designed to identify suitable boundaries for the Laguna Plata Archaeological District. Laumbach feels that most of the discovered sites may have been reoccupied over a very long time span. He also notes that frequent visits by artifact collectors have resulted in the removal of the diagnostic items from the sites. Only one site (NMSU 576) is assigned a definite Archaic affiliation on the basis of projectile points; one other (NMSU 562) is described as having a possible Archaic component. Both are classed as late Archaic and consist of fire-cracked rock and lithic scatters.

As noted in the chronology discussion, a large number of CRM-funded projects have been carried out in the Pecos region in the last few years. It is impossible to discuss all of these sites in any detail; references are provided below.

Several projects have been completed in the Waste Isolation Pilot Project area near Carlsbad. The major report is Lord and Reynolds (1985), which describes several Archaic and Neoarchaic (their term for groups who continued to pursue an Archaic lifeway after the introduction of ceramics and the bow and arrow) components from the WIPP core area. In general, the reported dates are quite late (Table 3.1), but one site yielded a 3090 BP date. Their site ENM 10418 is the best-dated Archaic site in the Roswell District. They propose four main occupational episodes for this site, ranging from late Archaic through Neoarchaic. Schermer (1980b) describes several potentially late Archaic or Archaic/Mogollon transition sites from the WIPP area. Most of the sites appear to be multicomponent; two of them include components with at least the potential for middle Archaic dates in that they yielded projectile points dating to 3950–1450 BP (2000 BC–AD 500) and to 5950–750 BP (4000 BC–AD 1200). Hicks (1981a, 1981b, 1982) reports on two late Archaic sites, one in the WIPP core area near Carlsbad, the other near Dexter.

Alexander (1982, 1983a) reports two late Archaic sites from Rock House Canyon north of Roswell. Bond (1979a) reports one middle Archaic and one late Archaic site from the proposed Haystack Mountain ORV Area near Roswell. Brett and Schermer (1984) report one transitional Archaic/Mogollon site in the Delaware Basin. Duran and Laumbach (1981) report a site yielding numerous projectile points indicating a date of ca. 5000 BP on the Black River in southern Eddy County. Fifield (1984a) reports on three sites in Bear Grass Draw east of Artesia that yielded radiocarbon dates ranging from 2480 to 1110 BP (530 BC to AD 840; Table 3.1). Ford and Sciscienti (1982) report four possible Archaic sites from the Mescalero Sands area east of Roswell. One site yielded a point identified as Williams or Palmillas dating to 5950–950 BP (4000 BC–AD 1000), and another contained a Pandora point dating to 3950–950 BP (2000 BC–AD 1000).

Kemrer and Kearns (1984) report 14 Archaic components, two of them potentially quite early, and 14 transitional Archaic/Formative components from the Abo Oil and Gas Field area just north of Roswell. Kyte (1984a) describes a late Archaic site near Maljamar. Oakes (1982) reports on two very late Archaic gathering sites from Hackberry Lake. Parry and Speith (1984) describe the late Archaic/Mogollon transition Garney Spring Campsite, which is located a few hundred meters from the late prehistoric Garney Bison Kill site. Two sites from the Two Rivers Dam and Reservoir Project area are described as Archaic (Phillips et al. 1981). One site is assigned to the late Archaic on the basis of point types; the other is given a suggested early to middle Archaic date based on the presence of a Clear Forks gouge. Wiseman's (1981) report on the King Ranch site suggests that this Jornada Mogollon site may have had an Archaic component, based on the presence of a Calf Creek or Shumla point, a point resembling San Pedro Cochise points, and an unidentified stemmed point. Wiseman also notes, however, that Archaic points are relatively common in Ceramic period contexts in the Roswell District, especially in the Sierra Blanca region to the west.

Other energy-related projects include those described by Hilley (1982), who reports one very late Archaic site and one possible Archaic site on two proposed seismic testing corridors, and Baker and Fifield (1983), who assign a site excavated as part of a well pad clearance to the Archaic based on association with an Altithermal soil. Because the cultural remains are approximately half a meter above this soil horizon, they suggest a date of 3000–4000 BP.

Canadian River Region

Three recent survey and excavation projects conducted by the Office of Contract Archaeology, University of New Mexico, to mitigate the effects of carbon dioxide pipeline
construction have provided information about the Archaic occupation of the Canadian River region (Lent 1982; Winter 1983; Wozniak 1985). The ARCO survey revealed three possible Archaic sites; one of them (OCA-201–W12) yielded Marcos and Scalhorn points, again indicating a late Archaic occupation (Winter 1983). The Bravo survey identified 16 aceramic sites, six of which exhibit projectile points, including Martindale, Castroville, Marcos, Ellis, and Fresno types, reflecting a possible temporal range of occupation from 5950 to 150 BP (4000 BC to AD 1800; Wozniak 1985).

Sierra Blanca Region

The pre–Puebloan prehistory of the Sierra Blanca region is not well known. Archaic sites, which were termed Hueco phase by Lehmer (1948), consist chiefly of open-air scatters and rockshelters. All of the sites are described as seasonally occupied camps without architecture. These sites contain hearths and fire-cracked rock scatters and, where preservation conditions permit, basketry, atlatls, firebow drills, and fireboards (Lehmer 1948:70–75). Lithic material on these sites include basin metates and one–hand manos, stone mortars, cylindrical pestles, and a variety of chipped stone tools.

Two other probable Archaic sites in this region were reported by Roosa (1952) and Kelley (1966). The lower preceramic levels at Feather Cave yielded sandals that are believed to indicate Archaic occupation (Roosa 1952; Kelley 1966:196), while the Pfingsten Site No. 1, which is located on a terrace of the Ruidoso River, contains a number of hearths along with dart points that Kelley identifies as probably Archaic. The Archaic adaptation in this area is described as involving small–game hunting and plant gathering with heavy dependence on gathering.

One recent project in the Sierra Blanca region is Higgins's (1984) survey for the proposed Sierra Blanca Airport on Fort Stanton Mesa. Among the sites recorded is a large lithic scatter that yielded an Ellis point (2450–1450 BC; 500 BC–AD 500; Suhm and Jelks 1962).

Several interesting projects have been conducted by Human Systems Research in the mountainous areas just to the west of the western boundary of the Roswell District. Two proposed astronomical observatories were identified on peaks in the Sacramento Mountains (Eidenbach 1979). Both sites are dated to the late Archaic—on the basis of point typology, the other on the basis of observed astronomical alignments. The other project of special interest to Archaic research in the Roswell District is the excavations at Fresnal Shelter, which yielded valuable information on Archaic subsistence (Bohrer 1981; Wimberly and Eidenbach 1981). Although this site is outside the original Roswell District boundaries, it is within the post–1980 boundaries; the Fresnal Shelter data will be discussed in the section on Subsistence below because they provide an insight into possible subsistence practices within the district.

Guadalupe Mountains Region

Quite a bit is known about the Archaic of the Guadalupe Mountains, thanks to excavations in several caves (S. Applegarth 1976; Ferdon 1946; Howard 1932; Roney 1985; Schroeder 1983) and to several surveys (S. Applegarth 1976; Katz and Katz 1974; Mera 1938; Roney 1985). Roney notes that the earliest firmly dated Archaic occupation of the Guadalupe Mountains extends to approximately 3000 BP.

Dry cave excavations have provided excellent information about the perishable material culture inventory of the late Archaic population: basketry, matting, cordage and netting, sandals, and wooden implements and weapons have all been recorded. Relatively little information about subsistence has been recovered, however. The abundance of manos and metates may indicate a dependence upon wild seed resources; the presence of digging sticks may indicate dependence on tubers and roots. There is also evidence of hunting, in the form of both weapons and animal bones. Deer, sheep, and antelope remains are recorded along with many small animals and birds. Very small creatures, such as wood rats and mice, may have been cooked and consumed at least on occasion (S. Applegarth 1976). Perhaps the most important information about Archaic subsistence from the Guadalupe Mountain sites is in the form of negative data.

Direct evidence of domestic food plants is surprisingly sparse in the Guadalupe Mountains, given the consistent occurrence of corn in other Archaic sites further west. A number of dry rockshelters have been excavated...but only three have yielded any evidence of agriculture....These negative data suggest that corn was not important in the Archaic subsistence pattern in the Guadalupe Mountains (Roney 1985:44).

The agricultural remains cited by Roney are a single corn kernel from a hearth at Pratt Cave and a few cobs and kernels from undated contexts at Williams Cave and an unnamed cave explored by Howard in 1930.

Other recent work in this region includes an electric transmission line survey reported by Wilson (1984), which identified three Archaic sites at the northern end of the Guadalupe Mountains. Two of these sites are identified on the basis of point typologies as late Archaic (ca. 3000 BC–1450 BP); the third is identified as multicompont, with a late Archaic component and a middle Archaic component—the latter assignment is based on the presence of one point identified as San Jose (but see the discussion of the similarity between San Jose and Fairland or Darl points above).
The Archaic Adaptation

In general the factors limiting our understanding of the Archaic adaptation are the same as those that limit our understanding of the Paleoindian adaptation: problems of identification and problems of preservation. As discussed in Chapter 2, if our major criterion for identifying sites as belonging to a particular period is the presence or absence of projectile points, then our research will be limited to those sites where points were made, used, and/or discarded. Sites within the settlement system that were not associated with hunting activities, or upon which such artifacts were not lost or discarded, are likely to remain unidentified.

With Archaic period sites, however, this problem is somewhat mitigated by our awareness of the apparently broad-spectrum nature of the subsistence economy. Because of the long tradition within archeology of viewing Paleoindians as big-game hunters little attention has been given to the problem of recognizing sites belonging to "the rest" of the subsistence system. On the other hand, because Archaic groups have traditionally been defined as broad-spectrum hunters and gatherers there has been more research emphasis on identifying sites representing the whole range of the subsistence/settlement system.

Our understanding of the Archaic period also has been less hampered by problems of preservation, not only because the Archaic is so much more recent but because of the number of Archaic cave sites that have been excavated. Although the wealth of perishable material from these caves has certainly added to our knowledge of Archaic subsistence and material culture, there is a danger involved in placing too great an emphasis on data from these cave sites. All these sites could represent a single, highly specialized and nonrepresentative segment of the entire Archaic settlement/subsistence system. If we rely too heavily on information from them, we could be left with a very inaccurate picture of Archaic subsistence and material culture.

Subsistence

In general the Archaic subsistence system in southeastern New Mexico is characterized in the same way as all Archaic subsistence systems: a mobile, hunting-and-gathering adaptation, heavily dependent on plant resources and emphasizing small rather than large game animals. Stuart and Gauthier (1981), however, argue that

cavated or tested indicate that large mammal procurement was not a feature of Archaic adaptations. Again, this is unlike western New Mexico, where more Archaic assemblages are known to have produced remains of deer, antelope and, occasionally, bison (Stuart and Gauthier 1981:267).

The observation about the lack of large game animals has been negated somewhat by excavations carried out since Prehistoric New Mexico was written (see Roney 1985, for example). But the lack of evidence for incipient agriculture continues to be an important characteristic of the Roswell District Archaic, which Wilson (1984:39) describes as exhibiting "a relatively 'flat' or unchanging pattern of subsistence activities extending perhaps over millennia."

Wordell (1979:30) describes two approaches that have been used to understand Archaic subsistence: analysis of actual food remains and interpretations based on the locations of sites with respect to potential food resources. Although she does not specifically include analysis of human coprolites in the former category, such analyses are certainly one variant of this approach that has been successfully applied to Archaic research in other areas. Roney (1985:44) suggests that artifacts and cultural features constitute an additional source of inferences about subsistence practices.

Data concerning actual food remains from open-air sites in the Roswell District are extremely rare, largely because much of the archeology that has been done has been survey. Lord and Reynolds (1985) report rabbit, sheep, and bison bones from sites in the WIPP area, but these may be from Neolithic/Ceramic period contexts. Parry and Speth (1984) report a number of apparently subsistence-related rabbit bones from the Garson Spring Campsite. Ethnobotanical remains are very rare in the reported sites, and consequently their cultural origin is questionable. Freshwater mussel shells are very frequently reported from sites in the middle Pecos Valley region. Some may be naturally occurring or animal transported, but those encountered in sites at considerable distances from the river must be considered to be of cultural origin.

Data on food remains from cave sites are more numerous. Roney (1985:43ff) provides a summary of the available information, describing remains of mescal, prickly pear, and gourds and noting the probable use of piñon, acorns, mesquite, sotol, and yucca. He also describes a wide variety of faunal remains recovered from caves in the Guadalupe Mountains, ranging from large animals, such as bison, Merriam's elk, and deer, through very small animals, such as squirrels and mice. Although several of the species that he lists, such as skunks and foxes, probably occur naturally in the cave deposits, he makes a good case for some unexpected species, such as small rodents, having been eaten.

Some of the most valuable direct data on Archaic subsis-
tence in the general area have been derived from the excavations at Fresnal Shelter (Bohrer 1981; Wimberly and Eidenbach 1981), which lies west of the original Roswell District boundaries. Deposits at this site are believed to date to the period from 3550 to 1950 BP (1600 BC to AD 1). The plant food remains include chapalote maize, but this species appears to have been relatively little used. Mescal, piñon nuts, and yucca fruit are all present but are rare relative to their abundance in the area. Bohrer (1981) argues that the nature of the ethno-botanical assemblage implies an Archaic subsistence pattern similar to that of the ethnographically known Southern Paiute, who relied on species with a long season of availability, such as cacti, roots, and clinging fruits, rather than on plants requiring specialized processing and storage technologies. In this, the Archaic population differed radically from the subsequent Puebloan and even later Apachan groups, who emphasized plant foods that could be harvested and cached.

Hunting was also important at Fresnal Shelter. At least 26 deer, 1 antelope, 1 bison, and 1 sheep were represented in the faunal assemblage (Wimberly and Eidenbach 1981) along with many smaller animals.

Attempts to understand Archaic subsistence by observing correlations between site location and potential food resources have been relatively rare in the Roswell District. Mobley (1978b) offers some arguments based on this approach, but he is not specific about resources used or about problems of availability, scheduling, transport, and storage. He also makes a number of unsupported assumptions about the settlement system and about sedentism of the Archaic population in the Los Esteros area.

The most systematic effort to investigate the relationship between site location and food resource distributions is Roney's (1985) thesis research in the Guadalupe Mountains. Two of the four hypotheses in the subsistence-settlement system portion of his research concerned this relationship. One of these was that prehistoric subsistence activities would be found to have focused on agave, piñon, datil, and mesquite. He was only able to test the association with piñon and agave, but he found that lithic scatter sites “were demonstrably more likely to occur in the hilly uplands environmental zone where both agave and piñon would have been within site catchments” (Roney 1985:16).

Testing of his second site location/resource location hypothesis produced an unexpected but important result. Roney found that rather than being associated with the distribution of agave and sotol, as he had expected, the distribution of ring middens (features believed to have been used in roasting agave and sotol) was much more closely related to the distribution of piñon and oak communities. He suggests that this unexpected locational pattern for the ring middens means either that the functional interpretation for these features is incorrect or that the location of firewood was a more important consideration in their location than the location of the plants to be roasted. This example is an excellent lesson in the problems involved in using the correlation approach to understanding prehistoric subsistence practices.

A frequently used approach for characterizing the Archaic subsistence system is the "Mescalero model." The two best-known attempts to use ethnographic data about the Mescalero Apaches to create a model of prehistoric hunter-gatherer behavior in southern New Mexico are Human Systems Research (1973) and Henderson (1976). Wilson (1984) notes that

[The Mescalero Apache Indians once inhabited this country but Apachian sites are virtually unreported. One key requirement of Henderson's (1976:55) model was that the location of activities (i.e., sites) be predicted upon the basis of the location of resources. The near-absence of documented Apache remains does not necessarily inhibit the development of such a model, but this scarcity should be disturbing to archeologists (Wilson 1984:31).

Gallagher and Bearden (1980) suggest that problems encountered in using the Mescalero model at Brantley Reservoir were a result of gaps in their data. Wilson argues that

[The problem might lie instead with the model being grounded too seriously in a normative picture of site types and activities drawn from reservation-period memories, compounded by implicit assumptions about the degrees of self-sufficiency and of free choice available under aboriginal conditions (Wilson 1984:31).

We would suggest, first, that the lack of specific information in the Mescalero ethnographies about the relationship between site locations and food resources makes it difficult to formulate expectations about how these two distributions should be related. Second, the almost total absence of known prehistoric or protohistoric Mescalero sites (or even pre-reservation historical ones) makes it impossible to evaluate any hypothesized relationships. Third, the use of horses had such a major impact on the subsistence and settlement strategies of the ethnographically known Mescaleros that the applicability of a model based on their subsistence system to groups restricted to foot travel and human transport is limited. And finally, Bohrer argues that the Archaic populations of southeastern New Mexico depended on plant resources with long periods of availability and made little use of plants requiring a major input of energy for processing and storage. The Mescalero, on the other hand, organized their subsistence around such plants as mescal and sotol which require careful scheduling of harvests and considerable inputs of labor for processing (Basehart]
1974), if Bohrer's assessment of southeastern Archaic gathering strategies is correct, then the Mescalero are not a particularly appropriate analog, despite the fact that they occupied much the same territory and practiced a hunting-and-gathering way of life.

Site Typology

Three recent CRM-funded projects have attempted to develop site typologies for the Archaic period in the Roswell District. The most fully specified and thoroughly tested typology was formulated by Gallagher and Bearden (1980). They offer a morphological typology and a functional typology for the Brantley Reservoir sites. The morphological model depends on criteria of site size and presence/absence of burned rock, burned rock structures, and mortar holes to define types. The functional model consists of a series of hypothesized functions, based on the Mescalero model, for the morphological types. The suggested functional types were basecamps, temporary support encampments, hunting and meat-processing camps, vegetal food gathering and processing sites, mescal and sotol processing sites, and mortar holes (as posited by Gallagher and Bearden [1980:39–40] to have been used in processing some unknown riverine or aquatic resource).

Test criteria were developed for assessing the utility of the morphological types and the validity of the functional types, using data on environmental setting, assemblage characteristics, and edge damage on tools from 22 prehistoric sites in the reservoir area. When the analysis was complete, Gallagher and Bearden felt that two of the suggested functional types had been confirmed, two had been rejected, and two remained untested. The mescal and sotol processing sites and plant gathering and processing sites met the functional test implications. The sites that had been identified as basecamps, on the other hand, proved to be reoccupied gathering and processing sites, and an unanticipated type, lithic procurement and workshop areas, accounted for at least some of the small artifact scatters.

The general prehistoric site typology formulated by Kenney and Kearns (1984) was described in Chapter 2. Briefly, their types are multiple-use sites, temporary camps, lithic procurement and workshop sites, and limited activity sites. All of the Archaic sites from the Abo Oil and Gas Field project area could be assigned to one of these types, but it is important to note that the types are based strictly on morphology. Probable functions have been suggested for the types, but these functional assessments have not yet been tested against independent data.

In their work with the WIPP sites, Lord and Reynolds (1985) suggest a typology consisting of limited basecamps, satellite plant collection and processing localities, and permanent villages. Sites of the last-mentioned type are described as lying outside the project area, probably being located at or near the Pecos River.

As noted in Chapter 2, most site typologies used by archeologists depend on empirical generalizations about constellations of artifacts and/or features on sites. Although such generalizations can be very useful in enabling us to observe and compare patterns in the distribution of archeological remains, these morphological typologies are frequently considered to be—and used as if they were—functional typologies. Calling something a "basecamp" or a "plant collecting site" does not make it a basecamp or a plant collecting locus.

Functional labels are usually placed on the empirically observed patterns on the basis of an informal or specified model of how hunter-gatherers are believed to have behaved. The model underlying most of the typologies discussed above, for example, is one of a basic Archaic settlement system composed of basecamps, temporary camps, and limited activity sites. This model is commonly encountered, especially in the research related to the Oshara tradition area of northeastern New Mexico (e.g., Irwin-Williams 1973; Reher 1977), but it is one that has proved to be unsatisfactory for that area (e.g., Chapman 1980; Hogan and Winter 1983; Moore and Winter 1980). The results of Gallagher and Bearden's test of their functional typology suggest that this underlying model may prove to be unsatisfying for the Roswell District as well. The following section of this chapter contains some suggestions about ways in which hunter-gatherers in temperate environments use the landscape and discusses the implications of these mobility strategies for the kinds of sites that these groups could be expected to leave behind.

Organization and Scale of Mobility

At the end of the section on Paleoindian mobility strategies in Chapter 2 it was suggested that as the bison herds became increasingly aggregated and migratory, bison procurement would have become less of an embedded activity (an activity carried out in the course of other subsistence pursuits) and more of a specialized activity. It was further suggested that this specialization would have selected for a logistical organization of the settlement–subsistence system, at least during some seasons of the year. It was also argued, in an earlier section of the present chapter, that the question of whether the transition from a Paleoindian adaptation to an Archaic adaptation involved abandonment and immigration or in situ evolution revolved around the nature of Paleoindian subsistence and the ecology of the post-Pleistocene bison herds.

Given a relatively broad–based late Paleoindian subsistence strategy with a seasonal specialization in bison and the range of resources available during the long growing season of the Roswell District, there would have been lit-
the impetus to process and store food other than the meat needed for the coldest portions of the winter. The mobility strategy for most of the year would have been one of serial specialization (Binford 1980) or serial foraging (Elyea and Hogan 1983).

Binford describes this strategy as being characterized by "residential mobility so as to position the group with respect to particular food species that are temporally phased in their availability through a seasonal cycle" (Binford 1980:17). Elyea and Hogan contrast this strategy with both collector strategies (which depend on logistical task groups to procure and return resources to the base camp) and true foragers, who are completely dependent on residential mobility to procure subsistence resources. They suggest that Archaic subsistence in the Southwest would have depended on sequential procurement of seasonally available resources in conjunction with some use of cached resources during the harshest portion of the winter season. Because this strategy appears to have depended on residential rather than logistical mobility, they describe it as serial foraging (1983:399). Under this strategy, only the requirements of having people, food, water, and fuel for fires all together in one place during the brief period of worst winter weather would have led to the proposed logistical component of the system.

Given such a subsistence/mobility strategy, the northward shift in the distribution of the bison herds, which occurred ca. 7000–8000 BP as a response to drying conditions (Dillehay 1974), would have had a predictable impact. Certainly, as Laumbach (1979:47) suggests, the loss of such a major protein source (along with other effects of the progressive desiccation) would have adversely affected the carrying capacity of the district. Some families and larger groups could have done what Irwin-Williams (1979) suggests—followed the herds, leaving the district entirely. This would have mitigated the impact of the lowered carrying capacity, and those who remained behind would have been able to follow their accustomed pattern of moving from resource to resource throughout the spring, summer, and fall. The main alterations in the subsistence system would have been (a) an increased emphasis on small-animal hunting to make up for the lost protein and (b) a shift in strategies used to make provisions for the winter months.

Among hunter-gatherers in temperate climates the degree of dependence on storage to provide for the winter months varies directly with the effective temperature, a standardized measure of annual temperature (Binford 1980). By the early Holocene, when climatic conditions were beginning to approximate those of the modern environment, effective temperature in the Roswell District would have been nearly what it is today—with values between 14 and 15 (see Cordell 1979:Map 2). Cross-cultural studies indicate that storage is only practiced by groups living in areas with effective temperatures of 15 or below. What this means in the current case is that the climate in most of the Roswell District is mild enough to permit overwintering with only minimal preparation in the form of cached foods.

Given this climate and relatively low population densities it would be possible to follow a strategy like that outlined by Bohrer (1981)—dependence on "self-storing" foods, resources with a long period of availability, rather than on foods requiring complex processing and storage technologies—for most of the year. Preparations for winter could have involved either setting up camp in an area where selected resources were still available despite the season or some amount of caching of easily stored resources or, most likely, both. An example of the first strategy would be to camp in the Pecos River valley where water and firewood would be readily available along with such resources as waterfowl, mussels, and cattails.

To be successful, a subsistence strategy like that outlined above would require low population density, especially during the very dry period of the early and middle Archaic. By late Archaic times, when the moisture regime had improved somewhat (see Paleoclimatic discussion in Chapter 1), the same strategy could have supported a larger population, which could, in part, account for the increased number of radiocarbon dates from the late period.

Although relatively little direct evidence is available concerning Archaic subsistence in the Roswell District, much of what is known supports or at least does not contradict the hypothesized post-Pleistocene adaptation outlined above. The near absence of bison remains from Archaic sites implies that there was, indeed, a dramatic decline in availability of this resource concurrent with the beginning of the Archaic period. The lack of evidence for intensive use of mesquite and sotol prior to the Ceramic period (Roney 1985) along with the absence of horticulture (Stuart and Gauthier 1981) implies a nonintensive subsistence strategy. The lack of early sites in the shinny oak dunes near Hackberry Lake (Oakes 1982) also implies minimal use of resources requiring complex processing or storage until the very late Archaic. The extremely eclectic diet implied by faunal studies such as that reported by S. Applegarth (1976) certainly supports a hypothesis that the Archaic strategy was one of eating whatever was available at the moment.

The other question to be considered here is what kind of settlement pattern would be produced by a serial foraging strategy such as the one described above. What kinds of sites could we expect? 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 archeological 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 resources appear in the same place year after year or in some other cyclical pattern, some sites tend to be reoccupied.

It is this pattern that Roney is describing when he notes:

Hypothesis 1 [of his thesis] predicted that temporary camp sites would be complemented by isolated occurrences and task specific loci. In fact very few isolated occurrences or sites which seemed to represent specialized task specific loci were found. Instead, the range of tools represented on sites seemed largely a function of size and density. Thus most sites seemed to include camp site elements. Relatively low artifact densities and an absence of midden or evidence of substantial dwellings suggest short term occupation. Small size of many sites and localized clusters on larger sites suggest that relatively small groups were involved (Roney 1985:15).

This pattern also created the large artifact and burned rock scatters that Gallagher and Bearden (1980) first viewed as being a separate “basecamp” site type. Subsequent analysis indicated that these sites were simply large, probably multiple occupation versions of the small artifact and burned rock scatters that they interpreted as temporary camps.

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.

As noted in the Chronology discussion, the large number of available late Archaic dates and the very small number of early Archaic dates is undoubtedly due in part to factors of organic preservation and natural forces of erosion and deposition, which have destroyed or obscured the early remains. These factors do not appear to account for the marked preponderance of late dates on Table 3.1, however. In the San Juan Basin, where presumably many of the same factors of preservation and impact from natural processes have operated, much higher proportions of early Archaic to late Archaic dates are reported (Elyea and Hogan 1983:Table 22.2, Figure 22.3). The relatively large number of sites in the Roswell District yielding dates in the very late Archaic period would seem, therefore, to indicate a gradual but continuous increase in population.

This reconstruction of the Archaic settlement–subsistence system is based on information about subsistence and mobility strategies among hunter–gatherers in arid temperate environments and is consistent with currently available evidence. Until we find ways of identifying the whole range of Archaic sites (not just those containing projectile points) and until we gain a better understanding of the resources used by the Archaic period population of the Roswell District, however, reconstructions such as this one must remain highly speculative.

Managing The Resource

This chapter, like Chapter 2, will end with a description of National and State Register properties in the Roswell District and a discussion of research topics pertinent to the district, with an emphasis upon those suitable for small-scale survey and mitigation projects.

National and State Register Properties

The Archaic component at Blackwater Draw Locality No. 1 is part of the Anderson Basin National Register nomination (Stuart and Gauthier 1981:283–286), and the Mescalero Sands Archeological District nomination notes the possible presence of Archaic components at several of the sites in this district. Some probable Archaic occupation is also noted for the State Register sites of Burro Tanks, Taylor Peak, Rattlesnake Draw, and Monument Springs, although available information about these sites is limited. As Stuart and Gauthier (1981:286) note, no Archaic remains in southeastern New Mexico have been nominated to either register in their own right—the only nominated Archaic remains are components of multi-component sites.

Research Directions

Based on the discussions of problems with Archaic chronology and questions concerning the settlement–subsistence system, several suitable directions for Archaic period research in the Roswell District can be suggested. Once again, the problem of simply being able to identify sites pertaining to all aspects of the Archaic settlement system and not just those containing projectile points or yielding datable materials arises. Several possible sources of new identification criteria have been outlined in this chapter; all are worth pursuing with any data base that becomes available. For example, given the reported success of efforts to identify Archaic assemblages on the basis of characteristics of the debitage, a concerted effort should be made to record the attributes of a
THE ARCHAIC PERIOD

representative sample of thedebitage on all lithic sites. At the same time, criteria are needed for differentiating between multiple small occupations and single large occupations and for identifying activities carried out at a site.

The second major concern is chronology. Efforts should be made to match the growing number of absolute dates from Archaic sites in the district with a suitable local point typology. The apparent sparseness of early and middle Archaic occupation in the district should be examined. During excavation projects special attention should be paid to hearths and other contexts containing organic material that appears to be marginal in quantity or quality for radiocarbon dating. Constantly improving laboratory techniques mean that marginal samples are increasingly likely to yield results. Since it is probable that the oldest materials will appear least promising, the extra effort involved in sampling such contexts is especially critical.

The lack of subsistence-related information from open-air sites is another critical concern in studies of the Archaic period. Excavation and testing programs should be designed to maximize the potential for recovery of ethnobotanical and faunal remains. Also, the apparent lack of use of cultigens by Archaic populations in the district should remain a hypothesis to be tested rather than becoming an assumption that is taken for granted.

Finally, all archaeological projects, large and small, can have an impact by refining and adding to our understanding of the Archaic settlement–subsistence system. Any small or large segment of a reconstruction such as the one offered above can be tested, refined, and retested with any new body of data, but a usable, complete data base for the district is badly needed. With each refinement, our model of the Archaic can be brought into closer accord with the patterns observable in the archeological record and with the systematics of known hunting–and–gathering societies.
Chapter 4
SITES UNCLASSIFIABLE BY PERIOD
Signa Larralde

Undated sites pose a problem because archeologists often tend to think that, without chronological information, little can be done with such sites that will contribute to our understanding of the area’s prehistory. Often it is unclear whether undated sites resulted from a gradual increase in occupation through time or whether they were the product of occupations during only one or two cultural periods.

Problems in the interpretation of sites with unknown temporal affiliations are discussed in this chapter. Current means of placing such sites in the region’s chronological framework are summarized and their information potential is evaluated. Next, the distribution of temporally unidentified sites in the five regions of the Roswell District is described using ARMS file data. Finally, research questions pertinent to these sites are proposed. These questions focus not only on finding ways to place undated sites into a cultural/temporal context but also on exploring other aspects of these sites that are not directly tied to chronology (e.g., their geographic location and their function as suggested by feature types). ARMS file feature data are investigated as an example of a large-scale pattern search that can yield provocative spatial information about feature distribution, even in the absence of temporal controls.

Sites unclassifiable by temporal or cultural period can be placed into two categories. The first category consists of sites that did not yield diagnostic artifacts during survey but that might be dated through excavation or further analysis. Examples of sites in this category are hearths and scatters with obsidian artifacts. The second category contains sites that are unlikely to yield radiocarbon dates or other means of defining chronological or cultural context even after excavation. Although recommendations for both categories of temporally unassigned sites are offered, this chapter relies heavily on ARMS file data for discussing undated sites. The majority of sites in the ARMS file are described on the basis of survey information only and thus may fall into either of the above categories.

It is common to think of temporally unknown sites as small, unspectacular scatters, but they actually span a broad range of sizes, types of features, and artifact assemblages (Table 4.1). Common features include ring midden, bedrock mortars, roasting pits, and rock art, as well as more enigmatic feature types like depressions, caves, and undefined rock alignments. The specific feature types discussed below are determined by the coding choices on the ARMS site form. Figure 4.1 shows the distribution of temporally unknown sites in the Roswell District as reflected in the ARMS data base in November 1985.

Problems With Placing Sites In Time Periods

Lack of Diagnostics

Archeologists generally depend on diagnostic artifacts for dating sites during survey. When these artifacts are missing, either because they have been removed by artifact collectors or because they were never there in the first place, the sites usually cannot be culturally or temporally placed. In addition, many features and artifacts are common on sites from all periods, especially hearths, fire-cracked rock scatters, and lithic debris. Because survey data are less comprehensive than excavation data, many sites cannot be dated during the survey phase of investigation.

Identification of Components, Sites, and Isolates

The absence of temporal information makes it difficult to decide how to record sites lacking diagnostics. The distinction between sites and isolates, while always blurry, is particularly poorly defined for temporally unknown sites because the information potential for these sites is considered to be limited. The same cultural remains may be recorded by different fieldworkers as an isolated find, a locality, or a site. Because of the highly variable ways in which sites are defined, the frequency of temporally unknown sites could be inflated or deflated by hundreds (if not thousands) upon review and standardization of guidelines for site definition.

Defining components within sites is even more difficult. First, even if sites have diagnostic artifacts, the time ranges for diagnostics are often poorly defined and sometimes span millennia. This means that many sites classified by period probably have additional, unrecognized temporally unknown components. Second, it is often impossible to ascertain which artifacts are associated with which diagnostic artifacts, especially in the dune fields where many aceramic lithic scatters are found. This problem with defining component boundaries makes the assignment of temporal period arbitrary for any assemblage, let alone those without diagnostics.
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th># COMPONENTS</th>
<th>SYMBOL</th>
<th># COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>1 - 3</td>
<td>x</td>
<td>24 - 27</td>
</tr>
<tr>
<td>=</td>
<td>4 - 8</td>
<td>o</td>
<td>28 - 32</td>
</tr>
<tr>
<td>+</td>
<td>9 - 13</td>
<td>o</td>
<td>33 - 37</td>
</tr>
<tr>
<td>x</td>
<td>14 - 18</td>
<td>o</td>
<td>38 - 42</td>
</tr>
<tr>
<td>o</td>
<td>19 - 23</td>
<td>o</td>
<td>83</td>
</tr>
</tbody>
</table>

FIGURE 4.1 LOCATIONS OF THE TEMPORALLY UNKNOWN COMPONENTS RECORDED IN THE ARMS FILE (NOVEMBER 1985)
SITES UNCLASSIFIABLE BY PERIOD

Bias Against Investigating Temporally Unknown Sites

Since the cultural and chronological information content of temporally unclassified sites is already low, these sites tend to be slighted in mitigation efforts. Instead, sites containing diagnostic artifact types are favored. This practice limits the opportunity to obtain chronometric dates from temporally unclassified sites.

Differentiation from Natural Features

Some cultural and natural features cannot be readily distinguished from one another. This problem is especially pertinent to temporally unknown sites, because some site types in that category resemble natural phenomena. Little controlled research that would facilitate the recognition of cultural features, structures, and distributions has been done.

### TABLE 4.1

<table>
<thead>
<tr>
<th>Feature Type</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedrock mortar</td>
<td>47</td>
<td>0.98</td>
</tr>
<tr>
<td>Bin/cist</td>
<td>6</td>
<td>0.12</td>
</tr>
<tr>
<td>Bone</td>
<td>61</td>
<td>1.27</td>
</tr>
<tr>
<td>Bone bed</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Burial</td>
<td>21</td>
<td>0.44</td>
</tr>
<tr>
<td>Burned rock midden</td>
<td>2</td>
<td>0.04</td>
</tr>
<tr>
<td>Cache</td>
<td>2</td>
<td>0.04</td>
</tr>
<tr>
<td>Cairn</td>
<td>28</td>
<td>0.54</td>
</tr>
<tr>
<td>Cave</td>
<td>21</td>
<td>0.44</td>
</tr>
<tr>
<td>Ceramic artifact(s)</td>
<td>62</td>
<td>1.29</td>
</tr>
<tr>
<td>Ceramic scatter</td>
<td>29</td>
<td>0.60</td>
</tr>
<tr>
<td>Corral</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Depression</td>
<td>9</td>
<td>0.19</td>
</tr>
<tr>
<td>Dugout</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Dump</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Extant house</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Fence</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Fire-cracked/burned rock</td>
<td>555</td>
<td>11.55</td>
</tr>
<tr>
<td>Garden plot</td>
<td>2</td>
<td>0.04</td>
</tr>
<tr>
<td>Ground stone</td>
<td>719</td>
<td>14.96</td>
</tr>
<tr>
<td>Hearth</td>
<td>632</td>
<td>13.15</td>
</tr>
<tr>
<td>Historical trash</td>
<td>2</td>
<td>0.04</td>
</tr>
<tr>
<td>Isolated room/masonry</td>
<td>9</td>
<td>0.19</td>
</tr>
<tr>
<td>Kiva</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>Lithic artifact(s)</td>
<td>287</td>
<td>5.97</td>
</tr>
<tr>
<td>Lithic quarry</td>
<td>29</td>
<td>0.60</td>
</tr>
<tr>
<td>Lithic scatter</td>
<td>1311</td>
<td>27.28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4805</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Certain features are sometimes difficult to identify because of similarities with the raw materials from which they are constructed. Limestone and caliche, which occur in naturally disintegrating outcrops, can often be confused with fire-cracked rock of the same materials. Color and texture changes that occur when limestone and caliche are intentionally burned fall within the range of variation that can occur naturally as a result of seasonal temperature changes, weathering, and natural burning. In addition, some hearth features are composed of limestone and caliche cobbles that do not exhibit evidence of burning (Wilson 1984).

Burned and unburned mesquite bushes in coppice dune fields also may produce organic stains indistinguishable from cultural ash dumps or hearths. Burned packrat middens are a sticky case in point: packrats often incorporate artifacts as well as burned caliche pebbles into low mounds that resemble hearths. Fifield (1984b) reports middle-range research that compares packrat middens...
with cultural features. Similar kinds of studies are badly needed for many feature types.

Lithic procurement sites, which are defined largely on the basis of the surrounding geology and geomorphology, also are difficult to recognize. Cultural lithic debris may be impossible to distinguish from natural debris on these sites (Eardley 1966).

**Chronology**

One means of addressing the temporally unidentified archeological record is to find alternative techniques for assigning sites to chronological periods. While current exploratory methods may not work for all sites, many archeologists feel that the potential of such methods for dating assemblages has barely been tapped. Some methods, notably the definition of chronologically diagnostic lithic debitage, have rarely been applied to sites in southeastern New Mexico but have been employed with varying degrees of success elsewhere. Other methods, such as radiocarbon and obsidian-hydration dating, have become standard means of dating archeological deposits and merely need more exposure in this district in order to yield useful chronological results. Most of these methods are not appropriate for the initial recording of sites at the survey level, however, and they pertain only to steps taken in the mitigation phase of investigation.

**Dating Conventions**

One means of chronologically placing sites is by convention. The “rules” for temporal placement are often established by each project. For example, one convention is to regard temporally unknown lithic sites as Archaic simply because they have no ceramics (e.g., Beckett 1976). Lithic sites structurally and functionally similar to Archaic sites were probably produced up to and during historical times, however, especially in this region where an Archaic lifeway seems to have persisted very late and where nonceramic protohistoric groups are known to have lived. Other researchers have relied on using artifacts other than ceramics and projectile points as time markers. Biface thinning debris has been considered to indicate Archaic sites (Hilley 1982); flakes or formal tool fragments with parallel flaking have been considered to indicate Paleoindian sites (Schermmer 1980a). Most archeological analyses depend on establishing similar kinds of conventions. The danger lies in accepting the conventions as fact when they are in reality only typological devices.

**Dating Unknown Sites by Debitage Attributes**

One direction taken by researchers in the San Juan Basin (Kerley and Hogan 1983; Schutt 1980), southwestern Colorado (Phagan 1984), the Puerco River valley (Chapman 1982; Hicks 1985), southern Arizona (Sullivan and Rozen 1985), and the Pecos River valley (Lord and Reynolds 1985) stresses defining changes through time in lithic technology. Cores and lithic reduction debris from dated sites are described on the basis of techniques of core preparation; such debitage attributes as platform preparation, size, and shape; and ratios of bifacial tools to flake tools or of flakes to angular debris. Assemblages from undated sites are then compared with these dated assemblages to see if the undated assemblages can be assigned to a temporal category. A corollary class of studies defines technological changes in lithic reduction by looking at the types and varieties of raw materials used during each time period (Carmichael 1982; Heinsch et al. 1985; Schermmer 1980a).

Two studies using debitage characteristics to define temporal differences among assemblages have been conducted in southeastern New Mexico. Working with the hypothesis that a broader range of lithic materials was used during the Archaic than during later periods because of superior Archaic flintknapping craftsmanship, Schermmer (1980a) seriated the Haystack Mountain lithic concentrations by relative amount of the assemblages represented by different material types (measured by weight) using a multidimensional scaling program. His results were inconclusive. Heinsch et al. (1985:129–147) examined very small assemblages from the WIPP core area and found no significant difference in material types or platform types between radiocarbon-dated Neoarchaic (Ceramic period) and Archaic assemblages. The only significant differences were in tertiary flake width and thickness, with Archaic flakes being substantially larger. Material type selection was thought to influence flake size, and variability in assemblage function was considered to be responsible for assemblage differences. Similar lithic attribute data from the Abo project were submitted to cluster analysis to investigate functional differences among sites or differences in occupational history (Kemmer and Kearns 1984). Temporally unknown sites are represented in all classes of sites that were derived from the analysis, although such sites are more common in some categories than in others. In neither project were the results used to interpret the chronology of temporally unknown assemblages.

A major advantage to the method of dating temporally unknown assemblages by comparison with radiocarbon-dated assemblages is that it requires only the kinds of artifacts typically found on aceramic scatter—lithic debris. In addition, it fits well with the kinds of settlement pattern analyses most often conducted in the Southwest, in which adaptations are compared on a period-by-period basis in terms of site location, artifact assemblages, and overall subsistence strategy.

There are some disadvantages, however. First, the method relies on assumed principles of association between artifact assemblages and radiocarbon dates or diagnostic artifacts in order to date the technological char-
acteristics of debris. Much of southeastern New Mexico is covered with aeolian deposits that have been deflated and artifactual artifacts that may not be found on the original depositional surfaces. Consequently, defining associations between radiocarbon-dated features or other artifacts and debitage assemblages, which is always problematic, may be even more difficult in this depositional context.

Second, "pristine" sites from only one time period are difficult to identify. Reuse of sites is likely to be a common strategy, not only because prime environmental locations are likely to be favored for recollection but also because facilities and cultural debris may make sites more desirable than places with no facilities. Even when diagnostic artifacts from different periods are present, the extent to which sites have been recolonized is difficult to gauge.

Third, the empirical generalization that different reduction technologies are characteristic of different time periods remains difficult to prove or disprove. Researchers are often careful to qualify their results, stating that differences in site function may also result in different reduction trajectories and that even if trajectories are significantly different, there may be temporal overlap in their development.

Fourth, the method is geared towards assemblage analysis rather than analysis of individual diagnostic artifacts and therefore requires a minimum quantity of artifactual debris. Assemblage analyses may be poorly suited to small sites with few items. No guidelines have been established concerning adequate sample sizes, however, either for determining the characteristics of an assemblage known to be from a particular period or for determining whether an assemblage of unknown period is large enough to attempt the comparison. Heinrich et al. (1985) used very small assemblages to compare lithic reduction trajectories from different sites in the WIPP area.

Dating unknown assemblages by comparing them with assemblages of known time periods is one sign of a healthy change: alternative methods can be applied to the study of undated archaeological remains. The willingness to explore previously unstudied aspects of assemblages has resulted in a renaissance in field techniques. Detailed attribute data are now commonly collected for artifactual debris, whereas 20 years ago these kinds of assemblages were not recorded at all.

Dating Sites by Soil Correlations

A method currently being developed by geologist Fred Nials and by archeologists at Eastern New Mexico University emphasizes dating archeological deposits by correlation with soil sequences. Nials has identified an Archaic or Alithermal soil horizon, a Puebloan soil, and a modern soil, all of which stratigraphically overlie a Pleistocene argillolic red soil that forms a compact floor onto which deposits from later time periods often deflake. Nials's soil descriptions and profiles (Nials 1980c; Nials et al. 1977) are found in Haskell's (1977) Caprock report and in Thompson's (1980) investigations of six sites in the Carlsbad area. In southeastern New Mexico, sites have been chronologically placed on the basis of these soil correlations by Baker and Fifield (1983), by Fifield (1984a), and by Beck and Scherner (1981). The method was more widely applied in the San Juan Basin during the Navajo Indian Irrigation Project research (Del Bene and Ford 1982) and on earlier projects (Nials 1980a, 1980b). The apparent integrity of the soil strata also forms the basis for judgments concerning the integrity of archeological deposits on these sites.

Although Nials (1980a, 1980b, 1980c) has identified soil horizons by time period, no published data are available that chronometrically date the horizons, either in the specific projects cited above or more generally in southeastern, northwestern, or other parts of New Mexico. This lack of published detailed chronometric, chemical, soil, or statistical analyses makes it difficult to evaluate Nials's work. Soil profiles usually can be dated only to within ±1000 years by chronometric methods, partly because soil development tends to proceed slowly in arid Western environments and partly because of the large amount of variability in soil formation processes and rates owing to edaphic factors like topography. The influence of these factors on soil formation rates is not well understood. In fact, an extensive series of research goals and strategies was recently outlined for the study of geomorphic and stratigraphic indicators of climatic change in arid lands (Dohrenwend et al. 1986). Consequently, while pinning soil horizons down to periods lasting for hundreds—rather than thousands—of years is a goal soil scientists, geomorphologists, and archeologists would like to achieve, many experts feel that our current understanding of soil development processes does not begin to approach this scale of definition (Leslie McFadden, UNM Department of Geology, personal communication 1986). Nor can Holocene soils presently be defined over broad geographic areas as conforming to standard dated horizon descriptions. In sum, two problems must be overcome before this dating method can be used: datable soils must be defined over large areas, which may be an unrealistic goal, and then these soils must be chronometrically dated.

Thermoluminescent Dating of Fire-cracked Rock

Fire-cracked rock is one of the major constituents of many temporally unknown sites. If means could be found for accurately dating fire-cracked rock, at least some of these sites could be temporally placed. Thermoluminescence, one possible method of dating this class of debris, has been attempted on two projects in New Mexico (neither of which was in southeastern New Mexico) with
mixed results. Lord (1986) reports that 50% (9 of 18) of the samples submitted from the Abiquiu Reservoir project were dated by thermoluminescent techniques to time periods that approximately matched those obtained using other dating methods (obsidian hydration, radiocarbon dating, and diagnostic artifacts). The remaining nine samples dated earlier than 25,000 years BP; this result probably reflects residual geological thermoluminescence. Mark Harlan (personal communication 1986) reports that attempts by Public Service Company of New Mexico archeologists to date fire-cracked rock in the San Juan Basin were completely unsuccessful. Beta Analytic, Inc., performed the analyses of surface sandstones and quartzites for PNM: the sandstones were too porous to be dated, and the quartzites, which are ordinarily more easily datable, were too weathered. A higher success rate might have been obtained had materials from deeper deposits been submitted. If this caution also pertains to limestone and caliche, most fire-cracked rock (which occurs predominantly in surface contexts) from temporally unknown sites in the Roswell District would be undatable. The method bears further investigation, however, especially under circumstances in which results can be independently verified, as was possible in the Abiquiu Reservoir project.

Radiocarbon Dating and Obsidian–Hydration Dating

Radiocarbon dating and obsidian–hydration dating are two established techniques that have infrequently been applied to temporally unknown sites in the Roswell District. Obsidian is scarce on sites in southeastern New Mexico. Its rarity can be seen as an advantage rather than a drawback in tracing long-distance travel and contacts. The only attempt at obsidian–hydration dating and obsidian sourcing in the Roswell District, has been Parry and Speth’s (1984) Garmsey site analyses.

Charcoal samples often cannot be retrieved from the deflated fire-cracked rock scatters common on temporally unknown sites. With new (but expensive) capabilities for processing small sample sizes, however, the potential for recovering enough charcoal to submit for radiocarbon dating has increased tremendously.

Other Methods for Developing Chronologies

Measures of the amount of dispersion of hearth debris and of site size (as an index of multiple occupation over time) may yield relative chronological information. The assumption that a large site can be equated with multiple occupations is made in many archeological reports from southeastern New Mexico (e.g., Laumbach 1979; Roney 1985; Schermer 1980a). The degree of dispersion of artifact accumulations has also been related to occupational history (Stevenson 1985:77), with greater degrees of dispersal of artifact accumulations indicating earlier use. Little work has been done to quantify either of these concepts for measuring occupational history, but both are based on site data that may be available from survey records. Experimental and ethnoarcheological studies need to be conducted and ethnographic accounts of variability in feature use must be documented before such measures can be used with any degree of reliability.

Information Potential Of Temporally Unclassified Sites

Temporally unclassified sites represent a large segment of the archeological record of the Roswell District. Stuart and Gauthier (1981:266) estimate that aceramic lithic sites currently represent more than half of all sites recorded in southeastern New Mexico. On many projects, the percentage is even higher (e.g., 79% of all sites on the Abo survey; Kemrer and Kearns 1984:195). The high proportion of temporally unknown sites is especially notable since only recently have sites lacking temporal and cultural diagnostics been systematically recorded in the state as a whole, although Stuart and Gauthier (1981:267) speculate that they may have been recorded in the southeastern portion for a somewhat longer time than in other parts of New Mexico.

The information potential of "lithic unknown" and "other unknown" sites is typically considered to be minimal in comparison with that of sites that can be temporally or culturally placed (for example, there are no National Register nominations for sites in this category). Since unknown lithic and other temporally unclassified sites do constitute a substantial part of the archeology of southeastern New Mexico, it is particularly important for archeologists who frequently work in this region to reevaluate the data these sites do contain creatively and to make the most of them. Otherwise, the lion's share of this extensive, if unspectacular, archeological record is likely to be destroyed, overlooked, or dismissed.

The long-standing emphasis on chronology and cultural affiliation in archeological survey has resulted in a tendency to underestimate other kinds of data that temporally unknown sites may yield. Sites that lack diagnostics are difficult if not impossible to incorporate into typical settlement–pattern analyses that place sites into temporal or adaptational stages and then contrast the distributions of the various stages on the landscape (e.g., Willey 1956). Attempts to overcome the problem of what to do with unknown lithic site data have taken two forms. First, in order to incorporate these data into settlement pattern studies, attributes of assemblages from temporally known and unknown sites have been explored as a means of diagnosing changes in technology through time, as described above. Second, the spatial dimension of artifact distributions has been emphasized in studies of landscape use (e.g., Ebert 1986; Foley 1981; Isaac 1981). Temporally unknown sites have various kinds of information potential for landscape use studies. Locational
data have been used in conjunction with geographic attributes from topographic maps and contemporary field observations to project the probability of sites being found in different ecological zones (e.g., Beck and Schermer 1981; Kemrer and Kearns 1984). A major benefit of such locational analyses is that all sites are incorporated into the models—not just sites with diagnostic artifacts. Geological, geomorphological, and vegetation data are other mappable environmental variables that may be useful in locational analyses of sites.

The types of information available from all sites but often not used, especially from temporally unknown sites, includes feature attributes and raw material sourcing and morphology. Wilson (1984) is one of a few archeologists to describe attributes of fire-cracked rock scatters in detail. Although most of these scatters are located in the Tularosa Basin outside the study area, the feature descriptions pertain to the Roswell District. Wilson's views contrast with O'Laughlin's (1980) typology of fire-cracked rock scatters in the El Paso area. Although O'Laughlin distinguishes large from small hearth features, he infers that all of these fire-cracked rock features functioned as baking pits for the edible portions of various succulents. He postulates that large features and different morphological classes of features are the result of reuse of small features or of the hearth stones from the features. Wilson (1984:177), however, cites the ubiquitous distribution and long radiocarbon-dated span for fire-cracked rock features as evidence of multiple functions. Ethnographic evidence suggests that two important functions of fire-cracked rock features are roasting or stone-boiling of vegetables and rabbits.

Descriptions of raw material variability within and among source deposits are essential to studies of regional patterns of mobility and to studies using the regional distribution of raw materials in lithic assemblages to gauge territoriality and trade among prehistoric populations (e.g., Goodyear 1979; Reher and Frison 1977). If visual characteristics of local sources are not well known, errors like mistaking local materials for well-known exotic materials can result in erroneous inferences of long-distance movement or long-distance trade routes. For example, cherts macroscopically identical to the Edwards Plateau cherts of central Texas occur locally in the Dockum gravels of the Mescalero pediment (Holliday and Welty 1981). Brett and Schermer (1984) and Holliday and Welty (1981) review the distribution of raw material sources in southeastern New Mexico.

When lithic assemblage data are consistently collected and synthesized, patterns of landscape use can be discerned. Alexander (1982, 1983a, 1983b) has initiated a program of detailed lithic attribute analyses and comparison of site assemblages on small projects. Patterns indicating different procurement and reduction trajectories across space are beginning to emerge from these analyses. Using consistent attribute data over broad areas results in a database that is comparable from project to project and can be regionally synthesized for identifying large-scale patterning among assemblages. Alexander has presented his small project data in a cumulative format, so that previously analyzed sites are compared with sites currently under analysis, which gives the reader a sense of continuity and comparability lacking in many other contract reports, even when standard attributes are analyzed from project to project.

Local institutions like Eastern New Mexico University, Human Systems Research, Inc., and New Mexico State University are in an excellent position to conduct lithic source and assemblage studies, since the data generated through individual projects are cumulative and regional. The responsibility for conducting long-term research on these topics falls upon local institutions such as these because the necessary data are not available from the ARMS file.

Changes in the scale of analysis can result in insights about changes through time in land use. The following analysis utilizes ARMS feature data from undated components in a large-scale review of feature distribution in the five regions of the Roswell District defined in Chapter 1. One assumption this analysis makes is that there is a strong relationship among such large-scale landforms as mountain ranges and river valleys, the resources found there, and long-term human land use. Regional-scale data are useful for discussing the mobility and subsistence of prehistoric adaptations, since this scale provides a large enough geographic "window" so that broad similarities and differences in landscape use can be discerned.

This approach does not deny the possibility that much of the data from undated components may come from one or two time periods, as is probably the case in the Roswell District, where most dated occupations fall into the late Archaic and Ceramic periods. Yet the fact that we presently cannot determine the dates of these components means that other ways of learning about them must be exploited. Rather than discount the locational and functional information that temporally unknown components may offer, the analysis searches for large-scale patterns in feature distribution that may contain clues to human settlement in geographically and ecologically distinct regions, despite the lack of dates for these components. Other analyses might take advantage of more detailed feature attribute data to search for patterns at smaller scales.

The following analysis also does not address the question of whether different cultures migrated across space, or the question of cultural origins or relationships. Cultures are recognized archeologically by the types of artifacts and architecture that, by definition, are missing from temporally unclassifiable sites. Since cultures are not
recognized, ranges or territories as conceptualized by diagnostic artifact distributions are not defined.

In southeastern New Mexico, feature types have significantly different distributions in different regions. If feature types are treated the same way as projectile point types, the inference is that different cultures inhabited southeastern New Mexico in prehistoric times, each recognized by use of a particular feature type and each having its own territory, defined by the distribution of that feature type. A likelier explanation for the known distribution of features is that they match the distribution of certain resources that were being processed at these different facilities or were acquired as a result of different strategies. One clear example is the large number of elaborate burned rock features in the Guadalupes, which matches the distribution of the largest population of edible leaf succulents in southeastern New Mexico.

Unclassifiable Sites Of The Roswell District

Methods of Analysis

The following discussion relies heavily on ARMS file data available in November 1985, and components rather than sites are the units of analysis. The ARMS file allows three components to be recorded for each site; any component may be coded “unknown.” “Other/unknown” components make up 47.3% of the components recorded in the Roswell District (1862 of 3941). The proportions of “other/unknown” components is highest in the Canadian River valley (68.8% of recorded components) and in the Guadalupes (71.1%). It drops to 36.0% on the Plains and 33.1% in the Sierra Blanca region. Temporally unknown components represent 45.4% of the components recorded in the Pecos Valley. Components are coded by culture and period on the ARMS site forms, and three feature types may be recorded for each culture/period. Up to nine feature types may be recorded for every site. Only the features of the “other/unknown” components are summarized here. The frequency of features reported below is a conservative estimate of the actual number of features on the landscape.

The ARMS feature types listed in Table 4.1 were grouped into 12 categories so that patterning in feature distribution would stand out more clearly (groups are defined in Appendix 1). The ARMS file can be used to create typologies other than the one suggested in Appendix 1, even though the constraints of the feature codes provided are considerable. The lack of a “historical unknown” code in the ARMS culture coding format, for example, results in some obviously recent types (e.g., “historical trash”) appearing in the “unknown” category.

As proportions of features recorded per region are discussed below, please keep in mind that the actual frequencies of both features and components are widely disparate among the regions. In the Pecos Valley, 1318 unknown culture components have been recorded, while in the Sierra Blanca region this figure drops to only 49. Frequencies for the Canadian River valley (137), the Plains (139), and the Guadalupe Mountains (219) are also low.

Percentages of feature groups were calculated using the total number of unknown culture features in each region. Proportions reflect the percentage of feature groups within the region rather than comparisons between regions or for the district at large. The effects of uneven survey coverage between regions are minimized by comparing proportions rather than absolute frequencies of feature groups, but uneven coverage is undoubtedly responsible for some of the patterns reflected in the data, as will be discussed in Chapter 8.

Comparing Known–Culture and Unknown–Culture Components

Of all features recorded for all cultures in southeastern New Mexico, 52.2% are artifact scatters. In comparison, 53.6% of features on unknown components are artifact scatters (Table 4.2). When known and unknown culture components are compared, proportions for all feature groups are approximately equal except for structures and caves/rockshelters. The proportion of structures on unknown components (2.1%) is less than half the proportion of structures on components of known culture (4.4%). Temporally unknown components have nearly double the proportion of caves/rockshelters (3.5%) than that reported for known components (1.9%). Vandalism of this highly visible feature type may be responsible for the high proportion of undated components.

The distribution of feature types on known and unknown components supports the argument that unknown components span the range of feature types represented in the Roswell District. Further, features on unknown components occur in roughly the same proportions as features on other components in southeastern New Mexico; small artifact scatters are not more frequent among unknown components than among culturally known components.

Comparing Feature Groups Among Regions

Artifact Scatters and Hearth. In the Canadian River and Sierra Blanca regions respectively, artifact scatters account for 67.9% and 61.1% of the features at undated components, substantially higher proportions than that found in the district as a whole (53.6%). In the Guadalupe Mountains region, 38.9% of all features at undated components are artifact scatters, a much lower proportion than the district average. On the other hand, hearth features are underrepresented on Canadian River and Sierra Blanca region undated components (15.3% and 3.3%, respectively, compared with the 33.0% figure for the entire sample of undated components in the district). The
presently known distribution of features at undated components in the high mountains and in the northern parts of the district, then, consists largely of artifact scatters and few hearths. In the Guadalupe Mountains, the features tend to be hearths with few artifact scatters.

Nonarchitectural Features. Proportions of most grouped feature types are low; many fall below 5%. Some trends are worth noting, however. The proportion of nonarchitectural features at undated components is higher than the district-wide average in the Canadian River and Guadalupe Mountain regions, lower than that in the Sierra Blanca region. In the Canadian River region, the high frequency of bedrock mortars accounts for most of the nonarchitectural features at undated components, while in the Guadalupes, middens are largely responsible for the high proportion of nonarchitectural features. The term *midden* often connotes a burned rock feature in the archeological literature of southeastern New Mexico.
large midden count may add to the high number of specialized hearth features found in the Guadalupe.

Structures. In the Canadian River region, an unusually low proportion of structures has been recorded at undated components (0.6% compared with 2.1% of features from all undated components in the Roswell District). The Sierra Blanca region reports an unusually high proportion of structures at undated components, including a kiva, a pithouse, possible masonry and subterranean structures, an adobe room block, undefined rock alignments, and walls.

Burials, Rock Art, and Caves/Rockshelters. Burials from unknown components are only reported in the Pecos Valley and on the Plains, where the proportion far exceeds the proportion of burials at unknown components in the entire district (2.2% compared with 0.4%). Although rock art has been reported in the Canadian River region and on the Plains (Sam Ball, personal communication 1987), it does not appear in the ARMS file in those regions. Rock art occurs in high proportions in the Guadalupe (2.6% compared with the overall district figure of 0.7%) and in the Sierra Blanca region (4.4%). Caves and rockshelters are not reported on the Plains. They are disproportionately well represented in the Guadalupe (10.5% compared with 3.5% of all features at unknown components in the district) but have rarely been reported at undated components in the Sierra Blanca region (1.1%).

Organic Remains. Undated components in the Pecos Valley have yielded bone and shell organic remains. On the Plains, only bone has been recorded. Proportions of features with organic remains are low in the Canadian River region and the Guadalupe, with the latter region yielding only macrofloral remains at undated components. In the Sierra Blanca region, the proportion of organic remains at undated components is high (3.3% compared with 1.7% of all features at unknown components in the Roswell District). Organic remains at undated components in the Sierra Blanca region consist of bone and shell.

Stone Circles/Tipis/Rings/Wikis and “Other” Remains. Stone circles, tipi rings, and wikis have not been recorded at undated components on the Plains or in the Sierra Blanca region. In contrast, the proportion of such features is high on undated components in the Canadian River region (3.0% compared with 0.6% of all features at undated components in the district). Features characterized as “other” or “unknown” occur most frequently on undated components in the Plains, the Guadalupe, and the Sierra Blanca region.

Comparing Specific Feature Types Among Regions

When the distribution of specific feature types is examined, other patterns emerge. The proportion of ground stone is extremely low on undated components in both the Guadalupe and Sierra Blanca regions, making up 1.9% and 4.4% of all features, respectively, compared with 15.0% of all features at undated components in the entire district. The proportion of roasting pits, mescal pits, ring middens, and burned rock middens at undated components is extremely high in the Guadalupe (nearly 20%), while these feature types are virtually absent at undated components in all other regions. The proportion of quarries at undated components is highest in the Sierra Blanca region. Because of the disproportionately large number of recorded features in the Pecos Valley, the frequencies for various feature types at undated components in that region mirror the overall district frequencies closely.

In Chapter 8 the distribution of feature types as it changes through time will be discussed. Remember, however, that unknown components constitute nearly half of all components in the Roswell District.

The Nature Of The Adaptation

Unfortunately, for sites of unknown temporal affiliation, as for most other sites in the Roswell District, subsistence data are extremely scarce. Not only are most unknown sites recorded as a result of survey projects on which no ethno biological samples are collected, but even when such samples are available from excavation projects, preservation tends to be poor. For temporally unknown sites, subsistence information derived from ethno biological analyses are nonexistent.

Site location may provide clues to prehistoric subsistence patterns; for example, some researchers assume that sites are optimally located to take advantage of important subsistence resources (Jochim 1976; Winterhalder and Smith 1981). The influence of subsistence resources on archaeological remains can be observed on a regional level by examining the types of features that occur in the five regions defined for the Roswell District. As discussed in Chapters 1 and 3 these regions are broadly defined on the basis of differences in topography, elevation, and major physiographic features, all of which are environmental variables that affect resource availability within a region. As summarized above, features on components of unknown cultural affiliation represent the range of features present on dated components in the Roswell District. Because neither feature types nor resources are evenly distributed among the five regions of the Roswell District, people of various time periods and adaptations may have used these regions differently owing to differential availability of resources. The following interpretations are not meant to characterize components of unknown cultural affiliation as a separate adaptation, but rather an amalgam of all adaptations represented in the Roswell District.

The preceding section outlined the distribution of features in the five regions; some tentative inferences about sub-
sistence and mobility can be drawn from these distributions. In the Guadalupes, the high proportion of large, specialized hearth features (including roasting pits, mescal pits, burned rock middens, and ring middens), in combination with the fact that recovered organic remains reported in the ARMS data are macrofloral remains, supports the long-held belief that this region was utilized for intensive processing of leaf succulents (Roney 1985). Since the distribution of leaf succulents is confined to the Guadalupes, this observation comes as no surprise. Less obvious is the absence of reported bone and shell remains and the low frequency of ground stone and bedrock mortars. (Bedrock mortars are enigmatic features of unknown function. Nials [in Schermer 1980a] presents a convincing argument that these features may be natural rather than cultural in origin.) If we assume that there are no differences in preservation and visibility among regions, subsistence in the Guadalupes appears to have been specialized and largely limited to certain kinds of plant resources requiring extensive processing. Again, it must be emphasized that this interpretation is based exclusively on the analysis of ARMS file data for components of unknown culture, although data from dated components support the interpretation (Chapter 8).

Structural sites and elaborate features do not necessarily indicate sedentism. Instead, mobile groups may have periodically reused them over a long time span. This use pattern implies a more logistically organized use of space than that characteristic of a foraging strategy, in which places are used serially (Binford 1980). Some portions of subsistence systems may resemble foraging adaptations because of particular resource distributions, while other portions of subsistence systems are logistically organized. A resource distribution that results in a redundant, serially occupied archeological landscape is one of high biomass (i.e., forest) locales where the main resource is game hunted with an encounter strategy (Winterhalder and Smith 1981).

In the Roswell District, the large fire-cracked rock features of the Guadalupes fit the description of facilities of periodic reuse. The lack of reported structures in this region may reflect the abundance of caves and rockshelters, which provide natural shelter. Use of the Guadalupe landscape seems to be tied to the presence of existing natural and cultural facilities at specific locales in particular topographic settings (P. Katz 1978; Roney 1985).

A contrast to this pattern is found in the Sierra Blanca region. Here, although there is a high proportion of structures, we can infer that they probably date to the Ceramic period or to later occupations (i.e., kiva, Adobe roomblock, subterranean structure) and that they were located with respect to agricultural lands. These structures represent a long-term continuous or periodic investment in places similar to that evidenced by the Guadalupe burned rock middens and rockshelters. The remainder of the archeological record of the Sierra Blanca, however, suggests a foraging strategy with a basis in encounter hunting in the mountains and foothills. Artifact scatters are common and hearths are extraordinarily rare, suggesting low hearth visibility resulting from (a) short-term use of hearths or little use of hearths by small mobile groups who did not reuse the same camping places; (b) use of wood fires built directly on the ground with few rock components; (c) use of hearths for short-term cooking and camping purposes rather than for long-term food-processing purposes; (d) incorporation of hearths into structures, which offer shelter, storage, and warmth; or (e) concealment of hearths by the vegetation or surface geomorphology specific to the Sierra Blanca region.

The Sierra Blanca region is an anomaly in many respects. Both shell and bone occur on unknown components. Specialized hearth features and bedrock mortars have not been recorded, and the proportion of ground stone at temporally unknown components is quite low (4.4%). The only nonarchitectural feature in the ARMS data file is a midden.

The Canadian River region also exhibits a low proportion of reported hearths, which may indicate a similar pattern of use of space in that region. The proportion of stone circles, tipi rings, and wikiups at undated components is high, but it is likely that these features were single-occupation dwellings (overlapping rings occur elsewhere on the Plains, which would be an index of reuse). The proportion of bedrock mortars, which is far higher than that given for the district as a whole, indicates that certain locales were reused for processing specific resources (assuming that these features are cultural rather than natural). In the Canadian River region, two occurrences of bone at undated components have been noted in the ARMS data. Ground stone proportions are moderately high on undated components (14.6%).

Subsistence remains reported from Pecos Valley components of unknown cultural affiliation include 54 occurrences of bone, 14 of shell, and 1 of macrofloral remains. Ground stone frequencies are moderately high, representing 17.5% of all features at components of unknown culture in this region. The incidence of specialized hearth features, while extremely low in comparison with frequencies recorded for the Guadalupes, is higher than observed elsewhere in the Roswell District. Bedrock mortars are present in low proportions. The Pecos Valley unknown-culture components reflect a mix of subsistence practices, predominantly hunting and gathering, in which freshwater marine resources, faunal resources, and plant or insect resources requiring grinding were important. It should be emphasized again that the Pecos Valley contributes such a high frequency of features to the total number of recorded features for the Roswell District that the proportions of feature groups in the entire Roswell District is largely a reflection of the proportions of feature groups in the Pecos Valley. A low proportion
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of structures of the types that are, as suggested for the Sierra Blanca region, probably tied to agricultural lands has been reported on undated components in the Pecos Valley. Most of the temporarily unknown archeological record in this region, however, consists of hearths and artifact scatters.

Features at undated components on the Plains are similar to those of the Pecos Valley, except that a much lower proportion of features other than hearths and artifact scatters is present. On the Plains, all reported organic remains at culturally unknown components are bone. No specialized hearth features are present, nor are there any bedrock mortars. The proportion of ground stone is moderately high at undated components (13.5%). Cairns account for most of the nonarchitectural features at these components (eight of nine features).

The pattern of high frequencies of hearths and artifact scatters at temporally unknown components in the Pecos Valley and Plains regions may indicate (a) that mobile groups tended to construct or rebuild hearths during most occupations; (b) that rocks were important components of hearths for specific kinds of cooking (stone-boiling or roasting in rock ovens) or food processing in these regions; (c) that these regions may have been occupied for a long time span, resulting in a slowly accumulating, more highly visible archeological record than that found in regions with similar adaptations but shorter occupation spans (see Chapter 8 for a summary of temporal components by region); or (d) that hearths are more highly visible in these regions owing to the vegetation and surface geomorphology of the Plains and Pecos Valley.

The essential differences among the Pecos Valley, Canadian River, and Plains regions center on low hearth frequencies and high bedrock mortar frequencies along the Canadian River and the low diversity of feature types on the Plains.

Feature variety may also suggest patterns of human use of space. Of the 90 types of features recorded in the Roswell District on all components, 58 (64.4%) appear on culturally unknown components. In the Pecos Valley region, 49 of the feature types are present on culturally unknown components, suggesting variety and flexibility in the use of this large region. The Guadalupe (in which 28 feature types occur on unknown components) and the Canadian River and Sierra Blanca regions (both with 25 feature types reported on unknown components) represent a substantial drop in feature variety. The Plains region has 17 feature types on temporally unknown components, less than one-fifth of the feature types reported at undated components in the Roswell District at large. The low variety of feature types on the Plains suggests a redundant use of the landscape.

The amount of survey coverage in each region undoubtedly has a great impact on the variety of features recorded. As summarized in Chapter 8, the Pecos Valley region far surpasses the other regions in acres surveyed on large projects since 1979. Feature variety appears to be directly correlated with acres surveyed in this region. In the other regions, which all have very low survey coverage in comparison with the Pecos Valley, the relationship between survey coverage and feature variety is less clear. The Sierra Blanca region survey coverage is twice that of the Plains; the Plains coverage is more than twice that of the Guadalupe and the Canadian River. The variety of feature types represented in each region, however, is not directly correlated with the amount of survey coverage. If a direct relationship existed between survey coverage and feature variety, more feature types would be represented in the Sierra Blanca and Plains regions and the least number of feature types would be found in the Guadalupe and the Canadian River region.

In sum, when feature groups on components of unknown cultural affiliation are compared among regions of the Roswell District, strong differences between the two mountain regions and more subtle differences among the lowlands regions are apparent. These patterns may reflect gross differences in subsistence strategies among the five regions. The Sierra Blanca and Canadian River regions share more feature attributes than the Sierra Blanca and Guadalupe regions, while the Plains and Pecos Valley are similar in feature types present and in their proportions.

Managing The Resource

National and State Register Properties

No temporally unknown sites from the Roswell District are on or have been nominated to the National Register of Historic Places, not only because archeologists have emphasized dated sites for National Register nominations but also because of the small number of nominations from the Roswell District. Numerous temporally unknown sites have been declared eligible for nomination, however. The rationale for declaring sites eligible often does not depend on the presence of diagnostic artifacts or deposits that can be radiocarbon dated.

Research Directions and Site Significance

Most archeologists would agree that the problem posed by temporally unknown components is their lack of datable materials. Consequently, few would dispute the need for concentration of research efforts on finding means to date these sites. A review of rationale employed by archeologists working in southeastern New Mexico for determining National Register eligibility clearly identifies an emphasis on chronology. By consensus, two top priority research questions are

(a) How can sites of unknown temporal affiliation be placed in cultural or temporal periods?
(b) Are there dating devices that can be employed during the survey level of investigation?

Research geared towards developing methods of placing temporally unknown sites into a chronological framework requires well-controlled studies that correlate firmly dated deposits or features with careful assemblage analysis. Raw material controls are important to these analyses, since differences in lithic strategies are likely to be closely linked with the attributes of particular raw materials. Differences through time in use of raw materials may result in assemblage differences that can be correlated with different time periods. Through careful analysis of excavation data, it may be possible to identify chronologically sensitive attributes that make it possible to date more sites at the survey level, using diagnostic artifacts as dating conventions.

We would like to be able to incorporate temporally unknown sites into current research, in the absence of available dating mechanisms. Since questions directed toward change through time are not presently feasible for temporally unknown components, research questions should also focus on the following topics:

(a) What factors have influenced the spatial distribution of features and artifact types?
(b) What factors influence the visibility and discovery of features and artifact types?
(c) How can these factors be related to theories about human mobility and subsistence?
(d) How can these factors be related to theories about the formation of the archeological record?

While research should be guided by specific questions and hypotheses in the above areas, data recording and synthesis may produce provocative patterns that also lead to the generation of hypotheses. Attribute recording and a focus on geomorphological studies are two specific ways to address the above questions.

Attribute Recording. Seeing patterns in data, whether as a basis for deductive or inductive reasoning, requires that attribute data be recorded with care. Such data may take the form of lithic and fire-cracked rock attributes, attributes of other feature types, lithic source attributes, or attributes of the natural environment, such as vegetation, soils, or microtopography. Further, these data need to be synthesized so that patterns of artifact and feature distribution are visible beyond the site level. Such data can be highly informative for dated components as well as for undated components.

Studies focusing on fire-cracked rock are lacking in southeastern New Mexico, although this artifact class is undoubtedly the most common in the Roswell District. Ethnohistorical literature reviews may reveal the range of use of various kinds of hearth features by groups indigenous to and outside the district (e.g., Wilson 1984).

Alternatively, careful recording and analysis of the features themselves and construction of descriptive and distributional typologies may link them with environmental features (O’Laughlin 1980; Roney 1985), with processing specific resources, or with such morphological changes as accumulation or dispersion through time.

Geomorphological Studies. Regional geomorphological studies are crucial to archeological questions in the Roswell District. More work with chemical, statistical, and descriptive attributes of soils may result in a better understanding of not only how these soils were formed but also when they were formed and what relationship they bear to archeological deposits. The visibility, structure, and content of archeological distributions are often directly linked to changing surface conditions (Fifield 1984a; Shelley and Nials 1983; Windsnider 1985, 1986). Well-controlled pattern recognition studies of the effects of various kinds of surface processes on archeological assemblages, along with regional surface studies at a variety of scales to document surface characteristics and conditions, would provide important information about how the archeological record is formed and how we perceive it. Some classes of sites, such as specialized hearth features, may be highly visible while others, such as shallow pit structures, may be virtually impossible to find, both as a result of initial construction methods and as a result of geological processes influencing surface visibility. Understanding how these processes have affected different classes of archeological remains will clarify how our view of the past has been biased by what we can identify and date on the surface.

Significance. Although archeologists working in southeastern New Mexico have most often cited the potential to contribute chronological information as a criterion for determining site significance, many other criteria are also cited. These criteria apply to many sites in the Roswell District, not only those of unknown time period. They include the potential to contribute technological information, information about site structure and function, paleoenvironmental data, data on raw material utilization, and data on the intensity and duration of occupation.

The data potential of this class of archeological remains is a function of archeologists’ imaginations. Temporarily unknown remains need not be viewed as an information–impooverished part of the archeological record of southeastern New Mexico. The consequence of undervaluing these data is the dismissal of an enormous portion of the archeology of the Roswell District.
Unlike the chapters dealing with the Paleoindian and Archaic periods, this chapter concerns sites that are grouped together not on the basis of a hypothesized adaptation, but rather because they give evidence of a particular technological innovation: the introduction and use of pottery. Although ceramic vessels are often considered to be an artifact associated with agricultural economies, the association is not a complete one. Corn and other cultigens appear among the subsistence remains at Archaic sites in the San Juan Basin of northeastern New Mexico hundreds of years before the appearance of ceramics, and conversely, a number of authors have suggested that some ceramic—using peoples in the Roswell District, especially in the far southeastern portion of the state, exhibited little, if any, dependence on agriculture (e.g., Leslie 1979; Roney 1985; Stuart and Gauthier 1981).

The earliest use of ceramics in southeastern New Mexico is suggested to have occurred sometime between AD 600 and 900 (Stuart and Gauthier 1981; Wiseman 1983:Fig. 2). Although use of ceramics continued, of course, into historical times, the period covered by this chapter ends with the Spanish entrada of 1540.

Site-specific and project-specific archeological literature for the Ceramic period in the Roswell District is discussed below in the section on Ceramic Period Sites. General readings for this period can be found in the two Jornada Mogollon Conference volumes (Beckett and Wiseman 1979; Beck 1985), in Stuart and Gauthier (1981), and in the five publications discussed in the Chronology section below (Corley 1965; Jelinek 1967; Kelley 1984a; Lehmer 1948; and Leslie 1979).

Problems Of Interpretation

The first interpretive problem that will be discussed here concerns the unusually high proportion of nonstructural Ceramic period sites in the Roswell District, relative to other areas of New Mexico. Stuart and Gauthier (1981:268–270) estimate that at least two-thirds of the Ceramic period sites in southeastern New Mexico are mixed ceramic and lithic scatters; these authors point out that although ceramic and lithic scatters are common in other parts of New Mexico, the low proportion of structural sites in the southeast is unique. Our analysis of the ARMS file data from the Laboratory of Anthropology (November 1985) indicates an even higher proportion of nonstructural sites. Of the 1168 Ceramic period components reported for the Roswell District, only 110 (9.4%) are coded as having evidence of structures or possible structures.

Some of this apparent absence of structures may be a reflection of the widespread deposition of aeolian and alluvial materials throughout much of the district since the Ceramic period. Surface indications of pithouse structures are so rare in this part of the state that amateur archeologists and artifact collectors generally use probes and augers to locate subsurface structures. Since most of the site data consist of surface survey information, structural sites may be underrepresented. Many of the recent CRM-funded excavations in the Roswell District (see Ceramic Period Sites below) have tested ceramic and lithic scatter sites, however, and almost none have encountered evidence of structures. It would appear, therefore, that the apparent low proportion of structural sites in the Roswell District site assemblage is likely to be real, although the true proportion of structural sites may be somewhat higher than the ARMS data indicate.

The most commonly offered explanation for this low proportion of structural sites is that the Ceramic period groups in southeast New Mexico were much less sedentary than their contemporaries elsewhere in the state. While it is possible that this is true, as will be argued in the section below on the Nature of the Adaptation, it seems more likely that this apparently anomalous settlement pattern is a result of our having lumped sites belonging to two or more discrete settlement systems together, simply because they all yield surface ceramics.

This brings us to the second problem of interpretation for the Ceramic period sites: How were ceramic vessels used by populations in the Roswell District between AD 900 and 1540? What advantages did these vessels offer that offset their disadvantages for relatively mobile groups? The major ethnographically recorded uses of ceramics are for storage and for cooking and serving food. Ceramics could also be used to transport liquids, but other containers such as skins and water-tight baskets would be lighter and less breakable. Although detailed ceramic data are sometimes available on a site-specific or even project-specific basis, especially for excavation projects, a general study of vessel form, size, orifice diameter, seating, etc., using data from a large sample of sites is needed if we are to address the question of vessel function and site function for the myriad ceramic and ceramic and lithic scatters in the Roswell District. In addition, data on the
nature of ceramic use by ethnographically recorded mobile groups should be very helpful in examining the nature of the Ceramic period occupation of the area.

A third interpretive problem concerns the nature of trade and other cultural relations between the Ceramic period populations of the Roswell District and the Anasazi and Jornada Mogollon groups to the northwest and west. Kemrer and Kearns (1984:191) summarize this problem as it relates to their particular study area.

[Are the ceramic period sites in the Abo study area more closely aligned with the Jornada branch of the Mogollon or do they represent an extension of eastern Anasazi or Puebloan cultures? Conversely, the Abo study area appears to represent an area peripheral to the mainstream developments of both the Mogollon and Anasazi culture areas. Does the cultural manifestation represented by the ceramic period groups constitute a distinct expression of formative stage development influenced by, yet independent from, these larger cultural entities? Or, does the formative period within the Abo study area represent a local amalgamation of ideas, influences and lifeways adopted from both the Mogollon and Anasazi culture areas?]

Stuart and Gauthier (1981:277) suggest that, if sufficient burial populations were available to assess the genetic make-up of Ceramic period groups in southeastern New Mexico, we would find that they were neither Anasazi nor Mogollon types. They argue that while the earliest ceramic-using groups may have been of western New Mexico (Mogollon) origin, through time there was considerable admixture of Anasazi and Plains groups.

In his discussion of the Ceramic period in the Middle Pecos Valley, Jelinek (1967:145–161 passim) describes a basic Jornada Mogollon pattern with strong influence from cultural groups in the Middle and Northern Rio Grande for the early portion of the Ceramic period (until ca. AD 1000). He believes that the Anasazi influence waned and that later Ceramic period groups in the Middle Pecos had less interaction with either the Mogollon or the Anasazi systems.

Kelley (1984a:153–156), on the other hand, views the sources of outside influence in the Ceramic period of the Sierra Blanca region as varying not with time but across space. She describes a basic local cultural tradition marked by the ubiquitous presence of locally manufactured brownware utility vessels, but she sees a "north–south cultural dichotomy" (Kelley 1984a:156) in the origins of external influences as evidenced by trade ceramics and architectural innovations. Kelley sees this dichotomy as continuing across all of the phases that she describes for the Sierra Blanca region. (Both Kelley’s and Jelinek’s phase sequences will be discussed in the section on Chronology below.)

Finally, in a paper in the first Jornada Mogollon Conference volume (Beckett and Wiseman 1979), Schaafsma (1979) suggests that the influence of the Casas Grandes system of northern Chihuahua on the Jornada Mogollon has been underestimated. This is probably especially true of the period between AD 1205 and 1261, the Paquimé phase (Cordell 1984:275–277), when the size and strength of the Casas Grandes interaction sphere appear to have been greatest.

Chronology

Four major phases sequences have been used to order discussions of the Ceramic period prehistory of the Roswell District: those proposed by Lehmer (1948), Leslie (1979; based on Corley 1965), Kelley (1984a: originally formulated in Kelley 1966), and Jelinek (1967). These phase sequences will be outlined in the following paragraphs; Figure 5.1 shows the areas to which these formulations have been applied, and Figure 5.2 shows the temporal relationships of the phase sequences to each other.

The Jornada Branch of the Mogollon

The earliest attempt to characterize Ceramic period developments in south–central New Mexico was a study by Lehmer (1948). As originally formulated, Lehmer’s (1948) eastern or Jornada branch of the Mogollon culture included the western portion of the Roswell District (Figure 5.1). Lehmer (1948:70–89) describes a preceramic Hueco phase which he viewed as arising out of the Cochise tradition of the southern Southwest and as being equivalent to the Basketmaker developments of the Anasazi tradition. The cultural inventory of Hueco phase sites is largely identical to the Archaic assemblages, however, and today the Hueco phase is generally considered to be an Archaic phenomenon (Anyon 1985:5; cf. Beckett 1979).

Lehmer believed that the introduction of ceramics and pithouses into the Jornada Mogollon area was a result of contact between the late Hueco phase populations and the San Marcial peoples of the Middle Rio Grande, a formative group exhibiting both Mogollon and Anasazi traits (Lehmer 1948:74; see Marshall and Walt 1984 for a summary of San Marcial). As Figure 5.2 shows, Lehmer divided the resultant Ceramic period manifestations within the Jornada area into northern and southern phase sequences. Lehmer describes the northern phases as variants of the better known southern phases—Mesilla, Doña Ana, and El Paso. The reasons for defining separate phases seem largely to be relatively minor differences in the locally manufactured pottery.

The Mesilla phase (Lehmer 1948:75–78) is described as a time of pithouse sites, comprising both round and rectangular structures, with numerous extramural hearths and
FIGURE 5.1  STUDY AREAS DISCUSSED BY JELINEK (1967), KELLEY (1984a), LEHMER (1948),
AND LESLIE (1979)
<table>
<thead>
<tr>
<th>SIERRA BLANCA (Kelley 1966)</th>
<th>MIDDLE PECOS (Jelinek 1967)</th>
<th>JORNADA BRANCH (Lehmer 1948)</th>
<th>EASTERN EXTENSION (revised) (Leslie 1979)</th>
<th>EASTERN EXTENSION (Corley 1965)</th>
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<tr>
<td>1600</td>
<td></td>
<td></td>
<td>Post-Ochoa</td>
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<tr>
<td>1500</td>
<td></td>
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<td>Ochoa</td>
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<td>1400</td>
<td>Lincoln</td>
<td>San Andres</td>
<td>Transitional</td>
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<td>1300</td>
<td>Glencoe</td>
<td>Late McKenzie</td>
<td>El Paso</td>
<td>Maljamar</td>
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<td>1200</td>
<td>Corona</td>
<td>Early McKenzie</td>
<td></td>
<td>Maljamar</td>
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<tr>
<td>1100</td>
<td>Mesita Negra</td>
<td>Three Rivers</td>
<td></td>
<td>Maljamar</td>
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<tr>
<td>1000</td>
<td>Early Mesita Negra</td>
<td>Late 18 Mile</td>
<td>Querecho</td>
<td>Querecho</td>
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<tr>
<td>900</td>
<td>(undefined ceramic period remains)</td>
<td>Late 18 Mile</td>
<td>Mesilla</td>
<td></td>
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<td>800</td>
<td>Early 18 Mile</td>
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<td>Hueso</td>
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**Figure 5.2** Comparitive Phase Sequences for the Ceramic Period in the Roswell District
storage pits. Nearly all recovered pottery is a locally produced utility ware called El Paso Brown; imported ceramics are extremely rare, but where they occur, they appear to be indicative of trade with the Mimbres area.

Lehmer’s (1948:78–80) Doña Ana phase is described as a time of transition. In architecture this transition involved the development of multiroomed, above-ground adobe structures that were occupied along with pithouses like those of the previous period. In ceramics the transition was from the plain El Paso Brown to a painted ware—El Paso Polychrome. Doña Ana sites are described as yielding assemblages containing approximately half El Paso Brown and half El Paso Polychrome. In addition Lehmer notes that tradeware ceramics increase in numbers and in variety in the Doña Ana sites. Contacts with the Mimbres area are still seen as strong, but tradewares from the Zuni area are also in evidence, and ceramics were being imported from the northern Tularosa Basin as well.

Some recent researchers (e.g., Anyon 1985:7) have argued that, rather than representing a distinct temporal phase, Doña Ana sites are multicomponent sites containing both Mesilla phase and El Paso phase structures and materials. Others, especially David Carmichael (1983, 1985) have argued strongly that the Doña Ana or Transitional Pueblo phase is not only real, but a period that is critical to an understanding of agricultural intensification in the Jornada Mogollon area.

Lehmer’s (1948:80–84) El Paso phase sites are described as consisting of adobe roomblocks arranged either around a plaza or plazas or in long, east–west oriented tiers. The dominant ceramic type is El Paso Polychrome, but El Paso phase ceramic assemblages contain a large number and variety of tradewares, with Chupadero Black-on-white, Lincoln Black-on-red, and Three Rivers Black-on-terracotta as the most common types. In addition, Lehmer notes that El Paso Polychrome has a very wide distribution in the southwestern United States, again indicating widespread trade in ceramics during this time.

Relatively little work was done in the Jornada area between Lehmer’s 1948 study and the mid- to late 1970s. Beginning in the 1970s a number of important studies in the Tularosa Basin (Human Systems Research 1973; Wimberly and Eidenbach 1977a; Wimberly and Rogers 1977) and in the El Paso area (Carmichael 1981, 1983, 1985; Hard 1983, 1986; Whalen 1977, 1978, 1981) have greatly expanded our understanding of the Ceramic period occupation. But these areas lie outside the Roswell District. The eastern portions of the area that Lehmer included within the Jornada Mogollon culture area and the portions of the Roswell District lying beyond the Jornada culture area have been subject to remarkably little investigation and even less synthesis, and those synthetic efforts that are available date from the mid-1960s, when relatively few data were available.

The Eastern Extension of the Jornada Mogollon

In 1965 Corley suggested, based on information collected by the Lea County Archaeological Society, that extreme southeastern New Mexico (Figure 5.1) was occupied during the Ceramic period by groups closely related to the Jornada Mogollon, as defined by Lehmer. Corley’s phase sequence was revised slightly by Robert Leslie, also of the Lea County Archaeological Society, in 1979, and it is Leslie’s sequence (1979:188–192) that is discussed here (Figure 5.2).

The Querecho phase is the earliest ceramic period defined by Corley and described by Leslie. Only nonstructural sites are known for the early portions of this phase, but small rectangular pitrooms occur on a few late Querecho sites. In addition some possible surface room floors were noted on two Querecho sites. The main ceramic types encountered on sites of this phase are locally manufactured variants of Jornada Brown. Mimbres and Cebolleta Black-on-white appear among the imported ceramics.

The Maljamar phase sites are divided between nonstructural “camps” and pithouse villages, some containing as many as 20 to 30 small rectangular structures. The major ceramic types continue to be variants of Jornada Brown, with some corrugated utility wares appearing near the end of the period. Chupadero Black-on-white is the major import accompanied by small amounts of El Paso Polychrome and Three Rivers Red-on-terracotta.

After the end of the Maljamar phase, which Leslie suggests occurred ca. AD 1300 but others (e.g., Stuart and Gauthier 1981:275) argue occurred between AD 1150 and 1200, the extreme southeastern corner of New Mexico appears to have been temporarily abandoned or at least to have experienced some dislocation of population. Sites of the next phase, which Leslie terms Transitional, yield distinctive ceramic assemblages containing Glaze A red and yellow types; Gila, Ramos, and El Paso polychromes; and Lincoln Black-on-red.

The final Ceramic period phase, Ochoa, includes sites with surface rooms, both in roomblocks and as single units. The pottery assemblages are much less varied than those of the Transitional phase and consist largely of a single locally produced type, Ochoa Indent. The main imported type is Chupadero Black-on-white.

The Sierra Blanca Region

In 1966 Jane Holden Kelley presented a dissertation based on work done during the 1950s in the Sierra Blanca region, which forms the west–central portion of the Roswell District. This very important work was nearly unavailable for many years, but it has recently been reprinted by the University of Michigan Museum of Anthropology (Kelley 1984a). Kelley’s sequence (Figure 5.2) consists of three phases, two of which—Corona and
Lincoln—are viewed as sequential and pertaining to the northern portion of her study area, while the third (Glencoe) is largely contemporaneous with both Corona and Lincoln but occurs in the southern portion of the Sierra Blanca region (Figure 5.1).

The Glencoe phase sites are described as tending to be near drainages in the piñon—juniper zone and as consisting of open, scattered arrangements of pithouses (Kelley 1984a:47). The major pottery type of this phase is Jornada Brown, a type very similar to El Paso Brown but generally distinguished on the basis of finer temper and better finishing (Anyon 1985:87). In later sites of this phase Chupadero Black—on—white, El Paso Polychrome, Lincoln Black—on—red, and Three Rivers Red—on—terracotta appear as tradewares, while earlier sites yield the Chupadero and Three Rivers types along with Mimbres Boldface Black—on—white (Kelley 1984a:48).

Sites of the earlier of the two northern phases, the Corona phase, are described as small open villages of contiguous jachal rooms with upright slab foundations (Kelley 1984a:50). Corona phase sites tend to be concentrated in the piñon—juniper zone, either in broad valley bottoms or in flat areas near water. The two major pottery types for this phase are Jornada Brown and Chupadero Black—on—white (Kelley 1984a:51).

The subsequent Lincoln phase sites are also generally located in the piñon—juniper zone, most often on larger drainages (Kelley 1984a:52). The villages consist of multroom pueblos of stone masonry and coursed adobe, with the roomblocks being arranged either in a square around a plaza or in a linear fashion facing east onto a plaza. Evidence of subterranean “ceremonial” structures has been noted on Lincoln phase sites—a rare feature in the Jornada Mogollon area. In the ceramic complex Jornada Brown was largely replaced by corrugated utility wares. Chupadero Black—on—white remained popular; other major imported types are the same as those noted for the late Glencoe phase—El Paso Polychrome and Three Rivers Red—on—terracotta—with Lincoln Black—on—red being locally produced. Kelley (1984a:55—56) suggests that Bloom Mound, an excavated Lincoln phase site that appears to have been catastrophically destroyed, may have been a trading center.

The Middle Pecos Valley

During a nine—year period between the mid—1950s and mid—1960s Arthur Jelinek conducted a survey and testing project along the middle reaches of the Pecos River between Fort Sumner and Roswell (Figure 5.1). Based on this research, he formulated a Ceramic period sequence of four phases, the first three of which are each subdivided into an early and a late subphase (Jelinek 1967:144—164).

The Early and Late 18 Mile phase sites are pithouse sites with some surface rooms appearing along with pithouses in the late subphase. The ceramic assemblages of the early subphase consist of Jornada Brown and Lino Grey, an early Anasazi type. In the late subphase assemblages Middle Pecos Micaceous largely replaces the plain brownware and Red Mesa Black—on—white sherds are fairly common.

Architectural information is sketchy for the next pair of subphases, Early and Late Mesita Negra, but it appears that pithouses were still the most common structures. The ceramic assemblage for the Early Mesita Negra sites is very similar to those of Late 18 Mile sites, although the first sherds of Chupadero Black—on—white appear in sites from the former period. In the Late Mesita Negra phase, Chupadero Black—on—white becomes common while micaceous sherds decline in frequency. Intrusives during this period are largely from the middle and northern Rio Grande and consist of such wares as Santa Fe and Socorro Black—on—white.

Architectural information is also minimal for Early and Late McKenzie phase sites, but known structures consist of rectangular, slab—based surface rooms. Ceramic assemblages from the early subphase contain very few intrusive wares; during this period McKenzie Brown appears to have begun replacing the micaceous ware that formed the most common utility type during the preceding phase. In Late McKenzie sites brownwares form a smaller proportion of the ceramic assemblage than previously, and increasingly the brownwares that are present are corrugated. Chupadero and Middle Pecos Black—on—white are the most common painted wares; intrusives occur but the numbers are very small.

Jelinek encountered some evidence for continued use of the Middle Pecos region by Ceramic period groups after AD 1300, and he termed this phase Post—McKenzie. Jelinek argues (1967:159—160) that the ceramics indicate ties to the northern Rio Grande area and notes that the increased frequency of obsidian in the lithic assemblages supports this suggestion. The only structure noted on his Post—McKenzie sites was one possible tipi ring (Jelinek 1967:160).

Discussion

All of these suggested phase sequences are at least 20 years old; Leslie’s revision of Corley’s Eastern Extension sequence largely reworks old data rather than incorporating new information. These sequences are based on very small numbers of sites; the data are from nonintensive surveys and from excavations of sites whose representativeness is unknown. And, as will be discussed in the next section, these sequences were based almost exclusively on ceramic cross—dating—the number of absolute dates available in the mid—1960s was extremely small. Given the large number of systematic survey and excavation projects that have been carried out since these sequences
were offered, there is a critical need for a new synthesis of the data concerning Ceramic period occupation in southeastern New Mexico.

Not only are these sequences outdated, the types of information that they offer are very limited—generally only the architectural and ceramic patterns discussed above, with some additional data on lithic artifacts. The general architectural progression from pithouse to surface dwellings described in these phase sequences is a pan-Southwestern phenomenon. The discussions of the ceramic assemblages may be accurate as far as they go, but they are almost entirely dependent on ceramic cross-dating. Additionally, these discussions are largely based on surface collections, and southeastern New Mexico has been the scene of long-term, intensive artifact collecting. The temporally sensitive sherd types that are critical to cross-dating are often the very types that are most likely to be removed from sites by artifact collectors. Attempts to provide an updated scheme of space/time systematics for this area will need to incorporate information on site typology, settlement pattern, and subsistence as well as temporally controlled data on ceramics and architecture.

Absolute Dates. The calendar dates assigned to the various phase sequences discussed above (Figure 5.2) were largely based on ceramic cross-dating—the presence on a site of ceramics dated somewhere else on the basis of dendrochronology or some other absolute means. At the time that he formulated the original Jornada Mogollon chronology, Lehmer’s (1948) only calendrical dates were inferential. That is, none of the sites on which he based the phase sequence yielded datable tree-ring samples, but El Paso Polychrome (one of his major pottery types) had been reported in well-dated contexts in other areas. All of the dates for El Paso Polychrome in these sites ranged between AD 1310 and 1366.

Leslie’s (1979) revision of Corley’s (1965) Eastern Extension phase sequence says nothing about the basis for assigning calendar dates to the phases. Apparently these dates were based largely on ceramic cross-dating and partially on Leslie’s previous work with projectile point typologies (Leslie 1978).

Jane Kelley’s (1984a) only absolute dates for the Sierra Blanca region were from five dendrochronological specimens from the Armstrong Ruin, a Lincoln phase site, reported by Smiley et al. (1953). These dates ranged between AD 1342 and 1366. All other temporal assignments are based on ceramic cross-dating. Jelinek’s (1967) sequence was also largely based on cross-dating. The only absolute dates available to him at the time that the research was published were two radiocarbon dates from site P4C, one on bison bone and one from a structural post, and one date on bison bone from site P4B. Jelinek assigned the former site to the Late McKenzie phase, and he felt that the dates of AD 1360 ± 100 and AD 1100 ± 200, respectively, were consistent with his AD 1250 to 1350 temporal assignment for this phase, given that the post sample mixed inner and outer rings and that posts are often reused. The latter site, P4B, was assigned to the Late Mesita Negra phase (AD 1100–1200), and the date from the bison bone sample was AD 1130 ± 100.

Even by the time the Camilli and Allen (1979) draft overview for the Roswell District was prepared, absolute dates were still rare. They report a total of 27 dates, including the 8 dendrochronological and radiocarbon dates discussed above (Camilli and Allen 1979:Tables 17, 21, 23, and 26). Since that time, many new radiocarbon dates have been reported, largely as a result of the increase in CRM-funded projects.

The reported dates attributed to the Ceramic period encountered in the course of our efforts to update this overview have been in the general temporal range given above for the Ceramic period (ca. AD 900 to 1540). But discussions of the relations between these dates and the various phase sequences have generally taken the form of whether or not the radiocarbon date was consistent with the ceramic date for the site, not whether the phase sequence dates were consistent with newly derived radiocarbon dates. Perhaps even more important, in nearly every case where radiocarbon dates indicating occupation earlier than AD 800–900 were recovered from a ceramic site (and these cases are very common), the site was interpreted as a multicomponent Archaic/Ceramic period site; for an exception see Lord and Reynolds (1985:193), who suggest that ceramics came into use in southeastern New Mexico at least 300 years earlier than currently believed. While many multicomponent Archaic/Ceramic sites undoubtedly exist, the possibility that ceramics came into use in southeastern New Mexico much earlier than is now believed should also be considered.

As a first step toward updating the space/time schemes available for the Roswell District, a survey of all known absolute dates for southeastern New Mexico similar to Whalen’s (1985) survey for south-central and southwestern New Mexico would be very useful. Such a survey should include data on the suggested phase assignment for the site and on the reported ceramic assemblage. In this way the accuracy of the temporal designations for the phases based on cross-dating could be assessed.

The Nature Of The Adaptation

Although there are few syntheses of the Ceramic period adaptation in southeastern New Mexico, even a brief review of those that are available makes it clear that there is a great deal of apparent variability within the area (Tuinier 1979:380–381) and that most of the described adaptations are quite different from Ceramic period developments in the rest of the state. The greatest differences, both from place to place within the Roswell Dis-
strict and between this area and the rest of the state, are in
the reported degree of sedentism and the reported degree
of dependence on agriculture. These two aspects of the
adaptation are discussed separately below, and then pos-
sible reasons for the apparent intra- and interregional
variability are discussed.

Subsistence

The most extensive data on subsistence available
within the Roswell District are from the Sierra Blanca region
along its western border. In Kelley’s dissertation (1965; also
see Kelley 1984a) some data on plant and animal
remains were reported, and since that time Kelley and her
colleagues have made a number of additional contribu-
tions to our understanding of subsistence patterns in this
area. The only currently published information on the
Sierra Blanca Restudy Project and the ongoing Capitan
North Project are Kelley (1979) and Driver (1985),
respectively, but additional information in the form of pre-
liminary reports on both faunal and ethnobotanical
studies are available in the BLM’s Roswell District Office.

In his study of faunal remains from six sites in the Sierra
Blanca region, Driver (1985:59–61) describes Ceramic
period meat procurement as including three components:
hunting of small animals, especially lagomorphs, in the
immediate site vicinity; hunting of medium–sized ani-
mals somewhat farther afield (although the general site
environment seems to have determined whether antelope
or deer were dominant in this prey species category); and
acquisition of bison from still farther away, although he is
unable to determine whether this acquisition took the
form of actual hunting expeditions or of trade. Driver
concludes that hunting served largely to supply protein
rather than fat for the prehistoric diet in this region. He
notes that “the low frequency of lower limb bones of deer
and antelope...suggests a lack of concern with high–fat
areas of the skeleton” and that “many of the species
represented on the site are generally low in fat” (Driver
1985:59).

Based on analyses of fauna from the Angus site, a Glenco
phase pithouse village on the Rio Bonito (Speth and Scott
1983), Speth has suggested that a shift occurred through
time in the western uplands of the Roswell District to-
ward emphasis on larger animals (antelope and deer).
He views this shift as paralleling the shift to an emphasis on
bison procurement in the Pecos Valley portion of the dis-

trict and believes that it occurred for the same socioe-

conomic reasons (see discussion of Pecos Valley subsis-
tence later in this section).

Available ethnobotanical data from the Sierra Blanca re-

gion largely consist of macrofossil discussions in Kel-

ley’s dissertation (Kelley 1984a); more detailed informa-
tion on both macrofossils and items recovered through
flotation is available in preliminary reports (e.g., Adams
1984) on materials recovered from the Robinson site, a

Lincoln phase pueblo in the upper Macho drainage. Kel-

ley reports an abundance of corn remains from at least
some house units at the Phillips site and corn, walnut, and

Opuntia remains from the Bonnell site. Adams reports
that macrofossil and preliminary flotation analyses indi-
cate that corn played a significant role in the diet at the
Robinson site with beans as a secondary cultigen. Kelley
(1984b) notes that although no squash remains were re-
covered in the Robinson site samples, squash has been
reported from other nearby Lincoln phase sites. Among
the wild plant remains, the most important plants re-

sources appear to have been Cheno–Am seeds and wild

nut crops, both pifion and oak.

Ethnobotanical subsistence data from the middle Pecos
Valley consists of information on macrofossils from the
Bloom Mound site published in Kelley’s dissertation (Kelley
1984a) and pollen data from Jelinek’s Middle

Pecos survey and testing project (Jelinek 1967). Some
faunal data were published in those monographs, but
most of the detailed faunal reconstructions have been a
result of work by John Speth and his colleagues (Roeck
and Speth 1986; Speth 1983; Speth and Parry 1978,

1980).

In her discussion of Bloom Mound, Kelley notes that
members of the Roswell Archaeological Society reported
finding corn both stacked against a room wall and tied up
in a bag. Corn remains were found in at least five rooms
at the site in the form of cobs, cobs with the kernels still
in place, and loose kernels. Beans and hatchberry seeds
were also reported, but Kelley was unable to verify the
presence of these plant species. More recent data from the
nearby Henderson site confirm this apparent importance
of corn agriculture in the Rio Hondo Valley. Roeck and

Speth (1986:36) report that burned maize cobs are found
throughout the midden deposits at this site. They hypo-
thesize a mixed horticultural/hunting–and–gathering subsis-
tence economy for the occupants of this site based on
evidence from the food remains and from the population
of human burials.

Jelinek (1967) does not report any macrofossils, but vir-
tually all of his pollen samples contained Zea pollen
(1967:133). Zea pollen was especially abundant in sam-

ples from site P4B, a Late Mesilla Negra phase site. Since

corn pollen is relatively rare even in cornfields, its pres-
ence in any quantity in an archeological site implies con-
siderable human involvement with this cultigen.

The major sources of faunal data for the Middle Pecos
portion of the Roswell District are the Garnsey site on the
Pecos just south of the city of Roswell and the Henderson
site on the Rio Hondo to the west of Roswell. The
Garnsey site is a bison kill site dating to the mid–1400s;
the Henderson site is a pueblo dating between ca. AD

1200 and 1400. The faunal assemblages from both of
these sites indicate a major emphasis on bison procure-
ment in the late Ceramic period, and both sites exhibit a
surprising pattern of differential selection for male animals. Speth (1983) argues that this indicates a spring hunting pattern because it is during this period that bulls, being in better condition than the pregnant and nursing cows, would be the preferred prey.

Speth also notes that, at least in the Garnsey assemblage, there is evidence for selection of individuals and body parts based on potential for recovery of fat. He argues that the Garnsey materials indicate highly selective hunting—and-butcher ing behavior designed to maximize fat recovery and suggests that this strategy is used to compensate for periods of low availability of carbohydrates (Speth 1983).

The emphasis on bison noted at these late prehistoric sites marks the culmination of a temporal trend toward hunting of larger prey species. This trend culminated in an emphasis on antelope and deer in the upland areas along the western edge of the Roswell District and in an emphasis on bison procurement in the Pecos Valley. Jelinek noted this trend and explained it in terms of increased (or renewed) availability of bison in the Pecos Valley during the McKenzie phase. He suggests that the abundance of this new resource “persuaded the peoples living in [the Middle Pecos Valley] to abandon their traditional pattern of cultivation in favor of bison hunting” (Jelinek 1967:158).

This view of the meaning of the major increase in bison frequencies in late Ceramic period has been the commonly accepted one in the archaeological literature (e.g., Stuart and Gauthier 1981:277). Speth, however, offers an alternative explanation beginning with an aggregation of population into increasingly more sedentary communities, perhaps in conjunction with greater reliance on cultivated plants. As communities became larger and more residentially stable, prey populations around the settlements would have been reduced and dispersed. This in turn may have favored greater reliance on logistic strategies for procuring hunted foods, and greater selectivity for larger prey species, as travel time and transport costs between villages and hunting areas increased....[T]he increasing importance of bison in late prehistoric Pecos Valley subsistence systems may reflect a greater commitment on the part of the inhabitants to a village-based horticultural economy, not a transitional stage of a group en route to becoming nomadic bison hunters (Speth 1984:15).

In part, Speth’s argument against Jelinek’s interpretation of increased bison hunting in the late prehistoric period is based on tooth wear and life expectancy studies on the bison remains from the Garnsey kill site. Speth and Parry argue that

[i]the Garnsey data, while consistent with a view of generally increasing exploitation of bison in the Middle Pecos area, cast doubt on the likelihood that bison became sufficiently abundant or predictable to have brought about the transformation of village-farming systems into bison-hunting economies. The high rate of dental attrition and the comparatively short life expectancy of the Garnsey bison attest to the marginal nature of local forage during this period. In all likelihood, bison populations in the area remained relatively small and probably were very vulnerable to fluctuations in precipitation which altered local pasture conditions (Speth and Parry 1980:176–177).

Another interesting perspective on faunal resource use in the middle Pecos Valley is provided by Wiseman (1985), who reports on excavations at the Rocky Arroyo site in the Rio Hondo drainage. This thirteenth-century pithouse site has been badly damaged by vandals, but recovered faunal remains indicate that fish and bison formed an important part of the diet at this site. Both the Garnsey and the Rocky Arroyo data indicate that the potential contribution of riverine resources, especially fish and mussels, to prehistoric diet in the Pecos Valley has been underestimated.

Subsistence data from the upper reaches of the Pecos River within the Roswell District are almost nonexistent. The single exception is Mobley’s (1979) data from the Los Esteros area. Mobley (1979:214) notes that little of the floral material recovered from his excavated sites could be definitely determined to be of cultural origin; in the absence of botanical data he used faunal remains and the artifact assemblage to examine subsistence activities. In general, he found no evidence to indicate that Pueblo period subsistence differed from the Archaic hunting-and-gathering subsistence economy in his sample of sites. He suggests that during the Pueblo period the Los Esteros area was occupied by hunters and gatherers who maintained a basically Archaic way of life but incorporated ceramics and the bow and arrow into their subsistence technology (Mobley 1979:220).

A similar pattern has been suggested for the Guadalupe Mountains region of the Roswell District.

In the Guadalupe Mountains differences between the Archaic Period and the Ceramic Period are less pronounced than in surrounding areas. Agriculture was not adopted here and related changes such as population growth, aggregation, and architectural development did not occur. Instead hunting and gathering remained the primary subsistence activities. No major changes in settlement pattern have been perceived and when faunal data relating to diet have been recovered (S. Applegarth 1976) no change in prey species has been indicated.

The primary characteristics distinguishing the Ceramic Period from the Archaic Period are the

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use of pottery and the bow and arrow (Roney 1985:52).

Almost no subsistence data are available for the Canadian River or the northern portion of the Plains regions. Those few indications that do exist (e.g., Winter 1983) imply a similar pattern of a continued hunting—and—gathering economy with the inclusion of a very few Puebloan traits—again, mostly ceramics and the bow and arrow.

For the extreme southeastern corner of the district, a very different pattern is suggested. Both pithouses and surface structures have been reported on sites in this area (Corley 1965); Speth notes that local amateurs have found that

[from at least A.D. 1100 onwards there were major pithouse villages throughout the area...[T]hese sites contain substantial architectural remains, including large pithouses and surface jarcal roomblocks. Most of these sites have substantial midden deposits. The amateurs know of at least 20 pithouse villages south of Roswell. All occur near former major springs or on the edge of what are now dry playas (Speth 1984:11).

What is remarkable about these sites is the claim made by Corley (1965), supported by Leslie (1979), and largely accepted by most archaeologists who have written about this area (e.g., Stuart and Gauthier 1981:275; Tainter 1979:380) that these sites are a result of occupation by largely sedentary people who did not practice agriculture but rather depended upon a hunting—and—gathering economy. Harvesting of acorns and mesquite and hunting of bison are the most often proposed bases of such sedentary occupations.

The very few known cases of nonagricultural sedentary populations almost involve resources that are unusually abundant, highly localized, and very predictable—Northwest Coast village settlements based on the availability of anadromous fish are the classic case. Since none of the known nonhorticultural subsistence resources available to prehistoric groups in southeastern New Mexico meet these criteria, I would suggest that the absence of evidence for agriculture is more likely to be a result of the excavation techniques used than of a true absence of agriculture. All of the excavations that have been carried out at structural sites in extreme southeastern New Mexico have been done by amateurs; in assessing this question of sedentism in the absence of agriculture, Speth notes:

The amateurs never used flotation techniques and frequently excavated without screening. As a consequence, botanical data are totally lacking. Given the scarcity of firewood in the area, used corn cobs and even bison dung probably would have been burned as fuel. Thus the remains of burned maize cupules and other cultigens, if present probably

would only be detectable using flotation (Speth 1984:11).

Sedentism and Mobility

The whole question of sedentism and mobility is, of course, intimately connected to the patterns of subsistence discussed in the preceding section. The suggestion is frequently made that Jornada Mogollon groups in general, and Ceramic period groups in southeastern New Mexico in particular, were less sedentary than contemporary groups elsewhere in New Mexico and the general Southwest. This suggestion is based on the large number of nonstructural Ceramic period sites and on the observation that there are whole areas of southeastern New Mexico (e.g., the Guadalupe Mountains; S. Katz 1985; Roney 1985) that were extensively utilized by ceramic—using people but yield no evidence of agriculture or of structural sites.

These observations are interpreted as indicating that Ceramic period groups were only minimally dependent on agriculture. These people, it is argued, lived in their pit-house and pueblo villages for only part of the year, for the rest of the time they lived a mobile life, making forays into areas such as the Guadalupes and out onto the Plains to harvest wild plant resources and to hunt (S. Katz 1985; Speth 1985:40).

It is possible that this is true. It is difficult, however, to envision a pattern of mobility under which the occupants of the small number of known and suspected structural sites could have created the large number of known nonstructural Ceramic period sites, especially since the structural sites occur in very localized areas and the scatter occurs over vast areas far from known structural sites.

It is also difficult to suggest a seasonal round for such an adaptation that would solve the scheduling conflicts between wild resource availability and agricultural labor requirements and the logistical problems of highly mobile groups using stored agricultural products. More important, there are a number of other explanations that could also account for the observed patterns.

In discussing the nonsedentary, nonagricultural use of the Guadalupe Mountains, Roney notes the possibility that agricultural groups, the nearest of which were 65 to 100 km north on the Rio Peñasco, may have exploited the Guadalupe Mountains periodically, possibly using the resources in the Guadalupe Mountains as a buffer against crop failure (Roney 1985:55).

But he also describes several other potential explanations.

It is possible that hunting and gathering populations who exploited shinnery oak communities east of the Pecos River also included the Guadalupe Mountains in the seasonal rounds....Applegarth (1979:179)
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raises the possibility that the Guadalupe Mountains were utilized in the Ceramic Period by Plains oriented groups who moved into the area seasonally to trade with agricultural peoples in adjacent regions. Finally it is possible that the Guadalupe Mountains were utilized by an indigenous population of hunters and gatherers who traded with nearby agricultural peoples (Roney 1985:55).

It has already been noted that Mobley (1979) believes that Ceramic period occupation of the Los Esteros area consisted of a hunter–gatherer adaptation that had incorporated ceramics and the bow and arrow. Similar suggestions have been made for sites in many areas of the Roswell District. In describing artifacts from a ceramic and lithic scatter near Artesia, Kauffman (1983a) notes that the high proportion of bifacial debitage suggests an Archaic site while the presence of ceramics and of projectile points common to the Maljamar and Post–Maljamar phases (Figure 5.2) suggests occupation in the AD 1150 to 1300 period.

Two explanations for this seeming incongruity can be advanced: 1) the site is a mixed, multicomponent assemblage, utilized during both the Archaic and Pueblo periods; or 2) NMSU 1394 resulted from occupations by members of a cultural group that still retained a basic Archaic stone tool tradition well into the 13th century or even later (Kauffman 1983a:23).

Kauffman (1983a:23) concludes that “overall, the total artifact assemblage shows strong evidence to support the second hypothesis.”

Lord and Reynolds (1985) examined several hypotheses concerning the nature of Ceramic period occupation in the WIPP project area in far southeastern New Mexico that were similar to several of those advanced by Roney for the Guadalupe Mountains. Based on the evidence recovered during their investigations they conclude that the WIPP sites represent

one portion of a seasonal round by mobile hunter–gatherer groups....Based on the presence of mesquite, acorns, and summer maturing grasses, a summer to early fall exploitation season is postulated (Lord and Reynolds 1985:236).

They suggest the term Neoarchaic to designate these hunter–gatherer groups since it “implies a continuation of an Archaic adaptation with the addition of ceramics and the bow and arrow” (Lord and Reynolds 1985:237).

It is, as noted, perfectly possible that Ceramic period agriculturalists in the Roswell District were much less dependent on agriculture and far more mobile than their contemporaries elsewhere. Even if true, however, this observation would not seem to account for the whole pattern of Ceramic period occupation in the district. There appear to have been entire regions that were subjected to only highly mobile, possibly seasonal utilization. And even in those areas where structural sites with evidence of agriculture are known or suspected to exist, large numbers of nonstructural, potentially gathering–or hunting–related sites are also to be found—possibly the product of hunting–and–gathering activities among the local agriculturalists or possibly the remains of a coexisting hunting–and–gathering adaptation.

An alternative model of Ceramic period occupation in the Roswell District, then, would be that populations of both agriculturalists and hunters and gatherers were to be found there. The presence of ceramics on sites created by groups of both types, it could be argued, has caused the remains of two very different settlement and subsistence systems to be lumped together into an apparently anomalous pattern. This alternative model appears to account for at least as much of the observed patterning in the Roswell District as the model that considers all Ceramic period sites to be part of a single adaptation, and it offers several potential directions for future research.

Attempts could be made to separate sites of the two adaptations on technological grounds—lithic technology (e.g., Kauffman 1983a), lithic material sourcing, petrographic analysis of ceramics, proportions of various artifact classes, etc. The subsistence and mobility research topics suggested in the chapter on the Archaic could be pursued in relation to the “Neoarchaic” hunters and gatherers of the Ceramic period. Questions of the relationship between hunters and gatherers and neighboring agricultural groups could be considered. Did the mutualistic food exchanges between Plains and Pueblo groups that were documented at the time of European contact (Speth and Spielmann 1983; Spielmann 1982) have their roots in trade relationships in existence throughout the Ceramic period? And perhaps most important in the context of this chapter, what was the nature of the agriculturalist adaptation in southeastern New Mexico? Were these people largely reliant on agriculture or did their settlement and subsistence system incorporate large hunting–and–gathering components?

Site Typology

Clearly the whole question of site types and functions depends on the resolution of the fundamental question discussed above: Is there a Ceramic period adaptation in the Roswell District, or were there two (or more) coexisting adaptations, both incorporating the use of pottery? Previous efforts to formulate a Ceramic period site typology for this area have assumed the existence of a single adaptation, and the results have been somewhat like the blind men describing the elephant—the kinds of sites proposed are heavily dependent on the location of the study area.

Studies done in areas where agriculture was a major part of the subsistence base offer typologies based on pres-
ence/absence of structures, pithouses vs surface pueblos, etc. In areas where agriculture does not appear to have been important, site types tend to include basecamps, gathering camps, plant-processing sites, etc. And most interesting, in these latter cases the same types and the same recognition criteria are proposed for both Archaic and Ceramic sites (e.g., Gallagher and Bearden 1980; Kemrer and Kearns 1984). What follows is a brief discussion of some of the typologies that have been offered for the Roswell District Ceramic period occupation with the caution that the nature of the relationship between the numerous hunting-and-gathering sites and the relatively rare structural sites sites has yet to be determined.

As discussed in the Chronology section the four main phase sequences used in the southeastern portion of New Mexico (Jelinek 1967; Kelley 1984a; Lehmer 1948; and Leslie 1979) were formulated in areas where agriculture is known or strongly suspected (in the case of Corley’s Eastern Extension area [Leslie 1979]) to have been an important component of the subsistence system. Temporally all four sequences describe a pithouse to pueblo transition; within given time periods the expressed awareness of the nonstructural portion of the settlement system varies.

Lehmer (1948) scarcely mentions nonstructural sites, yet we know from subsequent work that at least in some parts of the Jornada Mogollon area most of the sites are non-structural. Whalen (1977, 1978) reports that 88.4% of his Hueco Bolson sites can be classified as small camps or temporary activity areas—a figure very similar to the 90.6% nonstructural components among Ceramic period records in the ARMS file (November, 1985) for the Roswell District. Anderson and Carter (1985) suggest that a third site type, consisting of multiple overlapping small camps indicating reuse of a location, should be added to residential sites and small camps in characterizing Jornada Mogollon land use in the Hueco Bolson.

Leslie (1979:185–186) divides the known sites in far southeastern New Mexico into two types: *seasonal* sites, which he suggests were used for gathering mesquite and acorns and which sometimes show evidence of multiple uses and sometimes do not, and *house* sites. He includes early sites with extensive midden deposits but no obvious evidence of structures in the latter category, assuming that some type of structure was present. Leslie (1979:186) suggests that these sites were located with respect to permanent water sources. He does not offer figures on the proportion of structural to nonstructural sites, but he does provide a figure showing known or suspected structural sites (n = 46; Leslie 1979:Fig. 3) and he notes that the seasonal sites were “found by the hundreds within the shinnery-covered sandy areas” (Leslie 1979:185).

Although Jelinek (1967:43–44) concentrated his research on the structural sites within his survey area, he does provide some information on the kinds of nonstructural sites that occur in the middle Pecos Valley region and on relative proportions of his site types. He describes large and small nonstructural artifact scatter sites. It is not possible to determine from the information given whether these are actually two different site types or whether the larger sites are simply palimpsests of small scatter sites indicating reoccupation of the same locus; given the results of other studies in the district, the latter seems likely. The two nonstructural site types comprise 41.2% of the sites recorded by Jelinek’s survey. An additional 50.0% of the sites are in the category he describes as “concentrations of several hundred flakes and/or sherds and occasional indications of permanent architecture” (Jelinek 1967:43). This last category is pivotal to our interpretation of settlement in the middle Pecos Valley. If Jelinek is correct in believing that most of these sites are, in fact, architectural, then the middle Pecos has a much higher proportion of structural sites than many other portions of the Roswell District. If, on the other hand, most of these sites are nonstructural, then this area, like many other portions of the district, has somewhere in the neighborhood of 90.0% nonstructural sites.

Kelley’s (1984a) work in the Sierra Blanca region was wholly focused on structural sites, and most subsequent work has been as well. The impression left by all this selective work is one of a settlement system dominated by sites with architecture. So little systematic survey has been done in this region that it is impossible to assess the relative proportions of structural and nonstructural sites.

It is very interesting in the context of a proposed continuation of a hunting-and-gathering lifeway during the Ceramic period that the three most carefully worked out and supported site typology discussions for the lower Pecos Valley region (Gallagher and Bearden 1980; Kemrer and Kearns 1984; Lord and Reynolds 1985) have already been discussed in some detail in Chapter 3. The functional and morphological site types offered in these publications are applied to both ceramic and nonceramic sites. No structural Ceramic period sites were encountered during these projects.

A fourth relatively detailed site typology from the lower Pecos Valley region is offered by Phillips et al. (1981:23–31). This typology takes into account both mobility strategy (free wandering, restricted wandering, central-based, and small–village sedentary) and use intensity (opportunistic activity loci, recurrent activity loci, and habitations). The habitations include all sites used for domestic activities from small, single–occupation camps to permanent sites with architecture. The recurrent activity sites include ring middens, quarry sites, and fieldhouses. The opportunistic activity loci are, as the name indicates, places where a single activity took place.

In their survey of the Two Rivers dam and reservoir area,
Phillips et al. (1981:81) found mostly opportunistic activity sites, recurrent lithic procurement sites, and habitations. Generally the habitations were small, single-use camps; two large, multiple-occupation camps were identified—one dating to the Archaic and the other to what they term the Early Ceramic (ca. AD 900–1200). They argue (Phillips et al. 1981:31) that prior to AD 1200 ceramic—using groups in their area continued to practice basically a Late Archaic, central-based mobility strategy (and presumably an Archaic subsistence strategy as well). After that time, they suggest, the ceramic—using groups adopted agriculture and the small—village sedentary mobility option. They have no evidence of Late Ceramic occupation in their study area.

Work from the Guadalupe Mountains (S. Katz 1985; Katz and Katz 1979) suggests that there are three dimensions of variability in site types: open vs rockshelter/cave, large vs small, and presence/absence of large burned rock features, such as ring middens or rock mounds. Katz and Katz (1979:366) report that 6% of the recorded sites in Guadalupe Mountains National Park are caves or shelters. They note that the presence or absence of burned rock features was the major component of variability within the open sites, not presence or absence of ceramics; sites without burned rock made up 39% of their sample. The open sites with burned rock (51% of the sample) include a range of thermal features—hearths, burned rock scatters (probably the remains of multiple hearths), ring middens (apparently used for processing succulent plants, such as agave), and burned rock mounds (late prehistoric [ca. AD 1100–1400] features of unknown function).

Katz and Katz (1979:369) conclude that all of the open sites recorded in the survey could be classified as “work camps” rather than “base camps." Susanna Katz (1985) argues that the large/small dichotomy in these open sites is a function of reuse and not of differences in site function: “Most likely, the large sites represent multiple, overlapping small occupations” (Katz 1985:2). Roney suggests that the association between ceramics and the large burned rock features on sites in the Guadalupe Mountains is a reflection of a major subsistence shift in this region between the Archaic and Ceramic periods.

Rather than a shift from wild to domestic crops, the "agricultural revolution" in this part of the Southwest might be seen as the change from a foraging subsistence strategy to a collecting strategy (Binford 1980). That is, Archaic peoples foraged for plant foods which had long periods of availability and could be consumed as they were harvested, while later peoples emphasized collecting foods for storage and later consumption. Agricultural crops were among the species most suitable for this latter strategy, but their adoption was only one aspect of a larger subsistence change. In the Guadalupe Mountains area the shift to a collector strategy is expressed in increased emphasis on agave, a wild plant food with superior storage properties. The shift to a collector strategy is also accompanied by adoption of pottery, an improvement in storage technology (Roney 1985:160–161).

In Chapter 3 I argued that the Mescalero Apache were an inappropriate analog for Archaic groups in the Roswell area because the latter emphasized plant resources that require relatively little investment in processing and storage, while the Mescalero emphasized high—investment resources. Roney’s assessment of Ceramic period subsistence quoted above suggests that the Mescalero might have much greater potential as an analog for Ceramic period hunters and gatherers. There are still difficulties, however, most of them having to do with the availability of horses. The ethnographies of the Mescalero (e.g., Basehart 1974) were compiled long after the horse had become a major component in Mescalero culture. With horses the Mescalero could transport themselves to exploit distant resource patches; they could economically transport acquired resources over long distances to basecamps; and they could depend on raiding as a supplementary economic activity. None of these very important options were available to Ceramic period hunters and gatherers, and for that reason analogies to the Mescalero must be drawn with caution.

Discussion

The quotation from Roney near the end of the previous section points to an attractive unifying hypothesis under which the considerable variability of the Ceramic period in southeastern New Mexico can be reconciled. Throughout this section of this chapter I have been arguing for the possibility that people with two rather different adaptations but a single ceramic tradition occupied the Roswell District in late prehistoric times. Roney’s description of trends in post-Archaic subsistence suggests that perhaps, in a larger sense, one can argue that the Ceramic period in this part of the Southwest does represent a single adaptation.

Earlier, in discussing the nature of the Archaic adaptation, I suggested that Archaic groups in this area practiced a form of serial foraging, with a small component of the collector strategy being incorporated to solve problems of resource scarcity during the winter. Roney’s argument quoted above suggests that the shift from Archaic to Ceramic period subsistence was one in which the collector component of the adaptation assumed greater and greater importance.

It is suggested that in the modern period this trend that provides us with the potential unifying hypotheses that will permit us to account for the presence both of "Neo—Archaic" hunter—gatherers and of agriculturalists. All of the ceramic—using groups in the Roswell District were involved in this shift in emphasis to the collector component of the subsistence system; some accomplished this shift by emphasizing...
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wild resources with particular availability and storage characteristics, others by adopting agriculture.

Given the suggested shift in subsistence, one would expect a concomitant shift in the settlement system, which would be evidenced by differences in site types and site locations from those described for the Archaic. Clearly those who adopted the agricultural option did begin to produce sites of a very different type—sites with structures, implying longer-term occupation, and ultimately village sites, implying aggregated, relatively sedentary settlement. Those who retained a hunting–and–gathering lifeway also produced sites of new types—the ubiquitous ring midden and burned rock mound sites that appear to have been associated with processing the newly emphasized resources.

Given the proposed increased importance of the collector component of the settlement and subsistence system, it would seem likely that true basecamps would occur, sites to which the collected resources would be brought for storage and consumption. This does not appear to be the case, however. Both Gallagher and Bearden (1980) and S. Katz (1985) note that for the Ceramic period as during the Archaic, large sites appear to be simply amalgams of numerous, overlapping, separately occupied small sites. A possible explanation for the absence of this expected site type may lie in the problems of transporting goods on foot. It may have been easier to cache processed resources and then move the consumers from cache to cache than to transport the stored resources to a basecamp for future consumption.

The final topic to be addressed is a possible explanation for the proposed shift in the subsistence system. The argument was made in Chapter 3 that the Archaic was a period of slow, gradual population growth. If this is so, then ultimately population reached a level where the mobility of local hunter–gatherer populations was constrained (see Tainter [1979] for a related argument). The only options in situations of decreased mobility are to limit population or to intensify resource acquisition in the smaller home range that is still available.

The continuation of a hunting–and–gathering lifeway throughout the Ceramic period could be viewed as a special case of Stuart’s power and efficiency model for the origins or the adoption of agriculture (Stuart and Gauthier 1981). Rather than reflecting an agricultural population that intensified and went into a power drive while the hunter–gatherer groups maintained a low–energy, efficient adaptation (the scenario suggested in Stuart and Gauthier 1981), the evidence from the Roswell District archeological record could be taken to imply two parallel intensification strategies.

In this scenario it could be suggested that when population reached levels that precluded a continuation of the extensive, highly mobile, serial foraging adaptation some elements of the population began using cultigens as a means of increasing productivity despite the decrease in mobility options. Those who maintained a relatively mobile strategy also would have needed to intensify production to compensate for decreasing mobility. They could have done so by investing energy in resources requiring more processing and storage technology—e.g., mescal, sotol, piñon, and acorns.

Ceramic Period Sites Of The Roswell District

The following discussion will be organized in terms of the physiographically defined regions illustrated in Figure 3.1. This discussion is by no means exhaustive, especially in reference to the multitude of small CRM–funded projects that have been carried out in the past 10–15 years. Rather, some information is provided on the larger projects in each region with references to a selection of the smaller projects. This portion of the chapter is intended to give some idea of the nature of the known Ceramic period sites in the various regions of the Roswell District and to provide an introduction to the Ceramic period site–data literature for this area. Figure 5.3 illustrates the distribution of Ceramic period components in the Roswell District that are recorded in the ARMS file as of November, 1985.

Canadian River and Plains

So little is known about the Canadian River and the Plains regions that they will be discussed together here. For the northeastern Llano Estacado and Canadian River Valley, there is no single regional chronology. In reviewing the archeology of northeastern New Mexico, Wendorf (1960) suggested Pueblo and Panhandle Aspect as a descriptive term for the Ceramic period; Suhm et al. (1954) term this period Neo–American in their sequence for the Plains/Panhandle area of Texas. For the southern Plains, Corley’s Eastern Extension of the Jornada Mogollon phase sequence (Corley 1965; Leslie 1979) is most often used.

Although Wendorf (1960) notes that during the Ceramic period there was an eastward expansion of Puebloan traits from north–central New Mexico into the area beyond the Pecos River—traits including adobe and stone–walled multiroom pueblos, kivas, and Puebloan pottery—the maximum extent of this expansion appears to lie north of the Roswell District boundaries (Gunnerson 1959). Anasazi ceramics are found on numerous ceramic and lithic scatter sites in the far northeastern portions of the district, but no structural sites are known. The most common ceramic types in the Plains and Canadian River regions (Collins 1971) are undifferentiated brownwares, El Paso Brown, El Paso Polychrome, and Chupadero Black–on–white. Jornada Brown, Rio Grande glazes, Tewa Polychrome, and Ramos Polychrome are also reported. Some of the large number of lithic scatter sites known from this area are likely to be of Ceramic period.
FIGURE 5.3  LOCATIONS OF CERAMIC PERIOD COMPONENTS RECORDED IN THE ARMS FILE
(NOVEMBER 1985)
Late prehistoric manifestations in some parts of northwestern New Mexico have been attributed to what is called the Antelope Creek Focus of the Panhandle Aspect (Krieger 1946). The Panhandle Aspect adaptation appears to have been a mix of foraging and horticulture; numerous structural sites of varying numbers of slab-based jücal rooms are known (Harlan et al. 1986:34). There are no known structural Panhandle sites within the Roswell District, but it is likely that nonstructural sites occur. Two recent surveys recorded Panhandle components on sites in northeastern New Mexico. Portions of the EIP survey (Harlan et al. 1986) fall within the Roswell District, but the site location information in the published report does not permit determination of locations for the Panhandle components relative to the district boundaries. Panhandle materials recorded during the ARCO survey (Lent 1982) appear to lie north of the district boundaries.

The latest dated pottery types in northeastern New Mexico are Glaze A wares (Wendorf 1960) made between AD 1315 and 1425 (Honea 1973). The absence of wares dating to the period between 1425 and the beginning of the Spanish period in the 1540s led Wendorf (1960) to suggest 1450 as the ending date for the Antelope Creek focus. Honea (1973) notes that Rio Grande Glaze C and D wares, which date from AD 1450 to about 1490, are rare to absent in Llano Estacado sites; Gunnerson (1977) indicates that no pueblos were present in the region north of Quarai and east of the Sangre de Cristos at the time of the Coronado expedition (Chapter 7).

In the southern portion of the Plains region, most of the survey and excavation work has been done by the Lea County Archaeological Society. Among the excavated sites are Monument Springs, a multicomponent site with multiple bedrock mortars and at least some evidence of a structure or structures, and the Merchant site, with two known pithouses and at least 13 surface habitation rooms. Excavations at this site were the first to demonstrate the presence of structures on sites east of the Pecos. The pit-structures had been dug into caliche and are ca. 6 ft deep. One is round and 12 ft in diameter, the other rectangular, 19.4 by 8.8 ft. The surface rooms are ca. 7 by 9 ft, with foundations constructed of caliche, stone, and clay mortar; the nature of the superstructures is unknown. Ceramics at both Monument Springs and the Merchant site indicate occupation during the Ochoa phase, around AD 1400.

One of the larger areal surveys in the southern Plains area was carried out in the Laguna Plata vicinity of western Lea County (Laumbach 1979). Of the 26 sites recorded during this project, 16 included at least some ceramics; one is described as exhibiting evidence of a possible structure or structures. These sites were interpreted as gathering sites, with the possibility of use for bison hunting during the late Ceramic period. Excavations in the Laguna Plata area include those reported by Runyan (1972), who describes excavations of three shallow pithouses, and Haskell (1977), who investigated midden deposits dating to ca. AD 900.

Landis et al. (1985) recorded six Ceramic period sites during a survey near Hobbs. They interpret all of these Quecho and Maljamar phase sites as components in a hunting–and–gathering settlement system. Smaller CRM-funded projects from the southern Plains region are described by Schermer (1983a), who reports on testing at a multicomponent Archaic and Jornada Mogollon site that he interprets as a seasonal camp, and Hilley (1982), who describes four ceramic period sites interpreted as processing camps and recorded during a seismic line survey.

Sierra Blanca

As noted in the Chronology section, most of the reported work in the Sierra Blanca region of the Roswell District has been done by Jane Kelley and her colleagues (see Spoerl [1985] and Broster and Harrill [1983] for survey data from the adjacent high country of the Lincoln National Forest and Mescalero Reservation). Kelley's dissertation (1984a, originally 1966) was based on sites studied by the faculty and students of Texas Technological College during the period from 1950 to 1956. The dissertation contains data on nine main sites plus various other manifestations identified during the fieldwork. On the basis of these investigations she defined the phase sequence and site and ceramic characteristics discussed in the Chronology section above. Subsequent studies (e.g., Driver 1985; Kelley 1979, 1984b) have provided more information on particular aspects of these sites, such as faunal remains, ceramics, and ethnobotanical remains.

Other studies in this region have included three projects on the Rio Bonito drainage. Anderson (n.d.) describes a survey project that identified 17 ceramic period sites. Although few details are provided, at least two of these sites may be structural. Lancaster (1983a) describes test excavations at an early Glencoe pithouse site in this drainage. Farwell (1978) reports the survey of a state road right-of-way along the river. Five ceramic and lithic sites with pithouse depressions, all assignable to the Glencoe phase, were recorded. The Museum of New Mexico conducted salvage excavations at one of these, the Angus site, but analysis and reporting have not yet been completed.

Feather Cave, a large limestone cave located east of Capitan, was excavated by field schools from the University of New Mexico in the early 1950s. Recovered artifacts include masses of reeds and a large number of yucca sandals; ceramics include El Paso Brown, Alma Plain, and Alma Scored types along with a single sherd of Chupadero Black-on-white. A second chamber of the
cave, Arrow Grotto, contains miniature bows, a medium-sized bow, full-sized reed arrows, a large number of miniature arrows (some attached to miniature bows), beads, prayer sticks, and a wooden ball. Numerous feathers were recovered, including those of the scarlet macaw, scrub jay, pinyon jay, and Oregon junco. Pictographs occur on the grotto walls. Ellis and Hammack (1968) identify this site as a Pueblo shrine.

Higgins (1984) reports on the Sierra Blanca Airport survey, which recorded five Jornada sites. No functions could be suggested for these sites on the basis of survey data, but excavations at these sites, conducted by the Office of Contract Archeology, University of New Mexico, are reported in Noyes (1988), which was written after this chapter was completed. Other work includes excavation of three pithouse sites (LA 5377, LA 5378, and LA 5380) near Ruidoso, reported by Broilo (1971b), and excavations at LA 2112, reported by Wiseman et al. (1971; Wiseman 1976).

Guadalupe Mountains

Early work in the Guadalupe Mountains region included a number of excavations in dry caves that have been discussed in Chapter 3. Sites containing ceramics and evidence of temporary occupation were described by Mera (1938). Evidence of a ceramic horizon was recovered from the uppermost stratum of Hermit’s Cave (Ferdon 1946), which contained a large pithouse.

Inventory surveys within Guadalupe Mountains National Park have been conducted by Katz and Katz (1974, 1979; P. Katz 1978), who report numerous ceramic scatter sites, many of them associated with various classes of burned rock features. S. Katz (1978) and Greer (1967, 1968a, 1968b) discuss excavations at burned rock sites in the region; S. Applegarth (1976:155) reports that ring middens in this area date between AD 1000 and 1450, on the basis of both radiocarbon analysis and ceramic cross-dating.

Susan Riches Applegarth has conducted survey and excavations of rockshelters and ring midden sites on the eastern slopes of the mountains (Riches 1970; S. Applegarth 1976) and also reports on excavations performed by amateurs. Applegarth’s excavations included four sites. Dark Canyon Cave yielded only a few brownware sherds and could not be dated. Roberts Rockshelter contains a number of hearths, a burned rock circle, and a mescal pit. The earliest occupation took place ca. AD 875 according to radiocarbon dating, but Applegarth places the bulk of the occupation between AD 1200 and 1300 on the basis of projectile point types. The Ellis site, which comprises three small shelters and a midden area, dates to ca. AD 1140 or 1150 according to radiocarbon dates from hearths in the middens of two of the shelters. Both the ceramic and projectile point assemblages indicate a date between AD 1000 and AD 1250 for the fourth cave, the Robert Brown site. This site consists of a shelter with extensive rubble and midden deposits. Seven hearths were recorded on the site surface, and at least 13 burials were present at the site; most of them had been removed prior to Applegarth’s 1972 excavation (S. Applegarth 1976:143–147).

Roney (1985) reports a survey in the Rocky Arroyo area that recorded 46 Ceramic period sites, most of them open sites with ring middens or other burned rock features. These sites appear to date between AD 850 and 1350. Roney also describes excavations at Hooper Canyon Cave, a stratified Archaic through Ceramic period site.

All of these survey and excavation reports describe a similar pattern of Ceramic period occupation. No structural sites are known; no sites have yielded evidence of agriculture. The major site types are rockshelters and ring middens. Large sites appear to be aggregate, reoccupied small sites. Both the association between ceramics and ring middens and the placement of lithic sites vs. lithic and ceramic sites relative to various plant food resource zones suggest that while hunting and gathering continued to be the basis of the economy of groups in the Guadalupe, the targeted resources changed between the Archaic and Ceramic periods (see discussion in the Nature of the Adaptation section above).

Pecos Valley

By far the greatest quantity of archeological work, and especially recent archeological work, has been done in the Pecos Valley region. The major projects in the northern part of this region have been the survey and excavations associated with construction of the dam and reservoir at Santa Rosa (Henderson 1974; Levine and Mobley 1976; Mobley 1977a). Most of the archeological fieldwork for this project was carried out between 1974 and 1979, on approximately 25,000 acres of land in the vicinity of the confluence of Los Esteros Creek and the Pecos River. The Los Esteros Lake Archeological District was determined to be eligible for the National Register of Historic Places in July of 1976.

The surveys identified a total of 246 sites; 50 of these are rockshelters containing lithic and ceramic debris and 22 are open sites including ceramics. The major recorded ceramic types are Chupadero Black-on-white and Jornada-like browns (Mobley 1978a:33). No ceramics related to the Panhandle Aspect phenomenon were found.

The excavated sites include the Spillway site (X29GU229), an open campsite that yielded Alma Plain and Chupadero Black-on-white ceramics and radiocarbon dates of AD 1074 ± 57 and AD 1141 ± 72, and Helter Shelter, a small rockshelter that contains El Paso and Jornada brownware sherds, Stratum II at Old Coyote Shelter was bracketed by radiocarbon dates of AD 1096 ± 82 and AD 1128 ± 59 and therefore appears to represent a
Puebloan occupation. Pictographs and petroglyphs from this site have been designated Jornada Mogollon on the basis of stylistic similarities with sites to the south and on the relatively severe obliteration from weathering (Mobley 1978a). There is some question about the Pueblo designation for Bishop's Cave (X29GU66) owing to the scarcity of ceramics and to the extent of vandalism at this site.

The central portion of the Pecos Valley within the Roswell District is best known from the work of Jelinek (1967), who carried out survey and excavation in the middle Pecos Valley between 1956 and 1965. The renaissance took place within the river valley between Alamogordo Reservoir in the north and Bitter Lakes Wildlife Refuge on the south, but not all portions of the valley were covered intensively. Jelinek reports that

[those areas which were examined most thoroughly include: (1) The west side of the Bosque Redondo from about two miles south of Fort Sumner to about two miles south of the mouth of Taiban Creek, (2) Both sides of the river in the vicinity of the 18 Mile Bend as far south as 18 Mile Draw, and about four miles north of the Bend, and (3) The west side of the river in the vicinity of Cedar Creek and the LX Ranch (Jelinek 1967:41).

Several sites on tributary streams were also examined, as were localities near springs and draws on the east side of the river along the Mescalero Pediment. In all, 64 sites were recorded.

Surveyed sites were classed into four general categories: (a) lithic and ceramic scatters with less than 100 material items (n = 14), (b) concentrations of several hundred lithic and ceramic items at sites containing occasional indications of permanent architecture (n = 34), (c) large concentrations of several thousand flakes and sherds with no indications of permanent architecture (n = 14), and (d) large concentrations of several thousand flakes and sherds with frequent indications of architecture (n = 6; Jelinek 1967:43). It was on the basis of this survey and of limited testing at some of the sites that Jelinek proposed the phase sequence discussed in the Chronology section above.

Smaller projects in the middle Pecos region have included the Permian–San Juan pipeline right-of-way survey (Wendorf et al. 1956), which recorded 11 open lithic and ceramic scatter sites dating to the period after AD 1100. Excavations at the Neff site (Wiseman 1971) suggested that this site served as the focus for manufacture and maintenance of hunting tools. The presence of South Pecos Brown and Roswell Brown indicated a date of ca. AD 1000 to 1200 for the site.

The archeology of the southern portion of the Pecos Valley within the Roswell District was known largely through the work of the Lea County Archaeological Society until the 1970s. Surveys indicate two distinct kinds of structural sites: pithouse sites containing a local smooth brownware and a brown corrugated ware, and surface room sites on which a dark brown indented ware was present (Corley 1965). Using decorated ceramics from these sites that could be cross-dated with ceramics of known temporal affiliation elsewhere in New Mexico, Corley was able to formulate the phase sequence discussed in the Chronology section above.

Excavations at the Boot Hill or Red Tank site in far northwestern Eddy County revealed four burials and yielded a variety of artifacts, including ceramics and artifacts of shell and bone (Corley and Leslie 1960). Pithouses may have been present at this site, but if so, vandalism had destroyed all evidence of the structures.

Since the 1970s a large number of both large and small projects have been carried out in this area. Between 1974 and 1975 an archeological inventory of the dam site and flood pool of the proposed Brantley Reservoir was undertaken by the Institute for the Study of Earth and Man at Southern Methodist University (Bousman 1974; Henderson 1976). Approximately 7500 acres of land were surveyed intensively, with most of the 114 sites being found in the area between McMillan Dam and the proposed location of Brantley Reservoir. An additional 14 sites were located during a later survey of proposed borrow areas (Gallagher 1976), and 9 more sites were found during subsequent survey (Etchieson 1983), which became necessary when the location of the dam was shifted. A total of 30 sites have been tested or excavated (Gallagher and Bearden 1980). Site density in the originally surveyed areas averages 10 sites per square mile. Sites investigated as part of the Brantley project are included in the Seven Rivers Archeological District.

Several site types were encountered in the Brantley project area. The 35 lithic and ceramic scatters were placed into large/small and burned rock present/absent categories (Henderson 1976:42). In addition to the scatters, sites consist of three burned rock mounds, mortar holes, and a ring midden. Ceramics on the scatter sites include Chupadero Black-on-white, El Paso Brown, Jornada Brown, and Three Rivers Red-on-terracotta. The ring midden yielded a similar ceramic assemblage with Corona Corrugated and El Paso Polychrome in small quantities. Etchieson (1983) found four additional ring midden sites. Excavations reported by Gallagher and Bearden (1980) include 15 prehistoric sites. Exact numbers are unclear, but 10 or 11 of those sites yielded ceramics. In most cases the number of sherds was very small, especially in comparison with the number of lithics. On the one excavated ring midden site, however, some 500 sherds were recovered, mostly Jornada Brown and red-on-terracotta. In addition to the ring midden site, one burned rock mound site was excavated; most of the other sites consist of hearths or burned rock scatters.
THE CERAMIC PERIOD

Between 1975 and 1978 the Agency for Conservation Archaeology (ACA) at Eastern New Mexico University undertook excavation of sites situated along the proposed Mississippi Chemical Corporation Caprock Waterline near Laguna Plata. All 11 recorded lithic and ceramic scatters appear to be temporary camps, with several showing evidence of quarrying activity (Haskell 1977). During this same period, ACA surveyed 6.4 sq mi of BLM-administered lands in the Maroon Cliffs area east of Carlsbad. Of 67 recorded sites, 32 were assigned to the Ceramic period and four others were described as multicomponent Archaic and Ceramic. Hurst (1976) suggests that both Archaic and early Mogollon sites represent seasonal occupation of the area for the purpose of exploiting wild plants and game. Late Mogollon sites are seen as permanent occupations based on horticulture supplemented by hunting and gathering. No permanent habitation sites were recorded within the survey area, however.

BLM-administered lands located in the Mescalero Sands district were surveyed by the Cultural Resources Management Division of New Mexico State University between 1975 and 1976. The surveys recorded 62 sites, mostly sherd and lithic scatters dating to the period between AD 950 and 1000—the Querecho phase. Also in 1975 NMSU surveyed 1.7 mi of the proposed Nomad ORV Trail on BLM-administered land southeast of Carlsbad National Park. They recorded only lithic scatters, but one of them produced a radiocarbon sample dating to AD 1025 ± 70 (Beckett et al. 1977).

A number of survey and excavation projects have been associated with the Waste Isolation Pilot Plant near Carlsbad. In 1977 a survey of 4 sq mi of the core area and of access road rights-of-way recorded 32 sites (Nielsen 1977), mostly large lithic scatters with small numbers of ceramics and associated burned rock scatters and hearths. Schermer (1980b) reports on efforts to relocate a number of these sites. He describes 19 open sites ranging from camps to task-specific locations and one site containing a possible roomblock. MacLennan and Schermer (1979) and Bradley (1982) each report finding one additional Ceramic period open camp site during subsequent WIPP surveys.

Hicks (1981b) reports the excavation of three Jornada Mogollon sites in the WIPP area that she identifies as gathering camps. Lord and Reynolds (1985) describe the excavation of three Ceramic period sites: a multicomponent Archaic and Ceramic period basecamp, with the latter occupations dating to AD 450–850 and 1100–1450; a reoccupied temporary camp dating to AD 600–1300; and a reoccupied temporary camp dating to 1200 BC–AD 1200. Lord and Reynolds suggest that these sites were part of a continuing hunting-and-gathering lifeway (which they term the Neo-Archaic) that in the WIPP area was concentrated on exploitation of acorns and mesquite.

The Abo project was a BLM-sponsored Class II cultural resources survey and predictive modeling project conducted by Chambers Consultants and Planners of Albuquerque (Kemrer and Kearns 1984). The survey covered 12,000 acres in the form of 150 sample units of 80 acres each in northern Chaves County, north of Roswell. The purpose of the project was to provide information on (a) estimated site densities, (b) settlement patterns, (c) areas of high and low resource sensitivity, and (d) parameters for assessing significance and mitigation requirements in the Abo oil and gas field. In the course of the survey 119 archeological sites were recorded and 11 previously known sites were relocated. Of this total of 130 sites, 27 were attributed to the Ceramic period. All 27 sites are open, nonstructural sherd and lithic scatters.

The Haystack Mountain ORV survey and mitigation (Bond 1979a; Schermer 1980a), the Two Rivers Dam and Reservoir survey (Phillips et al. 1981), and the Desana No. 1 seismic survey (Ford and Sciscienti 1982) were also multisite projects. In general the sites studied during these projects are nonstructural open sites identified as camps/gathering sites/plant-processing sites. The exceptions include one site identified by Bond (1979a) as having a possible pithouse, several sites in the Two Rivers project area that were described as lithic procurement loci, and one site identified by Phillips et al. (1981) as a kill site.

In addition to these multisite projects, a myriad of smaller salvage and CRM-funded projects have been reported. Wiseman (1981), for example, reports on salvage excavations at the King Ranch pithouse site. A partial list of the many small recent CRM projects would include Baker (1983), Fitlefield (1984a, 1984b), Hicks (1982), Kauffman (1983a), Kyte (1984a, 1984b, 1984c), Oakes (1982), Schermer (1982b, 1983a), Schermer and Brett (1983) and Self and Hunt (1984). Most of these small reports detail surveys or excavations dealing with one or a few sites. In every case except Kyte (1984a), these reports describe nonstructural sites interpreted as seasonal, usually gathering-related, temporary camps. LA 49226, the site reported in Kyte (1984a), is described as a multicomponent Archaic and Ceramic period site with a possible structure. In most cases these sites contain relatively few ceramics in comparison with the number of lithics, and surface features are rare.

Other major projects include excavations by the University of Michigan at the Garneyse bison kill site and Garneyse Spring campsite (Parry and Speth 1984; Speth and Parry 1978, 1980) and at the Henderson site (Roeck and Speth 1986). The bison kill site appears to date to the period from AD 1450 to 1600; the nearby campsite was occupied intermittently from approximately AD 800 into protohistoric times but was apparently not associated with the kill site. The Henderson site is a multiroom pueblo on the Rio Hondo dating to AD 1000–1450. The emphasis of the Roeck and Speth (1986) monograph is on the
burial population recovered from the site, but other data are also included.

Research Directions

There is an interesting contrast between this section of this chapter and the corresponding sections in the Paleopolisian and Archaic chapters. In those chapters one of the major concerns was with recognition criteria; the Ceramic period sites, by definition, come with a built-in recognition criterion—the presence of pottery. It has been suggested here that it is this very attribute of these sites that has given rise to a major interpretive problem. What does the presence of ceramics on a site mean? Are we justified in considering all Ceramic period sites to be part of a single settlement and subsistence system?

I would argue that a major research direction for Ceramic period sites in the Roswell District should be to identify the nature of the Ceramic period adaptation or adaptations. Is it true, as the currently accepted interpretation suggests, that Ceramic period groups in southeastern New Mexico were far less dependent on agriculture and far less sedentary than their contemporaries in much of the rest of the Southwest? If so, we need to determine how their annual round was organized, how they resolved the scheduling conflicts between the agricultural component of their system and the hunting-and--gathering component, and how they dealt with spatial incongruence between locations of stored resources and the locations of consumers. We also would need to develop some hypotheses concerning the nature of Ceramic period use of areas, such as the Guadalupe Mountains, that exhibit no signs of agriculture or sedentary villages but nonetheless experienced relatively heavy Ceramid period occupation.

If, on the other hand, one chooses to hypothesize, as I have done in this chapter, that there was not one but two (or more) Ceramic period adaptations—one relatively sedentary and dependent on agriculture and the other relatively mobile and dependent on wild resources—a different set of questions must be addressed. General questions include the following:

(a) If two separate settlement and subsistence systems are represented in the Ceramic period sites, how might we go about assigning sites to their respective settlement systems?

(b) What was the nature of the interaction between peoples practicing these two different adaptations?

For both proposed adaptations, more detailed ceramic analyses are necessary if we hope to address questions of site function and, indeed, of the part played by ceramics in both adaptations. Representative information on vessel form, size, and orifice diameter can be recorded even on noncollective surveys. Information on proportions of decorated and utility wares is probably best gleaned from excavations, given the rampant sherd collecting in many areas of the Roswell District, as is information on such attributes as sooting. Petrographic and refring analyses of pottery sherds are badly needed if we are ever to address questions of ceramic origins and systems of distribution.

Questions specific to the agricultural adaptation might include the following:

(a) How dependent were they on agriculture?

(b) Were the structural sites that they occupied used seasonally or year-round?

(c) What hunted and gathered resources were they using?

(d) How was the acquisition of those resources organized?

Questions pertinent to the proposed hunting--and--gathering adaptation include the following:

(a) What was the nature of their subsistence system?

(b) What was their mobility strategy?

(c) How were ceramics incorporated within a mobile, hunting--and--gathering lifeway?

Several potential means of separating the two hypothesized adaptations have been suggested in this chapter, including analysis of lithic technology and material sources, technological analysis of ceramics, and studies of assemblage variability.

The other major research need is for chronological control. As pointed out, the phase sequences currently being used to organize Ceramic period research in the Roswell District were formulated 20 years ago on the basis of relatively few sites (many of them vandalized surface assemblages) and even fewer absolute dates. Priority should be given to updating the time/space systematics for this area using the currently available data on site types, ceramic assemblages, and chronometric dates. We need such an update even to answer such basic questions as

(a) When did the proposed Archaic to Ceramic period subsistence shift take place?

(b) Were hunting--and--gathering populations and agricultural populations actually contemporaneous during the Ceramic period, or were these adaptations sequential as Phillips et al. (1981) suggest?
The period discussed in this chapter spans the time from the abandonment of the Roswell District by prehistoric agriculturalists some time before AD 1400 through the arrival of Athabaskans and other Plains nomads and includes the era of Spanish exploration and colonization of New Mexico. This chapter ends with Mexican independence in 1821, and the Mexican and Anglo-American periods are discussed in the following chapter. This division of the historical record between this chapter and the following chapter was made for two reasons. The first is that virtually all of our knowledge of the Protohistoric period in eastern and southeastern New Mexico is derived from Spanish chronicles of the sixteenth and early seventeenth centuries. Second, there were no Euroamerican settlements within the boundaries of the Roswell District prior to the Mexican period, so that aboriginal settlement and subsistence systems still dominated this region until the early nineteenth century. Despite this dominance by Native American groups, however, by the late seventeenth and eighteenth centuries events in the larger world of the Spanish Empire were both subtly and profoundly affecting these groups.

The Protohistoric is the least understood and least studied period in the entire prehistoric-historical continuum in the Southwest, and this is especially true in the Roswell District. In part this is a function of the absence of identifiable archeological remains. The Roswell District was inhabited during this period by nomadic groups who became increasingly mobile through time and who possessed a material culture inventory that has left them nearly invisible archeologically. We know very little about the technology or artifact assemblages that should characterize early protohistoric sites and therefore have no means of distinguishing them from "nondiagnostic" sites of earlier eras. By late protohistoric and early historical times, these nomadic groups had acquired guns and metal tools to replace or supplement their former stone implements, and this, combined with their infrequent use of ceramics and their increasing, horse-based mobility, caused them to leave fewer and fewer potentially identifiable traces in the archeological record.

A number of researchers in southeastern New Mexico have pointed out the remarkable scarcity of Apachean sites, even in areas that are known to have been heavily utilized during the Historical period such as the Guadalupe Mountains (Katz and Katz 1974; Roney 1985:56). As Wilson (1984:44) points out,

The realization that an Indian group could enjoy almost unlimited use of a territory for roughly 300 years and yet leave few traces upon the landscape should sober archeologists as to the imprecision of their customary tools for interpretation.

Wilson goes on to suggest more detailed and thoughtful use of documentary sources, such as military records, as one approach to studying this period. Certainly these records constitute a critical source of information, but they are limited to informing us about the period immediately prior to the establishment of the reservations. They describe horse-mounted, highly mobile groups under great pressure from the military and from other, competing nomadic groups. Models of pre-horse Apache settlement and subsistence, much less those of pre-contact settlement and subsistence, cannot be derived from nineteenth-century documentary sources.

In a discussion of Western Apache protohistoric sites, Gregory (1981) points out that the problems of identification associated with these sites, while severe, are neither unique (relative to other archeological periods) nor insurmountable. He emphasizes an archeological approach to the problem—use of multiple forms of absolute dating, detailed recording of feature morphology and artifact attributes, etc. While he is certainly correct about the importance of focusing archeological attention on the Protohistoric, this does not take into account the problem of having to find such sites before one can study them.

In his remarks as a discussant for the Protohistoric symposium at which Gregory presented his paper on the Western Apache, Schaafsma (1981) argues for an approach that combines the two approaches just described.

[Ar]cheologists now have the means and expertise to invade the phantom land of the protohistoric and demand that empirical materials be presented to corroborate, repudiate, or modify the conclusions that for years have been based on opinions reached by interpreting historical records and other nonarcheological lines of evidence. . . . [C]ontemporary archeologists [should] treat historical accounts, linguistic reconstructions, tribal traditions, and so forth as bases for setting up hypotheses that must be tested with empirical remains from the archeological record rather than conclusions to be accepted (Schaafsma 1981:299).
Whatever approach or combination of approaches we adopt, an understanding of the Protohistoric is critical to our understanding of both history and prehistory. In their introduction to the Protohistoric period symposium mentioned above, Wilcox and Masse\textsuperscript{(1981:1)} summarize the importance of this period by saying:

Descriptions of the ethnographic present are accounts of the mutual adaptation of the Greater Southwestern societies and Europeans, while descriptions of prehistoric societies are accounts of social systems totally lacking the European dimension. All inferences linking one set of descriptions with the other must logically take into account what happened to Southwestern and European societies during the intervening protohistoric period.

They go on to point out that appropriate applications of ethnographic analogies to prehistoric cases depend on an understanding of the systemic changes that took place during the Protohistoric period. Likewise, explanations of Native American adaptations that were observed during the Historical period and of such phenomena as persistence of some indigenous groups and extinction of others depend on an understanding of adaptational pressures and conditions during the Protohistoric.

The Protohistoric Period

In Chapter 5 it was suggested that two coexisting settlement and subsistence systems were in operation in the Roswell District during the Ceramic period. One system was a widespread pattern of hunting and gathering with an emphasis on plant resources suitable for storage and, late in the period, an increasing emphasis on bison procurement. The other pattern consisted of pockets of agriculturalists who occupied especially favorable areas along western tributary drainages of the Pecos as well as the Pecos Valley itself.

At approximately AD 1300 this dual pattern began to break down. The agricultural adaptation disappeared from the entire Roswell District, and the local hunting–and–gathering adaptation appears to have become increasing mobile and increasingly focused on bison hunting. Jelinek\textsuperscript{(1967:162)} suggests that the pattern of sedentary farming ceased in the middle Pecos Valley some time between AD 1250 and 1350. He argues that the local agriculturalists abandoned agriculture and adopted bison hunting as a way of life because of an increased availability of bison in the area adjacent to the middle Pecos Valley at this time. Based on the linguistic relationship between the Kiowa language and Towa, the Tanoan language spoken by the people of Pecos Pueblo, Jelinek offers the possibility that the middle Pecos Valley people became the historically known Kiowa.

As noted in the Ceramic period chapter, Speth and Parry\textsuperscript{(1978, 1980)}, the excavators of the late prehistoric/protohistoric Garnsey bison kill site, agree that there was an increasing emphasis on bison procurement during this period. But they argue that the physical condition of the animals present in the Garnsey deposits indicates a period of marginal conditions for bison rather than one of improved forage. This raises the alternative possibility that the Ceramic to Protohistoric transition occurred as a result of deteriorating environmental conditions.

This alternative explanation would suggest that just as agriculturalists had expanded into southeastern New Mexico with the improved environmental conditions of the tenth and eleventh centuries, they withdrew from the area in response to deteriorating conditions. Further, if conditions were such that agriculture was no longer a viable strategy, then perhaps they would also have precluded the alternative form of intensification within a hunting–and–gathering framework that was discussed as a "Neoarchaic" adaptation in Chapter 5. In this situation, the hunting–and–gathering populations appear to have responded by increasing their mobility (apparently using dogs as beasts of burden to increase their range and solve certain logistical problems) and focusing on bison. Even though the Garnsey data indicate that the bison, too, were affected by the deteriorating environmental conditions, they were apparently not as heavily impacted as the plant resources that had formed a large part of the Neoarchaic subsistence.

Given this alternative scenario, Jelinek's observation concerning the linguistic relationship between the Kiowa and Towa languages could be explained by suggesting that the agriculturalist groups along the middle Pecos withdrew to the northeast, toward Pecos and Rowe and the other large Pueblo IV pueblos on the upper Pecos River. The local hunter–gatherer groups along the middle Pecos, on the other hand, responded by becoming highly nomadic bison hunters who were ancestral to the historical Kiowa. Wilcox\textsuperscript{(1981:224–225)}, on the other hand, argues that the middle Pecos groups became the Teyaplains Jumano (see discussion of identification of Contact Era Indian Groups below).

Kelley\textsuperscript{(1984a:156)} states that abandonments in the Sierra Blanca region began in ca. AD 1300 in the Peñasco Valley and that by AD 1400 southeastern New Mexico had been abandoned by agriculturalists with the exception of the Chupadera Mesa or Salinas area. She offers two possible explanations for this pattern of abandonment—environmental deterioration and inter–group conflict. She notes two instances of archaeological evidence for hostilities; one is an undated hill fort on the Mescalero Reservation that is not remembered within Mescalero folklore and the other is the presence of unburied bodies and widespread burning at the abandonment of Bloom Mound.

Kelley suggests three possible sources for these inter–group hostilities: conflict with pre–Apache, nonsedentary
THE PROTOHISTORIC AND SPANISH COLONIAL PERIODS

groups that had inhabited portions of southeastern New Mexico throughout the Ceramic period; inter-village hostilities among agriculturalists; and conflict with "pre-Apache foot nomads of the Plains, who may have been feeling the pressure from Apaches or other groups pushing down the western Plains" (Kelley 1984a:157). The first two possibilities do not constitute explanations in themselves, since the local populations had coexisted peacefully for many years, but rather are combined with environmental deterioration to form an argument similar to that offered by J. Charles Kelley (1952) for abandonments on the lower Rio Grande. Jane Kelley (1984a:158) sketches this argument by noting that
during good times when crops were good, hunting was profitable, and wild food plants were abundant, harmonious relationships must have existed between the several dissimilar groups in the Sierra Blanca Region. Trading and visiting would have been mutually advantageous, and Bloom Mound must have been host to many parties.

She characterizes the rise of conflict by saying:
In lean years, face-to-face contacts might decrease and be less friendly. In really hard times, hostilities broke out. Bloom Mound, advantageously placed to trade with the Plains buffalo hunters and to act as a way station on the Pecos-Tularosa Basin trade route, was isolated and unprotected when hostilities arose. Deteriorating environmental conditions would be reflected in increased hostile activities (Kelley 1984a:157-158).

Kelley's third possible source of conflict, Plains nomads being pushed into this area by the effect of the southward migration of Athabaskan groups, could constitute an explanation for abandonments without depending on environmental deterioration. Support for this possibility, however, would depend on the timing of this migration (see discussion of the timing of Athabaskan Entry into the Southwest).

The most common explanation for the disappearance of agricultural populations from the northern Tularosa Basin and from the Sierra Blanca region is that these groups withdrew to the north and northeast into the Salinas province. Kelley (1984a:158) notes that the Spaniards distinguished between the Tompiro—speakers and the Jumano in the Salinas province pueblos; many researchers have agreed with Mera (1940) and Vivian (1964), who argue that the Tompiro were the original residents of the area while the Jumano were Jornada Mogollon immigrants (but see Tainter [1985] for a counter argument). Based on this argument and on linguistic patterns among the contact period populations of the lower Rio Grande, Kelley (1984a:161) suggests that the Jornada Mogollon, or at least some groups of Jornada Mogollon, were speakers of a Uto-Aztecan language. Tompiro, on the other hand, is a Tanoan language. When the Salinas pueblos were abandoned in the 1670s, both the Tompiro and the Jumano groups moved first to the Piro villages on the Rio Grande and ultimately to the El Paso area, where their cultural identity was lost.

The Protohistoric period events in the extreme northeastern portion of the Roswell District were similar to those described above. As noted in Chapter 5, the Ceramic period in the Canadian River region consisted of small enclaves of Plains Village agriculturalists in favored locations along the river valley, while intervening areas of the Canadian Valley and the Llano Estacado were occupied by resident populations of hunters and gatherers. By approximately AD 1350 the agricultural groups had withdrawn from the Canadian, apparently moving east to join similar Plains Village groups. The current interpretation is that these Plains Village people were the Caddoan—speaking village dwellers encountered by the Spaniards in the Great Bend area of the Arkansas River (Hughes 1974; Wozniak 1985).

The indigenous hunters and gatherers of the Canadian River region, like such populations in other areas of the Roswell District, appear to have adopted a more mobile strategy at this time. Wozniak (1985:38) argues that persistent indigenous hunters and gatherers, who had always been on the southern High Plains but who have been largely invisible in the archeological record, would appear to have made a resurgence as the horticulturalists left or readapted. Two severe droughts in the fifteenth century were part of a substantial climatic change, perhaps causing or at least contributing to these population and adaptive shifts. Finally, nonindigenous nomadic groups, namely the Athabascans, appear to have arrived from the north in the areas north of the Canadian River sometime in the late fifteenth or early sixteenth centuries, contributing significantly to the nomadic character of the region's populations. See the section below on Problems of Interpretation for discussions of the arrival of the Athabascans and of a possible identification for the indigenous hunters and gatherers relative to groups encountered by the Spaniards at contact.

Virtually no information is available concerning the Protohistoric period in extreme southeastern New Mexico. In referring to the Post-Ochoa phase(s), Leslie (1979:193) says only that

[s]ome sites produce evidence of later groups such as Apache, Comanche or Kiowa. These can not be identified unless historic artifacts are found. The most common are metal arrow points which date from about A.D. 1600 to 1850.
The Pecos Exploration

Winship

In encountering and identifying beyond the plains east of Pecos Pueblo, Francisco Vazquez de Coronado had moved his entire army to Pecos to prepare for an expedition to Quivira (see Bolton [1949], Kessell [1979], and Winship [1896] for details on the Coronado expedition in general and the search for Quivira in particular). They forded the Pecos River somewhere between Antón Chico and Puerto de Luna (Jelinek 1967) and then marched east, encountering vast herds of bison and the Querécho dog nomads (that is, highly mobile people who used dogs as beasts of burden) who hunted them (see discussion of identification of Contact Era Indian Groups below). Farther to the east on the Llano Estacado they encountered a different group of bison–hunting nomads whom they termed the Teyas.

When the expedition finally reached Quivira in modern-day Kansas, they found semisedentary agriculturalists living in grass lodges along the great bend in the Arkansas River and possessing none of the wealth they expected. They returned to Pecos, planning to return and search farther for the fabled wealth, but in the end only one priest with a few servants and an interpreter made the trip back across the plains to Quivira in the spring of 1542. Nothing is known of this small expedition because the priest was killed by the Indians a short distance beyond the point where Coronado turned back (Kessell 1979:25).

It was not until 40 years after Coronado’s expedition that Spaniards again entered New Mexico. Fray Agustín Rodríguez and Captain Francisco Sanchez Chamuscado led a small party of missionaries and soldiers to the Pueblos in 1581. Their primary purpose was to assess the need for missions among the Indians, but they also explored well beyond the Pueblo territory. They traveled from the Galisteo pueblos to the Pecos River, striking it somewhere in the vicinity of Antón Chico (Hammond and Rey 1966:88). They continued “four leagues” down the river and found an encampment of some 50 tipis. Seizing a guide from this village, they continued on to the Canadian River where they killed a number of bison. They then returned to the Galisteo pueblos by the same route. The Chamuscado party returned to Mexico in the spring of 1582, leaving behind at the pueblo of Puaray two friars who wished to stay and begin missionary work among the Pueblos.

In the fall of 1582 a party of soldiers, civilians, and priests, who ultimately selected Antonio de Espejo as their leader, set out from Chihuahua for New Mexico, ostensibly to rescue the friars left at Puaray. This expedition traveled north along the Rio Grande as far as the Piro pueblos of the San Marcial area and then made a side trip to the east to the Salinas pueblos. From the Piro the Espejo expedition learned that the two friars had been killed (Hammond and Rey 1966:22). When they arrived at Puaray, which was located somewhere between present-day Albuquerque and Bernalillo, they found that the residents had abandoned the pueblo and were in hiding in the mountains.

After making a lengthy excursion to Zuni, Hopi, and the Verde Valley of northern Arizona, the Espejo expedition continued on up the Rio Grande, visiting the Galisteo pueblos and Pecos. From there they entered the Roswell District, returning to Mexico in the summer of 1583 by traveling down the Pecos River. They did not encounter any Indians until they reached the Jumano rancherias near Pecos, Texas. These Indians guided them overland to the Rio Grande, and they returned to San Bartolome, Chihuahua, in September of 1583 (Hammond and Rey 1966:27).

As a result of the information provided by the Chamuscado–Rodríguez and Espejo parties, the king of Spain instructed the viceroy in Mexico to make a contract with a suitable person to organize the legal colonization of New Mexico. Ultimately this prize went to Don Juan de Oñate y Salazar, but at least one illegal colonizing effort preceded Oñate’s 1598 expedition (Hammond and Rey 1966:28–29), and several unauthorized groups of adventurers had also entered New Mexico (Kessell 1979:70).

In May of 1590, a band of colonists under the leadership of Gaspar Castaño de Sosa set out for New Mexico, following the Pecos River route explored by Espejo. They encountered numerous bands of dog nomads along the Pecos in Texas, and a cache of shelled corn in an olla near what is now Carlsbad, but no signs of Indians between Bosque Redondo and Pecos Pueblo.

Colonization and Conflict

Don Juan de Oñate contracted to undertake the colonization of New Mexico in the fall of 1595, but political maneuvering delayed the final departure until March of 1598. Soon after establishing his first settlement at San Gabriel near San Juan Pueblo, Oñate sent Vicente de Zaldívar Mendoza to the eastern plains to obtain buffalo meat and tallow. Beyond Pecos Pueblo, Mendoza encountered nomadic Indians whom he called Vaqueros (Apaches, according to Thomas 1935). Along the Canadian River near the present border of Texas and New Mexico he met a group of Plains Indians who were returning from a trading expedition to Taos and Picuris. He reported that the Plains groups traded meat, hides, tallow, suet, and salt to the Pueblos for cotton blankets, pottery, maize, and turquoise (Bolton 1916:226; Thomas 1935:7).

In 1599 and 1601 Oñate traveled onto the Plains east of
Pecos and reported encountering Querechos and Vaqueros, dog nomads who hunted buffalo and lived in tipis, and Apaches, who lived in small pueblos as well as in tipis (Bolton 1916:217–218). He continued on to the east until he encountered the Plains Village groups on the Arkansas River.

Ultimately the lack of mineral wealth and the difficulty of maintaining a colony so far from the Hispanic population centers of Mexico virtually destroyed the Oñate colony. In 1610 Oñate was replaced by a new governor, Don Pedro de Peralta. During the seventeenth century, New Mexico was run as a royal mission colony whose main purpose was to win over new souls. The history of the New Mexico colony between 1610 and the Pueblo Revolt of 1680 was one of conflict between the Franciscan friars and the civil governors and of exploitation of the Pueblos by both sides.

The Apaches took advantage of the political in–fighting between church and state in New Mexico to escalate their raiding (Scholes 1942). Hostilities increased in the 1630s, when the Spanish governors authorized slave raids against the Apaches, who were now ranging as far south along the Pecos as the Seven Rivers area (Wozniak 1985). In 1629 and 1632 there were missionizing expeditions to the Jumano (Kessell 1979:142), but by the 1650s pressure from the Apaches had moved the Jumano south to the Rio Grande in Texas.

As the Apaches acquired more and more horses in the mid–seventeenth century, their mobility increased along with their effectiveness as raiders. Droughts in New Mexico and on the Great Plains in the 1660s and 1670s increased the frequency and intensity of Apache raiding. Ultimately the combination of drought–induced famine, disease, and Apache raiding caused the abandonment of the pueblos throughout the entire Salinas province by 1679 (Schroeder 1974; Vivian 1964). In 1680, the Pueblos rose up in revolt and drove the Spaniards out of New Mexico.

The Spaniards believed that in their absence the Apaches would destroy the Pueblos (Forbes 1960; John 1975). Instead, the incidence of raiding decreased during the period between the revolt and reconquest. Wozniak (1985:43) suggests that this may have occurred because traditional trade ties between Plains and Pueblo groups were reestablished and because the irritable of Spanish slave raids had been removed. It is also possible that the Apaches were beginning to feel pressure from the approach of the next wave of immigrants into the southern Plains and the Southwest: the Comanches.

The Impact of the Comanches

The reconquest of New Mexico by Diego de Vargas in 1692 led to some dislocation of populations. The Picuris, for example, joined the Cuartejo Apaches in western Kansas, and it is possible that some of the Rio Grande Pueblos may have joined nomad groups in the Pecos region. Ultimately, however, for the Pueblos the reconquest meant life under a civil government that, while hardly benign, avoided most of the worst abuses practiced by the pre–revolt governments. For the nomadic occupants of the Roswell District, the reconquest meant a renewed source of guns, metal tools, and livestock, but also renewed and constantly increasing military pressure.

In the seventeenth century the Apaches had reigned supreme in eastern New Mexico and western Texas. The sedentary Pueblos and Caddos at either extreme of their range had been at a severe disadvantage against the highly mobile and increasingly horse–mounted Apaches; the Spaniards had superior fire–power but were spread too thinly to control the Apache depredations.

In the early eighteenth century three factors began to change this pattern of Apache dominance. For one thing, the northern Apache groups, the forerunners of the modern Jicarilla Apaches, had become partially dependent on horticulture, and their decreased mobility options made them increasingly vulnerable to raiding (Gunnerson 1956). At the same time, the Caddoan groups who had been the targets of raiding by the Apaches along the eastern portion of their range began to fight back effectively from fortified villages using firearms acquired from the French (Wozniak 1985:45). But most important, bands of Ute and especially of Comanches, well mounted on horses taken during raids on the Pueblo and Spanish communities of northern New Mexico (Wallace and Hoebel 1952), began exerting heavy pressure on the Apaches, driving them west and south. Ultimately the Comanches and their allies, the French–supplied Caddos, drove the Apaches from the Plains, concentrating them in the Pecos Valley and the mountains of southeastern New Mexico.

The Spaniards were also coming into heavy conflict with the Comanches by the mid–1700s. In the 1760s and 1770s, the far eastern Pueblos, such as Pecos, and the easternmost Spanish settlements were almost constantly at war with the Comanche (Kessell 1979:395). In 1779 Governor Juan Bautista de Anza began a series of military campaigns that turned the tide of Comanche dominance, and by 1785 the Plains nomads were ready for peace. Kessell (1979:401) suggests that a combination of the unrelenting campaigns waged by Anza, losses to smallpox in 1780–1781, and a growing alliance between the Spaniards and Indian tribes of east Texas brought about this willingness to live in peace.

The Mescalero Apaches

Portions of the Roswell District were within the occasional–use areas of a number of nomadic Indian groups during the Spanish colonial period, including the Apache, the Comanche, and the Kiowa. In addition, Pueblo groups used the northernmost portions of the district for
ROSWELL OVERVIEW

occasional hunting; some areas along the Pecos may have been used seasonally for grazing by Hispanics; and trading parties of Pueblos, Hispanics, and Plains groups traversed the northern portions of the district as well. There was no permanent settlement by Pueblos or Hispanics, however (Olmsted 1975:40), and the major occupation of the district during this period was by the Apache groups now identified as Mescaleros.

As the Comanches forced the Apaches off the Plains and into the mountains of east-central New Mexico in the late eighteenth century, the latter came into increasing conflict with the Spaniards. In 1775, Hugo de O’Conor, the comandancia general of the northern provinces of New Spain initiated a series of effective campaigns against the Apaches (Sheridan 1975:16–18). Several battles against the Mescaleros took place within and adjacent to the Roswell District in the Sacramento and Guadalupe mountains and as far north as Sierra Blanca (Thomas 1974). Teodoro de Croix replaced O’Conor as commander general in 1777; recognizing the difficulty of controlling nomadic groups in terrain such as that which characterizes the Mescalero territory of southeastern New Mexico, trans-Pecos Texas, and northern Mexico, Croix attempted to make peace with the Mescalero instead (Thomas 1974:11–12).

In northern Mexico the Mescalero broke the peace in 1779, and during the 1780s there were numerous campaigns against these southern Mescalero, some reaching as far north as the Guadalupe Mountains. In New Mexico, on the other hand, the Apache remained at peace until the early years of the nineteenth century. The northern Mescalero resumed raiding at this time, and in 1803 and 1806 military expeditions penetrated the Sacramento and Guadalupe mountains in search of Mescalero raiders. A major campaign in 1810 covered the Sacramento, Organ, and Sierra Blanca ranges. Apparently this campaign was successful because the Mescaleros entered into a treaty with the Spaniards in this same year. Under the terms of the treaty the New Mexico Mescaleros were assigned a territory extending from El Paso to the Sacramento Mountains. As late as 1814 the treaty was reported to be still in effect, although the Spaniards had failed to meet their obligations to provide rations (Thomas 1974:12–13).

We know very little about the pre-contact and immediately post-contact adaptation of the Apache (see Problems of Interpretation below) beyond the fact that they were dog nomads who depended on bison hunting. Wilcox (1981:219) points out that they were definitely not the semisedentary agriculturalists who created the Dismal River archeological manifestations and suggests that agriculture entered their subsistence repertoire only after they expanded their territory east of the 100th meridian. He also argues that although trade with their sedentary neighbors had been important since the first arrival of Athabaskans on the edges of the Southwest, raiding as a back-up strategy for coping with subsistence stress did not become important until the latter part of the seventeenth century when the Apaches had acquired horses (Wilcox 1981:219).

The first detailed discussion of Apache settlement and subsistence (Matson and Schroeder 1957) dates to 1796. Lt. Col. Antonio Cordero described the lifeway of the Mescalero at a time when the horse and raiding had been part of their culture for well more than a hundred years, when the Comanche had pushed them out of their original Plains habitat and into the mountainous areas of southeastern New Mexico, and when they had been under serious Spanish military pressure for a generation or more.

Under these intense selective pressures the subsistence strategy of the Mescalero had evolved from one of focal bison hunting to one that appears to have more closely resembled that postulated in Chapter 5 for the Ceramic period Neoarchaic hunters and gatherers of the Roswell District. They still depended on bison hunting to an extent, but the threat of the Comanches had restricted their hunting range to the very western edge of the Plains region. They had begun to develop their ethnographically recorded dependence on mescal (see Chapter 7 for a discussion of the settlement and subsistence system of the ethnographically known Mescaleros) and were using pithon, acorns, datil, and other plant resources that require considerable processing and storage technology (Matson and Schroeder 1957:354).

The major differences between the Mescalero at the beginning of the nineteenth century and the Neoarchaic hunters and gatherers of the eleventh and twelfth centuries had to do with the use of horses and other beasts of burden. With horse transport the Mescaleros could solve many of the logistical problems that limited resource and settlement options for the Neoarchaic groups, and with the horse as a source of fast and wide-ranging mobility the Mescaleros could also depend on raiding as a back-up subsistence strategy.

Problems Of Interpretation

The two most commonly addressed interpretive questions concerning the Protohistoric in eastern and southeastern New Mexico—and often the only interpretive questions addressed—are when did the Athabaskans arrive in the Southwest and which prehistoric and historically known tribes are being discussed in early Spanish references to named Indian groups?

Athabaskan Entry into the Southwest

The question of when and by what route Athabaskan groups entered the Southwest is one that has been debated for years (see Schaafsma 1981 and Wilcox 1981 for a history of this debate). By the early years of the twenti-
eth century it was clear that the Apaches and Navajos of the American Southwest were related linguistically and historically to the Athabaskan-speakers of western Canada and interior Alaska; subsequent studies of shared elements in the northern and southern Athabaskan languages indicated that the ancestors of the Apaches and Navajos began their migration to the Southwest approxi-

Two major competing views of the date of Athabaskan entry have been identified by Winter (1986a): one argues for an early, AD 1300-1400 date, the other for an entry date in the late 1500s or early 1600s. In characterizing the first view he cites Brugge (1984), who argues that by AD 1400 the former Anasazi country of northern New Mexico was occupied by a widespread but sparse Apachian population and even suggests that occupation of the San Juan and Chama drainages by Apaches occurred relatively soon after these areas were abandoned by the Anasazi.

In characterizing the second view, Winter cites Schaafsma (1981), who argues that the earliest Athabaskans in New Mexico were ancestral Navajo groups who settled in the Chama drainage by ca. AD 1600. Schaafsma argues that there was no Navajo settlement west of the continental divide before the Pueblo Revolt and the reconquest by the Spaniards at the end of the seventeenth century. Schaafsma's position is supported by Wilcox (1981:233), who argues that the Apacheans or Quechecos had barely arrived on the Southern Plains in the mid-1500s and were just begin-

In his paper Winter presents recent chronometric data bearing on this question from the Dry Cimarron area to the north of the Roswell District and from the San Juan, La Plata, and Chama drainages. The dates that he presents from the Dry Cimarron area are from tipi ring sites reported by Nowak and Jones (1984) and Greer (1966b) and from his own research (Winter 1986b). Nowak and Jones obtained one radiocarbon date of AD 1320 ± 50 and two dates of AD 1350 ± 55; Greer obtained one date of AD 1435 ± 65; and Winter's site LA 48826 yielded a date of AD 1070 ± 60. These would be very early dates for Athabaskan occupation, but the reasons for identification of these sites as Athabaskan are unclear. The presence of tipi rings indicates Plains Nomad occupation, but a more specific ethnic identification may not seem warranted.

The case for assigning the sites that Winter discusses from Blanco Wash and Cañada Alemita (Marshall 1985) to a Navajo occupation is much stronger; all but one of them yielded sherds of Navajo ceramics. The dates from these sites range from AD 1550 ± 55 to AD 1740 ± 55; the other date centroids are 1590, 1600, 1650, 1670, and 1700. Winter (1986a) also discusses a series of radiocar-

Winter argues, and I would agree, that these dates clearly indi-

The implication of this question of Athabaskan entry dates for the Roswell District is clear. If the very early dates for occupation of the Dinetah (the Navajo homeland) suggested by Brugge are correct, then the entire migration of Athabaskan-speaking groups from Canada to the Southwest took less than 400 years; expansion of Athabaskans from northern into southeastern New Mexico during the 1400s would be the most likely explanation for occupation of the Roswell District by nomadic groups during the Protohistoric. The scenario proposed by Schaafsma and Wilcox, on the other hand, would mean that the migration of the Southern Athabaskans took some 600 years and that no Apachean groups were to be found within the Roswell District even in the early years of Spanish contact, much less during the Protohis-

In fact, the data presented by Winter (1986a) indicate that the true date of Athabaskan entry (which was, after all, a multiple migration phenomenon and not a single event) probably lies somewhere between the suggested extremes. There is clear evidence of Athabaskan presence in north-central New Mexico in the early 1500s. Athabaskan presence in extreme northeastern New Mexico is likely to have occurred somewhat earlier than this date. At least some of the protohistoric remains in the
Contact Era Indian Groups

Surviving documents from the Spanish exploratory expeditions into the American Southwest provide extraordinary glimpses of Native American adaptations that were virtually unimpacted by Euroamerican influences. It is extremely difficult to use this information to link contact era groups with either prehistoric populations known archeologically or historically recorded tribes from later times, however, because of the vagueness and variability in the names applied to the various groups by the Spanish explorers. The names used to identify Indian groups were sometimes related to the place where they were encountered or to the name of the band leader or to some descriptive term for obvious attributes of the people. The term Jumano, for example, refers to body painting or tattooing and was applied to a number of apparently unrelated groups in the Southern Plains and Southwest.

The earliest and most consistently identified Indian group in eastern New Mexico was that termed the Querechos by the Coronado expedition in 1541. Coronado encountered these Indians east of the Canadian, and they are described as bison hunters who practiced no agriculture (Forbes 1960; Schroeder 1974). Most scholars agree that the Querechos were Apaches (e.g., Bolton 1949; Thomas 1935) and that the term Vaqueros used by later Spanish expeditions refers to these Apaches as well (Schroeder 1959). At the time of Spanish contact, the Querechos appear to have ranged largely north of the Canadian River and east of the Pecos, although late prehistoric and sixteenth-century materials from excavations at Gran Quivira and Pecos Pueblo indicate considerable contact between the Plains nomads and the Eastern Pueblos (Hayes et al. 1981; Schroeder 1974).

In the late 1500s the terms Querechos or Vaqueros seem to have been reserved for those Athabaskans who were primarily bison hunters while the term Apache was applied to those Athabaskans who lived for part of the year in villages (Bolton 1916). By the early 1600s, however, the Spaniards were using the term Apache to refer to all of the various Athabaskan-speaking groups of northern and eastern New Mexico (Gunnerson 1974). The confusion of terms continued, however, since the names applied to various Apache bands were highly variable. In general, the terms Cuarteles (Thomas 1935), Quinia (Gunnerson 1974), and Llanero and Ollero (Harrington 1940) were used for the groups now called Jicarilla Apaches, while the terms for groups that formed the Mescalero Apache tribe included Perrillo, Los Siete Rios, and Sierra Blanca, (Hodge et al. 1945; Opler and Opler 1950; Schroeder 1960), along with Faro and Natage (Thomas 1932).

The Teyas were nomadic bison hunters like the Querecho. The Coronado expedition encountered them far out on the Plains, to the east of the Querecho, but they clearly ranged into eastern New Mexico at times. The Pueblos reported that in approximately 1525 the Teyas had attacked Cochiti and Pecos along with some of the Galisteo pueblos. The identity of the Teyas in historical and prehistoric terms is uncertain. Some scholars have argued that they were Athabaskans related to the Querechos (D. Gunnerson 1956; J. Gunnerson 1979; Harrington 1940). Others have identified them as Jumanos (see below) because they are described as having tattoos on their bodies and faces (e.g., Bolton 1949; Scholes and Mera 1940). The Spaniards recognized both linguistic differences and differences in body decoration between the Teyas and the Querechos, as well as certain differences in material culture (see Wilcox 1981:220 for a summary). Probably the most widely accepted identification of the Teyas is that they were Caddoan speakers (Hughes 1974; John 1975; Schroeder 1974; Wozniak 1985). Some researchers have argued that they were the prehistoric residents of the Canadian drainage, who were being displaced by the Athabaskans at the time of Spanish contact (e.g., Wozniak 1985), while others have suggested that they were the descendants of middle Pecos River populations (Wilcox 1981:225).

In west Texas and southeastern New Mexico the Spaniards encountered groups of dog nomads whom they termed Jumanos (Scholes and Mera 1940). These Caddoan-speaking groups appear to have depended largely on bison hunting and gathering of mesquite and other plant resources. These nomads maintained much the same raid/trade cycle of interaction with agricultural village Indians along the river valleys of west Texas that the Querechos and Teyas had with the Pueblo Indians of the Rio Grande and Salinas areas (Kelley 1952).

At the time of Spanish contact the nomadic Jumanos ranged over much of the Roswell District, occupying the territory south of the Canadian and east of the Pecos. The subsequent expansion of the Apaches to the south and east during the sixteenth and early seventeenth centuries displaced the Jumanos, moving them well south and east into Texas. By the early eighteenth century the Jumanos had allied themselves with the Lipan Apache, and by the late eighteenth century they appear to have lost their separate cultural identity and been absorbed by the Lipan Apache (Kelley 1952).

One other group that was termed Jumanos by the Spaniards is also of interest to the protohistory of the Roswell District. This was an agricultural population that occupied a series of pueblos in the Salinas region just to
the northwest of the district boundaries. This use of the same term for agriculturalists and neighboring populations of hunters and gatherers may have been strictly a coincidence of similar styles in personal adornment. Given that the agricultural populations who abandoned the Roswell District at the end of the Ceramic period appear to have withdrawn to the Salinas area, however, and that the Ceramic period hunters and gatherers appear to have remained within the district but to have adopted a more mobile, Plains-oriented lifeway, these two Jumano populations could represent descendants of the Ceramic period occupants of the Roswell District. Scurlock (1979:164) has suggested that both the dog nomad, bison-hunting Jumano and the pueblo-dwelling, agricultural Jumano had their origins in the Jornada branch of the Mogollon.

On the other hand, Kelley (1984a:161) has suggested that Jornada Mogollon groups were most likely Uto-Aztecanspeakers, while most researchers identify the Plains Jumano as Caddoan speakers (see Naylor 1981 for an exception). Given that trade ties in the Roswell District during the Ceramic period appear to have been with the Mogollon populations toward the west, and given that the heartland of the Caddoan languages is to the east in Texas, if the Jumano were, indeed, Caddoan speakers it seems more likely that they moved into the Pecos region in protohistoric times and that the indigenous Ceramic period hunters and gatherers of the southern Roswell District appear historically as the Suma and other groups observed in trans-Pecos Texas. [Note: Miller (1983:122) argues that the Suma and Jumano spoke the same language and that it is not possible to determine, on the basis of presently available evidence, what their linguistic affiliation was.]

At least three other Indian groups—the Suma, the Jano, and the Manso—are mentioned in accounts of the Spanish explorations of extreme southeastern New Mexico and trans-Pecos Texas (Forbes 1957; Gerald 1973). Very little is known about any of these groups (Beckett 1985; Gerald 1974), but they appear to have been largely hunters and gatherers with at least some semisedentary village dwellers reported along major rivers. No records concerning these Indians specifically locate them within the Roswell District. All three groups appear to have lost their cultural identity and been absorbed by the Apache by the late 1700s (Gerald 1973), but Naylor (1981) argues that at least the Suma were not Athabaskans but Uto-Aztecanspeakers.

Other Interpretive Problems

One other interpretive question regarding the Protohistoric period that has received some attention and certainly deserves more is the nature and importance of trade and exchange during this period. Snow (1981:369) has suggested that the rise of large pueblos along the extreme eastern periphery, away from the Rio Grande Valley, is clearly related to a shift in focus eastward following the collapse of the Western Anasazi and Northern Mexican spheres. This focus...reflects the interaction of two complimentary economic systems characterized by intensive agriculture and incipient pastoral nomadism.

Wilcox agrees with Snow’s assessment, arguing that the New Mexico Pueblos survived the collapse of the Pueblo IV pan-regional system partly by adopting a locational strategy of clustering large pueblos close together, thereby increasing manpower and reducing transportation costs, but largely by their ability to arrange for new inputs of energy....The principal source of this new energy was the Southern Plains.... By providing bison meat, hides, and other Plains products to the Pueblos, the Teya-Plains Jumano and the Querecho-Athapaskans significantly helped the Pueblos to survive into the historic period (Wilcox 1981:235).

The sparse but ubiquitous presence of Mogollon and Anasazi ceramics in Neoarchaic sites on the Llano Estacado and Kelley’s (1984a) suggestion that Bloom Mound served as an outpost for the Pecos-Tularosa trade indicate a considerable time depth for this trade between nomadic and agricultural groups at the edge of the Plains. The Spaniards observed innumerable instances of Plains-Pueblo exchange (Bolton 1916; Thomas 1935), and contact era archeological evidence from such sites as Pecos Pueblo and Gran Quivira also indicates considerable trade at this time (see Spielmann 1983 for a study of archeological evidence indicating an increasingly mutualistic exchange between Plains and Pueblo groups in late prehistoric/protohistoric times). Ethnographic accounts (e.g., Ford 1972) indicate that this trade remained important well into the Historical period.

Wilcox (1981:226) suggests that not only was the Plains-Pueblo trade important to the protohistoric residents of eastern New Mexico, but that there was considerable trade between the Pueblos and the Plains Village groups of the Great Bend aspect, perhaps with the newly arrived Athabaskans acting as middlemen. Wilcox (1981:228) goes on to argue that it was through establishing trade relationships with the Pueblos that the Athabaskans were able to establish themselves on the fringes of the Southwest.

Brugge (1981:286–287) also points out the advantages of trade relationships for permitting the immigrant Athabaskans to establish themselves among the resident Pueblos.

That such a tribe, probably divided into a number of bands, should be quick to ally itself with more numerous Pueblo peoples is easy to understand. For
their part, the Pueblos were probably quick to accept potential trade partners and allies. The inter-pueblo warfare that seems to have contributed to the abandonment of the San Juan was still endemic. A rural dwelling people who could harvest the products of the hinterland and bring them to the pueblo for trade, as well as perhaps giving warning of the approach of war parties from rival pueblos, would give the towns with such allies a distinct advantage.

Additional archeological studies of the nature of Pueblo-Plains trade relationships, such as those of Spielmann (1983) and Snow (cited in Snow 1981), are extremely important to our understanding of the Protohistoric period in eastern New Mexico. They not only provide us with information on the nature of this exchange and its function(s) in the subsistence systems of the groups involved, they also can potentially inform us about how to identify various components in the settlement systems of the nomadic groups involved in these exchanges.

Among the other interpretive problems concerning the Protohistoric period that need to be addressed, the problem of site identification, which was discussed previously, is one of the most important. We need to develop means of identifying both the remains of true protohistoric, pre-contact and pre-horse nomads and those of early historical mounted nomadic groups of this region.

The one unique feature currently used to identify these sites is the stone circle or tipi ring, but relatively little research has been done concerning these features (e.g., Mobley 1983). For the later Apachean sites, metal arrow points and worked glass implements, such as scrapers, are offered as diagnostics, but nothing is known about the material culture of the protohistoric Plains nomads.

Efforts to solve the problem of identification of protohistoric sites might include emphasis on detailed excavation and analysis of sites suspected to date to this period. Attention to all possible absolute and relative dating methods (e.g., archeomagnetic and thermoluminescence sampling as well as more common techniques, such as radiocarbon analysis) is certainly needed. Source analysis for lithic materials might help to distinguish protohistoric sites from late Archaic and Ceramic period sites if it is indeed true that the protohistoric adaptation represented a return to a highly mobile strategy—that is, greater mobility might be reflected in a higher proportion and/or wider range of lithic material types (see discussion of the protohistoric adaptation below). As Gregory (1981) notes for the Western Apache, systematic application of basic archeological methods—e.g., detailed recording of feature and artifact morphology and of site layout—on a large number of sites is critical.

The best approach to identifying historical Apache (and Comanche) sites is probably that suggested by Wilson (1984), careful study of documentary sources to pinpoint locations of observed camps. Detailed field examinations of the reported camp locations can then be carried out in an effort to identify the subtle features and rare artifacts that should remain to mark such sites. Eventually both patterning in the environmental locations of Apachean sites and patterning in the observed features and artifacts may permit us to locate and recognize these sites.

Another important interpretive issue concerns the nature of the pre–horse Plains nomad adaptation and the transition to the ethnographically recorded Mescalero settlement and subsistence pattern. Very little is known about the adaptation of the dog nomads encountered by the first Spanish explorers in New Mexico, although they are generally described as bison hunters. A combination of careful research into the Spanish records and of excavation at known protohistoric sites, such as those conducted by Speth and Parry (1978, 1980) at the Garnsey bison kill site, is needed to provide information on this adaptation.

Additionally, although the nature of the historical Mescalero adaptation has been very well reported (Basehart 1974; Thomas 1974; see the summary of these studies in Chapter 7), very little attention has been paid to the transition from the protohistoric to the historical period. As noted above, this transition took place as a result of pressure from the Comanche, who forced the Mescaleros out of a Plains environment and into the mountain fastnesses where they were found ethnographically. Not only were these former Plains nomads forced to adapt to a new environment, they did so under the threat of periodic military campaigns. This meant that the greater mobility and options for raiding provided by horse transport assumed a critically important role in their adaptation. This transition from dog nomads of the Plains to mounted warriors of the high country took place in a very short period of time and is a subject of study that deserves more attention.

Research Directions

Perhaps the most important suggestion for research on the Protohistoric period in the Roswell District is simply that it should not be ignored. The problems of site identification make this period so difficult to work with that the temptation to ignore it can be great. As pointed out in the introduction to this chapter, the Protohistoric period provides a critical link between the cultures preserved in the archeological record and those recorded by the Spaniards and later historical observers.

Additionally, the Protohistoric is an era of great anthropological interest in and of itself. The processes of culture change and adaptation appear to have been rapid and sweeping in the Roswell District between the end of the Archaic period and the inception of Hispanic settlement in the early 1800s. A number of research questions can be offered for this period:

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(a) What caused the population and subsistence shifts evident at the end of the Ceramic period?

(b) Did the agriculturalist populations return to hunting and gathering as suggested by Jelinek (1967) or did they move out of the district to join other agricultural groups, perhaps in the Salinas and Great Bend regions?

(c) What caused the demonstrable increase in emphasis on bison procurement in the Protohistoric period?

(d) Was it, as Jelinek suggests, a result of improved range conditions leading to increased availability, or were range conditions in decline as Speth and Parry (1980) argue?

(e) What was the nature of the protohistoric dog nomad adaptation, and by what stages did the Mescalero shift to their historical, ethnographically recorded adaptation?

The three major interpretive questions relative to the Protohistoric period that have been addressed by previous research—Athabaskan entry, identification of contact era Indian groups, and Plains–Pueblo trade—are discussed in some detail above. These are all important questions and deserve additional attention. They are not the only important questions, however.

The three most important research needs relative to the Protohistoric period are

(a) Development of recognition criteria for these sites (see the section on Problems of Identification above).

(b) Development of creative methods for working back and forth between the historical records and the archeological record in dealing with sites of this period.

(c) A need for information on the environment of the Roswell District at the close of the Ceramic period and into the Protohistoric period. A number of major adaptational changes occurred during this time, and the nature of any accompanying changes in climate and in the availability of bison and other prey species must be understood before any explanations can be formulated.
Chapter 7
THE MEXICAN AND AMERICAN HISTORICAL PERIODS
Lynne Sebastian and Frances Levine

This chapter will be divided into three sections dealing with Hispanic, Native American, and AngloAmerican settlement in the Roswell District during the nineteenth and early twentieth centuries. This organization necessarily leads to some overlap and back-tracking in discussions, but it permits us to focus briefly on what little is known about the first two cultural groups. Hispanics and Native Americans have tended to be invisible in histories of this region or, even worse, to appear only in "bad guy" walk-on roles in the dramatic accounts of cattle barons, range wars, railroads, and homesteaders.

Hispanic Settlement In The Roswell District
In his fascinating and very readable historical geography of the Southwest, D. W. Meinig writes about the Hispanic expansion beyond the Rio Grande and into the Pecos Valley and the general area east of the Sangre de Cristos Mountains.

The gradual contiguous spread of Hispanic colonists during the nineteenth century is a little-known event of major importance. Overshadowed in the public mind and regional history by Indian wars, cattle kingdoms, and mining rushes, this spontaneous unspectacular folk movement impressed an indelible cultural stamp upon the life and landscape of a broad portion of this Southwest. It began in a small way in late Spanish times, gathered general momentum during the Mexican period, and continued for another generation, interrupted but never really stemmed until it ran head on into other settler movements seeking the same grass, water, and soil (Meinig 1971:27,30).

At the time of the Mexican Revolution in 1821, the Hispanic colonists in New Mexico, along with the indigenous Puebloan population, formed one of three "islands" of sedentary agriculturalists (the other two being in California and in south Texas along the Rio Grande) in a "sea" of often hostile nomadic Indians. Beginning at approximately this time, a small number of Hispanic settlers and seasonal herders began moving out of the Rio Grande corridor and into the edges of what is now the Roswell District.

Problems of Identification
One reason for the near invisibility of Hispanic settlement in New Mexico from a historical perspective is that historical records are extremely incomplete. Mexican period New Mexico was isolated and poor. Government record keeping was haphazard; often records were stored where they were subject to fire or water damage; and when the Americans took over at the end of the period, many records were destroyed. Additionally, many aspects of colonial life, especially the daily life of the lower classes, were simply never recorded in any way.

From an archaeological perspective, Hispanic sites are very difficult to differentiate from other contemporaneous sites. During the Mexican period, manufactured goods of every sort were extremely expensive and difficult to acquire. Very little money was in circulation, and the economy in most Hispanic villages was based on barter, exchange of goods and services, and social ties of kinship and patronage. Even into the American period manufactured goods tended to be expensive and rare. Additionally, their distribution tended to fall off with distance from the source—the Santa Fe Trail early on and the railroads in later years. This factor, plus the long-term use of similar construction materials and methods, makes it difficult to determine the ethnic affiliation or even the time period of many potentially Hispanic sites.

In general, throughout the colonial and Mexican periods, Hispanics and Pueblos and, later, Hispanics and Anglos had nearly identical economies, used the same ceramics and other material culture items, and made use of the same construction materials. For sites lacking historical identification, it is difficult in the absence of excavation data on differential site layout and space use to distinguish Mexican period Hispanic sites from Pueblo sites or American period Hispanic sites from Anglo sites (see Oakes [1983:109] for a discussion of using organizational properties to distinguish Hispanic and Anglo homesteads).

History
The land grant village of Anton Chico (Figure 7.1) on the Pecos at the very northern edge of the Roswell District was probably the first Hispanic settlement in the district—the grantees took possession of their land in May of 1822. Various wealthy merchants and politicians from Santa Fe and other areas of northern New Mexico secured titles to land east of Anton Chico, but their grants were used only for seasonal grazing throughout the Mexican period. In 1824 Pablo Montoya received a large
FIGURE 7.1  HISTORICAL PERIOD PLACENAMES
grant on the Canadian River just west of what is now Ute Reservoir in the northeastern portion of the district (the ranch itself was outside the district boundaries), but constant pressure from the Comanches forced abandonment of the grant by 1840 (Lang 1979:39). These are the only known settlements in or near the Roswell District prior to the American period.

With the establishment of Fort Stanton (Figure 7.1) in 1855, settlement in the Rio Hondo drainage became possible, and several small Hispanic villages were founded in that area in the 1850s and 1860s. La Placita (later Lincoln) on the Rio Bonito was settled by immigrants from the Manzano (Sheridan 1975:35) or Socorro (Oakes 1983:34) area and occupied until the fort was abandoned during the American Civil War and the Mescalero Apaches regained control of the area. In 1866 a group of 30-40 Hispanic families from the Estancia Valley settled on the Rio Hondo (Oakes 1983:34; Sheridan 1975:35). Many of the men had been employed as freighters on the Santa Fe Trail, and they named their village Plaza de San Jose or La Plaza de Missouri in honor of St. Joseph, Missouri. Missouri Plaza (Figure 7.1), as the village came to be called, was occupied until the 1870s when many of the downstream communities on the Rio Hondo were abandoned because large upstream irrigation projects led to reduced water flow.

At the end of the Civil War an influx of Anglo population into eastern New Mexico began—gradually at first, but in ever-increasing numbers, cattlemen from Texas and then ranchers, farmers, and homesteaders from throughout the U.S. and from many foreign countries arrived in the Pecos and Canadian valleys and moved into the Sierra Blanca uplands. The small villages of Hispanic subsistence farmers and herders were overwhelmed by the big ranches and new towns. Lacking the tight cultural integration and land-based economic and political power of the Hispanics of northern New Mexico, the Hispanics of southeastern New Mexico were reduced to the status of second-class citizens, and soon many were living in segregated communities within the larger Anglo towns (Meinig 1969:99; Oakes 1983:47–50).

Very little attention has been paid by historians or historical archeologists to Hispanics in the Roswell District after the settling of the pioneer villages mentioned above. One of the best such efforts is the study of the Otiberos site near Roswell carried out by the Laboratory of Anthropology (Oakes 1983). Both the baseline data on architecture, artifacts, and site structure from this Hispanic homestead and the information of the segregated Hispanic barrio of Chihuahuita in Roswell should prove valuable in future studies.

Economy

As noted above the Mexican period Hispanic economy was largely based on subsistence farming and stock raising, with barter being used to acquire most other goods. In part the barter system resulted in the exchange of basic subsistence items among villages with slightly different agricultural specialties, but it also resulted in part-time specializations in, for example, trade with the Plains Indians or in buffalo hunting. Other economic specializations, such as long-distance freighting of goods and sharecropping of sheep within the partido system, were more closely related to an expanding market economy. All of these part-time specializations continued into the American period, but most gradually died out and were replaced by wage labor.

Freighters, Traders, and the Santa Fe Trail. During the Spanish colonial period New Mexico was closed to foreign traders, but once independence was won the Mexican government was eager to establish trade relations with their neighbor to the east. In the summer of 1821 a patrol of Mexican soldiers encountered a group of Missouri traders seeking to establish contact with Plains tribes. They invited the traders to bring their goods on to New Mexico, and the trade route (or actually series of trade routes) known as the Santa Fe Trail was opened (Meinig 1971:17).

Clearly the economic benefits of the Santa Fe Trail to New Mexico Hispanics were great. It provided an expanded market for wool and other locally produced goods; it was a source of manufactured items; and it offered wage–labor opportunities to men who could work as freighters. It did, however, also attract the attention of expansionists in both the U.S. and Texas. As Meinig (1971:20) points out:

In the early 1840s, Texans made several attempts to tap the trunk line of the trade across the High Plains and divert at least some of it to their ports on the Gulf. But the New Mexicans regarded these Texan expeditions as military invasions rather than commercial invitations and they killed, imprisoned, or expelled all of the members of such parties. Their suspicion of the Texans as imperialists was well founded and such episodes would prove but the opening phase in recurrent Texan pressures.

When war broke out between the United States and Mexico in 1846, it had much more to do with quarrels over Texas than with anything directly concerning New Mexico. Nonetheless, once the war began, "the strategy of conquest followed directly along the paths of commerce opened a generation before" (Meinig 1971:20). In the spring of 1846 General Kearny lead an army into Santa Fe, where he received a surrender prearranged through the efforts of members of the local Anglo-American commercial community. Except for a minor rebellion in Taos in 1847, the incorporation of New Mexico into an American territory under the Treaty of Guadalupe-Hidalgo in 1848 was peaceful.
Trade with the Plains: The Comancheros. As discussed in previous chapters, there is archeological evidence for a long history of trade between the New Mexico Pueblos and nomadic Indian groups living on the Plains. Exchange between Hispanics and the Plains tribes began in the course of the Spanish colonial government's efforts to make peace through trade. Government attempts to monopolize or at least control this trade through the institution of trade fairs at Taos and Pecos had only limited success (Simmons 1983). The mainstays of the trade were pottery, iron tools (particularly knives), agricultural products, and bread on the Pueblo/Hispanic side and horses, tanned hides, and buffalo products on the side of the nomadic tribes.

By the Mexican period a great deal of this trade was being carried out by small bands of part-time or occasional traders (comancheros) who took their goods out onto the Plains and established trade contacts among the nomadic groups. These trading expeditions followed three major routes (Levine and Freeman 1982). One began at Las Vegas and followed the Mora and Canadian rivers to the Texas border, where one fork went northeast to Las Tecovas, northwest of Amarillo, and the other southeast to the Pease River. The second trail began at Bosque Redondo (Figure 7.1) on the Pecos and ran east to Laguna Salada and Yellowhouse Lake, ending near Lubbock, Texas. The third trail also began at Bosque Redondo but ran southeast to Sulphur Springs Draw near Denver City, Texas, and on to the headwaters of the Rio Colorado.

Throughout the Mexican period and the early years of the American period, the comanchero trade continued to be a small-scale, low-budget affair, usually organized at the village level to trade small surpluses for needed items. Beginning in the 1860s, however, the character of the trade changed radically—possibly as a result of the disruptions caused by the American Civil War. At this time the comancheros began to deal heavily in stolen cattle and in guns and whiskey.

During the war, when many cattle were left abandoned on the frontier, the Indians were able to simply round them up and drive them away to the waiting buyers. After the war ended, however, and the ranchers and their cowboys were at work branding and guarding their herds, the Indians took the cattle by force. This resulted in a situation where Hispanic traders encouraged (and even helped) Comanches and Kiowas to plunder cattle in Texas. These cattle were then bought by the largely Hispanic populace in New Mexico, with no questions asked. Needless to say, this exchange greatly exacerbated the animosity that had long existed between Texans and New Mexicans.

The army attempted through establishment of forts and permit systems, and through armed patrols and other means, to bring an end to this trade, but they were largely unsuccessful. Ultimately, the comanchero trade was brought to an end in 1872 by a combination of military action, vigilante activities on the part of the injured Texans, and probably most important by the destruction of the buffalo herds and consequent subjugation of the nomadic tribes.

The Ciboleros. Buffalo hunting, like the Plains/Pueblo trade, had a long history prior to the Spanish entrada. During the Ceramic period, Puebloan groups appear to have done much of their own hunting; with the arrival of the warlike Teyas and Querechos on the Southern Plains during the Protohistoric period (Chapter 6) the Pueblos appear to have shifted to a system of bartering for robes and meat. The arrival of the Comanches on the Plains also seems to have decreased the amount of hunting by Pueblos and Hispanics alike, but the establishment of peace with the Comanches during the Spanish colonial period and the shifting of the main locus of trade to the Plains stimulated a resurgence in buffalo hunting (Kenner 1969). Because the buffalo hides could be traded for manufactured goods in Chihuahua, the hunting also took on more of a commercial aspect.

Kenner (1969) describes the cibolero expeditions as comprising a number of men under a leader or mayor-domo. Only a few hunters in each party were skilled, athletic cazadores who made the actual kills with a lance. The rest of the party was needed to process the meat and hides.

The cibolero expeditions were a dangerous business. The hunting of these large fierce animals was dangerous in itself, and since most hunts occurred in October after the crops were harvested, there was also the risk of death from a sudden blizzard. Additionally, the nomadic Indian tribes, who viewed the ciboleros as competing for their main subsistence resource, could be extremely dangerous. In the 1850s and 1860s, ciboleros from New Mexico came increasingly into conflict with the Cheyenne, the Comanches, and the Kiowa. As the hunting pressure on the buffalo became greater, the conflicts also increased, but in the 1870s the cibolero/Indian conflicts were resolved in a way that was not only unforeseen but would have seemed nearly unthinkable a few decades earlier. Kenner (1969:114) describes this final solution emotionally, but accurately:

Anglo buffalo hunters, armed with deadly repeating rifles and motivated by an unquenchable thirst for gore and money, would commit unceasing carnage on the teeming herds until, within the space of a few years, only rows of bleached bones would be left as grim reminders of the great beasts which had so admirably served the ciboleros.

Sheep herding and the Partido System. Sheep raising was a traditional economic pursuit among Hispanics in New Mexico from the earliest colonial times. A special economic system unique to New Mexico Hispanics and known as the partido was developed to permit those of limited means to get a start in the sheep business. The
partido is a contract or sharecropping system in which goods (sheep) are exchanged for services and payments in kind. The owner of a large number of sheep supplies a breeding herd to the partido and gives him access to grazing land. The partido then raises the sheep and returns to the owner certain percentage of the wool and lambs each year. Eventually the partido becomes an owner in his own right and can negotiate contracts for his own sheep with other partidarios.

The partido system was most common in northern New Mexico. In the Roswell District it was largely limited to the northern Pecos Valley. Indeed, the earliest Hispanic use of this part of the district was by partidarios seasonally grazing sheep on land grants along the river. In the southern portion of the Roswell District, sheep ranching was a largely Anglo pursuit, at least at the ownership level. The shearsers and herders tended to be Hispanic (Oakes 1983:39), but they were hired as wage laborers and rarely could accumulate enough capital to go into the sheep business for themselves.

Wage Labor. Two early sources of wage labor for New Mexico Hispanics—freighting and sheep herding—have already been noted. A third major source of employment, the railroads, developed during the Angloamerican period (Oakes 1983:32). Barrera (1979) describes the Southwest during the Angloamerican period as having a colonial labor system. In such a system the "labor force [is] segmented along ethnic and racial lines and systematically maintained in a subordinate position" (Oakes 1983:33). Oakes goes on to note that in the Southwest the colonial labor pattern was one in which Hispanics were paid lower wages than Anglos for the same work. As Hispanics entered the wage-labor market in southeastern New Mexico a combination of racial prejudice and their lack of access to capital restricted them to menial, low-paying, and sometimes dangerous jobs in agriculture, mining, and railroad construction.

Land Use and Site Types

Two aspects of traditional Hispanic patterns of land use dominated the landscape during the Mexican period—the aggregated, often defensively constructed village, and the large land grant. Not surprisingly, the earliest Hispanic settlers in New Mexico developed a settlement pattern similar to that of the indigenous Pueblos. Both groups were practicing subsistence agriculture and both were threatened by often hostile nomadic Indians. A settlement pattern consisting of nucleated villages created a larger labor pool for agricultural tasks than would have been available with a pattern of isolated farms, permitted development of efficient irrigation systems, and provided for the common defense. The physical plan of Hispanic villages exhibited many of the same features as Pueblo villages (e.g., central plazas, solid outer walls, restricted access), again reflecting similar social and defensive needs.

Sheridan (1975:34–36) provides an interesting description of villages and village life during the Mexican and early American periods in southeastern New Mexico. He quotes the description of Anton Chico written by George Kendall of the Texan–Santa Fe Expedition of 1841–1842, indicating the strongly defensive quality of the village, and summarizes a series of sources describing the technologically primitive agriculture of the Missouri Plaza residents.

Under Spanish law the governor of the province was empowered to grant lands to individuals and communities. Generally the grants to individuals were designed to reward service or to raise revenue for the colony, while community grants were used to encourage settlement along the frontiers and expand Spanish claims in New Mexico. Community grants consisted of village sites, homesteads, farmlands, and land held in common for use in grazing, firewood collecting, etc. Both community and individual grantees were required to meet certain residency requirements before final title could be granted.

In addition to the Anton Chico land grant, all or part of four other Mexican period grants lie within the boundaries of the northern portion of the Roswell District: the Pablo Montoya, Agua Negra, Jose Perea, and Ojito Galinas or Preston Beck grants. For a detailed discussion of the history of the latter three, see Levine and Winter (1987); for a brief discussion of the Pablo Montoya grant see Lang (1979).

Both of these aspects of traditional Hispanic settlement patterns (that is, the nucleated villages and the large land grants) led to conflicts during the American period. Conflicts arose between the Hispanic pattern of village settlement and the Anglo pattern of dispersed ranches and farmsteads placed largely in reference to water. In the era of open ranges, the ranchers depended on controlling the water sources and discouraged settlement by agriculturalists of all races, but especially Hispanics. The Anglo pattern of individual farmsteads permitted Anglo farmers to settle in upstream areas on the small rivers in the Sierra Blanca region that would have been insufficient to support the village agriculture of the Hispanics. By diverting irrigation water, they depleted the water supplies reaching the larger downstream farming areas, leading in extreme cases to the abandonment of such sites as Missouri Plaza on the Rio Honda.

The land grants led to conflicts during the American period because of boundary disputes. The Treaty of Guadalupe–Hidalgo, which ceded New Mexico to the United States, contained specific provisions designed to protect the property rights of Mexican citizens. The authors of the treaty, however, were working within a framework of British and American legal precedent,
while the holders of the New Mexican land grants viewed property from the Hispanic perspective of usufructory rights to traditional use areas and ties of kinship and patronage.

The patents to the land grants described the land in terms of natural features or locally recognized landmarks; the American legal system recognized only surveyed boundaries. The vague descriptions of land grant boundaries led to overlapping and conflicting claims. Under the Mexican system this meant that actual occupation of the land was more significant than possession of documents, but under the American system possession of clear title was the critical consideration. Nowhere were the conflicting values of AngloAmericans and Hispanics more painfully evident than in the long drawn-out legal battles over land rights (see Levine and Winter [1987] for a history of legal conflicts over land grants in the northern portion of the Roswell District).

Native American Settlement In
The Roswell District

In general the history of Native American settlement in the Roswell District is a history of the Mescalero Apache and, to a lesser extent, of the Comanche. Brief, generally involuntary occupations by other groups, such as the Navajo and the Jicarilla Apache, did occur, but these will be discussed in the context of the main Native American and Anglo American occupations.

As noted in the chapter on the Protohistoric period, remains of the Plains nomads encountered by the first Spanish explorers and of the later, ethnographically described nomadic groups, such as the Comanche and Apaches, have been extremely difficult to identify in the archeological record. This archeological “invisibility” increased through time as the availability of horses increased the scale of mobility and as the availability of metal tools decreased the likelihood that nonperishable artifacts would be left on the surface of sites.

No systematic archeological studies of Native Americans in the Roswell District have been made; there are virtually no archeological data about these groups. Even at locations where historical records indicate that major Indian encampments were encountered, identifiable artifacts and features are rare. Indications of Native American settlement patterns provided by survey data consist of the occasional undated tipi ring and of very rare artifacts, such as scrapers made on glass shards or metal arrowheads. So little is known about the technology and material culture of the various Native American groups that occupied the Roswell District that only artifacts made of clearly postcontact materials, such as metal and glass, can be confidently assigned to these groups. Presumably both Apaches and Comanches continued to manufacture the stone tools that they had used prehistorically. But either their technology was very conservative and their artifacts are indistinguishable from Archaic and Neoarchaic remains or, more likely, the technological differences are subtle and too few dated assemblages have been analyzed to permit us to distinguish between them. Suggestions about ways of dealing archeologically with these highly mobile groups are offered in Chapter 6; the discussion that follows will be confined to historical and ethnographic data. The major historical source for the Comanche used here was Kenner (1969); major historical sources for the Mescalero are Thomas (1974) and Bender (1974). Elizabeth A. H. John (1975) provides a larger context for the dramatic events of this period in her study of Spanish diplomacy and the Plains Indians.

Conflict and Subjugation

Comanche. Beginning in the late 1700s, the Spaniards were remarkably successful in maintaining peace with the Comanche. Their “foreign policy” relative to these Plains nomads consisted of generous gift giving, strong trade relations, and careful information gathering and monitoring of Indian movements (Kenner 1969:53–58). Trade was a means of supplying the Comanche with goods that they desired, thereby decreasing the temptation to acquire these items by raiding. Gift giving performed this same role and additionally, since reciprocal gifts were not expected, increased the prestige of the Spaniards in the eyes of the Comanche. At the same time, gift giving provided the Comanche leaders with an incentive for maintaining good relations. The acquisition of gifts that could be distributed among their followers assisted the Comanche leaders in consolidating and maintaining their influence.

The Spanish colonial government supported a small cadre of paid interpreters who moved among the Comanche, reporting on their movements and activities and supervising the activities of traders in the Comanche camps. The government also managed to tap into the Comanche political system, persuading the Comanche in 1786 that their chiefs should be confirmed by Spanish officials in the name of the king and receive the silver-handled cane and scarlet cloak that would be emblems of their office (Kenner 1969:56–57). It was as a result of these relatively peaceful relations with the Comanche during the late Spanish colonial period (and also of the Spanish-supported attacks by the Comanche against the Apaches) that Hispanic and genizaro settlement was extended beyond Pecos Pueblo into the Pecos and Canadian valleys by Mexican period times.

The deterioration of the relationship between the New Mexicans and the Comanches began when the United States acquired Louisiana in 1803 (Kenner 1969:66). Because both the Americans and the Spaniards recognized the strategic importance of the Plains tribes in determining who would control the vast area between Louisiana and New Mexico, the Louisiana Purchase set off a strong
rivalry for the loyalty of the Plains groups at the very time that the Napoleonic wars were sap\ng Spain’s ability to pursue this goal. The scarcity of trade goods lost the Spaniards the loyalty of the eastern Comanche, who began raiding again in Texas and northern Chihuahua.

Relations with the Comanche continued to deteriorate after Mexican independence. A rapid turnover among government officials and severe financial constraints made it very difficult to maintain any consistency in Indian policy. Ultimately even the western Comanche, who were still allied with the New Mexicans, began raiding in Chihuahua and Durango. The New Mexicans were powerless to stop their Indian allies from raiding their neighbors to the south, but they seem to have suffered relatively few depredations themselves (Kenner 1969:72).

For approximately a decade after the transfer of New Mexico from Mexican to American rule, the Americans paid little attention to the Comanche. The lack of Anglo settlement in eastern New Mexico and the continuing peace between the Comanche and the Hispanic New Mexicans gave the American authorities little reason to be concerned with this tribe, especially since the Navajo were being troublesome at this time and were much closer to settled regions of the territory. But in the mid-1850s Anglo ranchers began moving into the Canadian and Pecos valleys, and the same Comanche demands for food and gifts that had been tolerated by the Hispanics became grounds for Anglo demands for military protection (Kenner 1969:120-121). Beginning at this time, the roles that would be played for many years by the various cultural groups involved were established.

The Comanches would continue to visit the New Mexican frontier settlements, the American inhabitants to protest, and the military to oppose the Indian incursions. Silent onlookers at first, the native New Mexicans would gradually align with the Comanches (Kenner 1969:122).

In 1856 the first American military outpost on the eastern frontier of New Mexico was established at Hatch’s Ranch (Figure 7.1) on the Gallinas River just to the north of the Roswell District. Emboldened by the presence of the military, additional settlers, both Anglo and Hispanic, began to arrive, and this caused alarm among the Comanche, who reacted with increasing hostility against the Anglos. From that time until the outbreak of the American Civil War, relations on the eastern frontier of New Mexico were characterized by repeated raids and retaliations, by unwarranted military attacks on peaceful Comanche trading parties, and by complicity between the Hispanic and Puebloan New Mexicans and their traditional Comanche trading partners. With the outbreak of the war and withdrawal of the American troops, relations between the Comanche and the New Mexicans returned largely to normal (Kenner 1969:137).

During the Civil War, relations between the military and the Plains tribes changed markedly. Alarmed by the nearly successful Confederate invasion of New Mexico and fearing another invasion across the Plains, the military in New Mexico began cultivating the Plains tribes and the Comancheros who traded with them in an effort to secure spies who would report the presence and movements of any invaders. During the war Camp Easton (later Fort Bascom; Figure 7.1) was established on the Canadian just north of the Roswell District boundaries, and at first good relations ensued between the troops and the Comanche.

Ultimately, however, bureaucratic reluctance to provide the goods and provisions needed to maintain these good relations led to some minor infractions by the Comanches. Gen. James H. Carleton, the military commander of New Mexico, promptly launched an all-out retaliatory campaign, despite the efforts and advice of many New Mexico citizens and the Indian superintendent for the territory, Michael Steck (Kenner 1969:146-147). Even the territorial governor of New Mexico, Henry Connelly, refused to let Carleton use the territorial militia in his campaign because the Comanches were at peace with the people of New Mexico, and Connelly was not about to antagonize this powerful tribe for no reason.

Never a man to be deflected by facts or reason once his mind was made up, Carleton launched the campaign anyway and had Steck removed from office. The Adobe Walls campaign was at best only marginally successful, but it angered the Indians so greatly that they increased the violence and frequency of their raiding and began negotiations with the Confederates in Texas. Only the collapse of the Confederacy prevented an alliance from being formed.

As noted in the discussion of Hispanic settlement above, during and after the Civil War the character of the comanchero trade changed markedly. The comancheros began trading whiskey and arms for stolen cattle, encouraging and even helping the Comanches to raid ranches in Texas. Efforts by the army to control or eradicate this trade were singularly unsuccessful, in part because the officers and men at Fort Bascom soon found that it was more profitable to participate in the trade than to bring it to an end, and in part because the trade was very profitable for the New Mexicans, many of whom felt only enmity for the Texans.

Despite all efforts to control it, the comanchero trade continued almost unchecked into the early 1870s. Gradually, however, increasing military pressure, along with vigilant raids by outraged Texans, began to take its toll. In 1874 the trade was interrupted by an uprising of Plains Indians, including Kiowas and Cheyennes as well as Comanches. The military campaign launched in response to this uprising was swift, effective, and deadly. In the winter of 1874 the army destroyed nearly all of the tipis, horses, and supplies of the largest Comanche band in a
raid on Palo Duro Canyon. By June of 1875 the last of the Comanches surrendered. The buffalo had been nearly hunted to extinction by Anglo hunters, thousands of the Indians' best horses had been confiscated, many of their leaders were in prison in Florida, and the people were confined on reservations in Oklahoma (Kenner 1969:206). The Comanche were gone from eastern New Mexico, and except for a few nostalgic visits by New Mexicans to the Oklahoma reservations, their century-old trade relationship with the Pueblo and Hispanic populations of New Mexico was at an end.

Apache. At the time of Spanish contact, the Apaches were largely concentrated on the Southern Plains, but the ongoing southward expansion of Athabaskan groups had resulted in bands of Apaches moving into the mountains of the western Roswell District and the high country beyond. As early as 1653 Apaches, referred to specifically as Mescaleros because of their reliance on mescal as a staple, are reported in the Sierra Blanca region (Thomas 1974:1). By 1672 Apache groups including Mescaleros had forced the abandonment of the Salinas pueblos. By the time of the Pueblo Revolt in 1680 and the reconquest in 1692 the Apache had become the scourge of the Rio Grande corridor, which was the locus of Spanish settlement and the lifeline of Spanish commerce.

Until the arrival of the Comanche in the early 1700s, the Apache also dominated the Southern Plains. In the first half of the eighteenth century the Comanche drove the Apache off the finest buffalo hunting grounds along the Canadian and Red rivers, pushing the Jicarillas into the Sangre de Cristos and the Mescaleros ever deeper into the mountain fastnesses of southeastern New Mexico (Sheridan 1975:15). One response on the part of the Mescalero to this pressure from and circumscription by the Comanche was to increase their raids on Spanish and Pueblo settlements—an economic measure facilitated by their increasing access to horses. These raids, in turn, led to the intensive and ultimately fairly successful Spanish military campaigns against the Mescalero described in Chapter 6.

The political chaos that followed Mexican independence affected relations with the Mescalero as it did everything else. The lack of unified policy and of funds for rations or enforcement brought the uneasy peace to an end. Although the treaty of 1810 that had brought peace between the Spanish and the Mescalero was renewed by the Mexican government in 1832, the Mescalero were in fact spreading out of their treaty-assigned territory into west Texas (Thomas 1974:17) and renewing their pattern of raiding in Chihuahua.

The early years under American rule (ca. 1847–1855) were years of exploration and military reconnaissance; these exploring missions will be described in the final major section of this chapter. Relations with the Mescalero consisted largely of minor skirmishes, thefts of stock, etc. During this period, the Mescaleros in the Sierra Blanca region appear to have attempted to avoid confrontation as much as possible, but those bands occupying the southern mountains, including the Guadalupe, were more prone to raiding and fighting than the others (Sheridan 1975:27).

In 1854 and 1855 the American military began their attempt to bring the Mescalero under control. Expeditions based at the numerous forts along the Rio Grande penetrated the land between that river and the Pecos, fighting the Apaches when necessary but also attempting to persuade them to cease raiding and to settle on a reservation. In 1855 a treaty was signed establishing a specific hunting territory for the Mescalero in an effort to reduce raiding and conflicts. In the same year, Fort Stanton was established on the headwaters of the Rio Hondo (Figure 7.1) to provide a central point for settling those Mescalero who were willing to give up their traditional way of life. The fort also served as a base for dispatching expeditions to punish those Indians who refused to settle. At this time the agreed-upon territory stretched from approximately Fort Stanton to the Texas border on the south and from the west slope of the Sierra Blancas to the Pecos Valley.

The largest single band of Mescaleros, that led by Cadete, settled near the fort, drawing rations and attempting to comply with the Anglo plan for turning them into farmers (Sheridan 1975:28; Thomas 1974:26). The rest of the Mescalero bands continued their roaming and raiding ways, but gradually both military pressure and the decline in the size of the hunting range attracted more bands to the Fort Stanton area. Ultimately only the southernmost Mescalero bands who ranged into Mexico remained unaffected by developments at the fort.

During the late 1850s and very early 1860s the Mescalero moved in and out of the Fort Stanton area—sometimes planting crops in compliance with the wishes of the agent and the military, sometimes going back on the land to hunt and gather—but generally Anglo–Mescalero relations were in equilibrium. This equilibrium was destroyed by the outbreak of the American Civil War; the general disruption and the withdrawal of troops led to a renewal of raiding throughout Apache territory. The Confederate army captured Fort Fillmore on the Rio Grande near Las Cruces in 1861. Upon receiving word of the surrender of Fort Fillmore, the commander of Fort Stanton abandoned the post and moved his troops to Albuquerque, and the Confederates occupied the fort (Dart and Arany 1980:65). Ultimately the Texans found the post too costly to hold against the Apache, and they too abandoned it, which resulted in the flight of local Hispanic settlers as well.

Once the Confederates had been defeated and driven out of New Mexico, the Union army reoccupied the forts in the southern part of the state. General Carleton, who had arrived with his California Column of volunteers just as...
the army that he came to fight withdrew, declared martial law and began a massive campaign against the Indians instead. He sent Kit Carson and five companies of New Mexico volunteers to recapture Fort Stanton in September of 1862 and ordered them to begin a campaign of extermination against the Mescalero: all men were to be killed; all women and children were to be taken prisoner; no surrenders would be accepted.

Carleton then orchestrated a three-pronged attack on the Mescalero’s main highland stronghold. The three columns attacked from Hueco Tanks northeast of El Paso, through Dog Canyon in the Sacramentos south of Alamogordo, and from Fort Stanton. By November the Mescaleros had been defeated. Despite Carleton’s orders, Carson accepted the surrender of every band that came to the fort. Carleton ordered the captives confined at Bosque Redondo, first planning to return them to their homeland when the hostilities were over, then deciding to establish a reserve at the site, centering on the newly established Fort Sumner. To this reserve he sent not only the Mescaleros but the Jicarilla and Mimbres Apaches as well.

In the spring of 1863 the Apaches began efforts to farm the land set aside for them at Bosque Redondo. Jelinek (1967) provides an excellent summary of what happened next, as does Thompson (1976). Jelinek notes that both the military establishment in New Mexico and the Office of Indian Affairs considered the isolated Bosque to offer ideal conditions for the confinement of troublesome Indians. They disagreed, however, on questions of which Indians and how many of them should be confined there.

The sufferings of the Indians were great. As Sheridan notes, not only were the Navajo and the Apache traditional enemies, but conditions at Bosque Redondo were less like those of a reservation than they were like those of “a concentration camp, or a refugee village, full of hungry, demoralized, displaced persons” (1975:33). Crowding and bad water brought disease and hardship. Lack of tools and seed coupled with alkaline soil led to crop yields that were insufficient to support so large a population at the best of times, and vermin and drought often destroyed the entire crop. Small parties would attempt to slip away and go on hunting or raiding expeditions in an effort to feed their families, but they were hunted down by the soldiers.

Eventually conditions became unbearable, and on the night of November 3, 1865, all but 9 of the 335 Mescaleros who remained at Bosque Redondo escaped (Thompson 1976). Most of the escapees returned to their Sierra Blanca and Sacramento mountains homeland; others fled into Mexico or joined other Apache groups farther west. Most of the Navajos remained at Bosque Redondo until 1868, when even the army had to admit that the incarceration of the Indians around Fort Sumner had been a serious mistake. In that year the Navajo were allowed to return to their own homeland in western New Mexico and eastern Arizona.

Various routes were used by the American troops to escort Navajos on the Long Walk to the Bosque Redondo. Frank McNitt (1973) reconstructed from primary sources the routes used on 20 separate marches to the bosque between August 1863 and November 1867 and the route chosen by the Navajos to return to their homeland in the spring of 1868. McNitt reports that wagons were used for transporting supplies, women, children, and the sick and that escorts attempted to average 12 mi per day (1973:155).

By the shortest and, ironically, the least frequently used route, McNitt calculates that the distance by wagon from Fort Canby to the bosque was 375 mi. The preferred mountain route was 424 mi. Detours off the mountain route to Santa Fe were often taken, making the trip 436 mi. Detours to Fort Union extended the march to 498 mi (McNitt 1973:145).

All of the routes followed an established wagon road from Fort Canby to Albuquerque by way of Ojo de Oso, Fort Wingate, Cuba, Burgo, Laguna, and Los Lunas, then across the Río Grande at Albuquerque. From Albuquerque one route led to Santa Fe and then east and south to the Gallinas River at Tucolote, and south to Hatch’s Ranch at the Pecos. The mountain route and the detour to Fort Union proceeded east from Albuquerque through Tijeras Canyon, across the Ortiz Mountains to Galisteo and Tucolote, then down the Gallinas to Hatch’s Ranch on the Pecos, following it to the bosque. From Tucolote to the Bosque Redondo was a distance of about 120 mi. This portion of the mountain route lies within the Roswell District.

On their return march in 1868, the Navajos also took a variety of routes. They preferred a route that left the Pecos River between Santa Rosa and Puerto de Luna or Giddings Ranch, then followed Cason Pintada west toward Chilili, and then northwest to Tijeras, where they picked up the established wagon road from Albuquerque to Fort Wingate. This way totaled 167 mi from Albu-
In the late 1870s a violent power struggle took place between two prominent Anglo political and economic factions in eastern New Mexico. The Lincoln County War, as it has come to be called, will be discussed in the final major section of this chapter, but even though the Mescaleros were not directly involved in this conflict, it had certain ramifications for the Indians. For one thing, both the Indian agent and the military at Fort Stanton were distracted by the events taking place in the Anglo community; the troops were often called in an attempt to maintain or restore order. Lincoln County experienced an abrupt dislocation of population in 1878 as a result of the violence (Dart and Arany 1980:68). And just at this time of violence and disruption, Victorio, the famous Chiricahua Apache warrior, came to Mescalero.

In 1879 Victorio took the warpath, and many Mescalero went with him or joined his band when he returned from Mexico later that year. After cutting a bloody swath across southern New Mexico, Victorio and his band, closely pursued by the American army, rode into Mexico, but many of the Mescaleros returned to the reservation. After a number of skirmishes, the military decided to attempt an "ultimate disarmament action" against the Mescaleros, gathering them at the agency without letting either the Indians or their agent know what was to happen (Dart and Arany 1980:69). Realizing that they were about to be stripped of their arms, horses, and other possessions, the Indians fled, but not quickly enough. A massacre resulted (Sonnichsen 1973:194).

In 1881, after Victorio and many of his followers were killed in a battle with the Mexican army, Chief Nana and his band came to Mescalero. On June 17 they left, taking some of the Mescaleros with them, on what Sonnichsen (1973:210) has called the "last and bloodiest" of the Apache raids. Killing and stealing as they went, the crippled old chief and his warriors raced through much of southwestern New Mexico. Defeating small patrols and evading a small army that had been brought in to stop them, they escaped into Mexico. After those who had participated in this one last raiding expedition had been killed or captured and jailed, the Mescaleros were finally and permanently settled on their reservation, which lies adjacent to the western boundary of the Roswell District (Figure 7.1).

The Ethnographic Mescalero

Although the Comanche were important to the history and economy of eastern New Mexico, their actual occupation or use of the Roswell District was largely limited to occasional hunting, raiding, and trading forays. Their winter encampments and other sites of more intensive occupation and general domestic use were located to the east in Texas. Efforts to study Comanche use of the Roswell District archeologically would be especially difficult because the sites that are likely to occur represent the most mobile and ephemeral portions of an already highly mobile and non-intensive system of land use.

The Mescalero, on the other hand, offer greater potential for archeological studies in the Roswell District because sites representing all or nearly all of the settlement and subsistence system of the Mescalero could potentially be found within the boundaries of the district. The actual territory used by the various Mescalero bands extended well beyond the Roswell District, but based on ethnographic information it would appear that all of the resources needed for a complete seasonal round can be found within the confines of the district. For this reason a brief synopsis of the available information about Mescalero settlement and subsistence is presented in this portion of the chapter as a baseline for generating models about or interpretations of the archeological record; for ethnographic information on the Comanche see Wallace and Hoebel (1952).
THE MEXICAN AND AMERICAN HISTORICAL PERIODS

The most complete and accessible ethnographic information on the economy and organization of the Mescalero is Basehart’s (1967) article which summarizes studies carried out largely in the late 1950s in conjunction with the Mescalero land claims case. Basehart’s (1973) contribution to the Human Systems Research technical manual is a summary of more detailed data presented in his 1967 and 1974 publications. Additional information on other aspects of Mescalero culture can be found in various publications by Opler (e.g., Opler 1983; Opler and Opler 1950) and Sonnichsen (1973). Much of what follows is taken from Basehart (1967, 1974); the culture described is that of the Mescaleros at roughly the mid-1800s, a time when their mobility was extended by the adoption of the horse but when their range may have been restricted by pressures from the American military and by Anglo-American settlement.

Subsistence. The Mescalero were a classic hunting–and–gathering society, moving seasonally throughout a large territory and depending on a wide variety of resources. Although there is limited evidence that a small number of Mescaleros may have practiced some agriculture prior to the Fort Stanton period (Basehart 1974:58), the vast majority of Mescaleros were wholly reliant on hunted and gathered resources.

The most important prey species for Mescalero hunters were deer, antelope, and bison; smaller animals, such as rabbits and prairie dogs, were also taken when needed. Deer probably provided the most significant proportion of the meat in the Mescalero diet, as indicated not only by informant reports but also by the amount of ceremonialism involved in deer hunting and butchering (Basehart 1974:12). Small groups of hunters and their families would establish a basecamp in a likely hunting area, and then the men would hunt from that camp either individually or in small groups. Butchering apparently was done in the field, with only the meat, hides, and other desired portions of the carcass being returned to the camp. Both the Sierra Blanca and Guadalupe mountains regions of the Roswell District were mentioned by Basehart’s informants as good deer-hunting areas (Basehart 1974:13).

Basehart (1974:15) describes antelope as constituting less of the diet than either deer or bison, but as still being of considerable importance. This lesser importance was again reflected in the virtual lack of ceremonialism surrounding antelope hunting. Antelope were hunted by individual families or very small groups from one or more small camps located with respect to water availability. Large encampments, such as those used for deer hunting, were considered to be impractical because larger hunting areas per hunter were required for effective antelope hunting. Occasionally group hunts using surrounds or entrapment or hunting by horse relays were used. Nearly all of the Pecos Valley, Guadalupe Mountains, and Plains regions of the Roswell District were described by Basehart’s informants as potential antelope hunting areas (Basehart 1974:18).

Despite their basically highland adaptation, the Mescalero were heavily dependent on bison, both for the highly prized meat and for the hides. Basehart notes that all Mescalero groups hunted the bison at times, whatever their geographical center...[even though] the Plains country was the geographical focus for one or more groups associated with particular leaders (1974:19).

Because the geographical center of the Mescalero territory was so far from the bison hunting ranges, more extensive preparations and longer migrations were required for these trips than for other hunting expeditions. Preparations included manufacturing weapons and hide–working tools, securing poles and stakes for the tipis that would serve as dwellings in the woodless Plains environment, making and repairing water containers, etc. Although large groups might move en masse to the bison–hunting area east of the Pecos, most often the migrations took the form of smaller groups following multiple routes and then converging on the selected bison camp.

The bison camp generally consisted of numerous closely spaced tipis. Basehart notes that this site structure contrasts with the more widely spaced organization of mountain camps and suggests that this pattern reflected the need for greater cooperation both in the subsistence task at hand and in defense, since groups on the Plains were at constant risk from the Comanche and other enemies (1974:22). Bison were hunted with bow and arrow and with the lance; the surround technique was frequently used, both before and after horses became available. The bison–hunting camp might be occupied for the entire fall season, or relatively frequent moves might be made, depending on the distribution of the animals. The major areas for bison hunting reported by Basehart’s informants lie outside the Roswell District: to the east in the Amarillo/Lubbock, Texas, region and to the northeast beyond Clayton, New Mexico (Basehart 1974:25).

Basehart (1974:30) notes that 50% or more of the Mescalero diet consisted of gathered wild plant resources. Mescal, datil, pifion, and mesquite were the major gathered resources, but a variety of cactus fruits, other nuts, grass seeds, tubers, and greens were also consumed. Although the proportion of the diet attributable to each of the four major resources varied from year to year, mescal was always the staple of the Mescalero diet owing to its consistent production and its good storage potential. The other three major resources exhibit marked yearly variability in productivity. Basehart notes that, as would be expected, the greater importance of mescal was marked by a greater emphasis on ceremonialism associated with this plant (Basehart 1974:31), although datil and other plants were subject to certain ceremonial prohibitions and uses as well.
Mescal was generally collected in the spring and sometimes in the fall by small task groups of women. Basehart is not clear on this subject, but it appears that actual basecamps were established by a group of families and that collecting took place in a radius around those camps; it is likely that at least in the fall collecting would have been carried out from hunting basecamps as well, or that basecamp locations during this season would have been selected with an eye to advantageous location for both hunting and collecting of a number of resources. He does mention (Basehart 1974:31) that if the collecting areas were not too far from the camp the mescal heads were brought back to the camp for processing; if the distance was too great relative to the available transportation, a roasting pit was prepared at the point where the heads were collected, and they were roasted there and returned to the main camp as already processed food.

Processing required that the heads be baked in large, stone-lined earth ovens for several days. Once this was accomplished, “mescal cakes were made from the bases of the leaves, the heart was sliced, and both were dried” (Basehart 1974:32). Among the favored mescal collecting areas mentioned by Basehart (1974:33), only the Guadalupe Mountains are within the Roswell District; the other favored areas lie just to the southwest of the district boundaries.

The fruits of the datil were also prized for their storage potential and relative abundance. Datil exhibits more year to year variability in productivity, but its distribution is much less restricted than that of mescal. Basehart’s information on the organization of datil collecting is much more explicit than that for mescal. It appears that generally datil were collected in a radius around already established basecamps, but on occasion actual task groups might be formed to collect and process datil at some distance from the main camp. In these cases, the duration of a particular gathering expedition depended upon the distance of the fruits from the permanent camp; a large party might collect and process for about six days, return to camp with the prepared food, rest, and then journey again to the collecting site for a similar period of work (Basehart 1974:34).

The datil fruits were processed by roasting over an open fire, followed by splitting, seedling, and drying. Some fruits were dried whole, others were mashed into cakes. Implements used were all perishable. The only reported preferred collecting area for datil that lies within the Roswell District is the Guadalupe Mountains (Basehart 1974:35).

Pifion nuts were gathered opportunistically whenever a good crop was discovered, but this resource tends to be highly variable in distribution and productivity. Occasionally a small group might set up a temporary camp at an especially productive stand of trees, but generally these nuts do not appear to have been the impetus for major residential moves or long-term camps. The nuts could be stored either raw or after having been roasted over a fire or with coals. Nuts stored raw were subsequently processed by roasting. The major reported collecting areas for pifion lie outside the Roswell District to the west (Basehart 1974:37).

Mesquite beans were valued for their excellent storage properties, but their distribution was limited and their productivity tended to vary greatly from year to year. Mesquite collecting was apparently carried out through daily or at most overnight forays from established camps. The beans were processed either by grinding into flour or by boiling. Again, most of the major collecting areas lay west of the Roswell District (Basehart 1974:37).

The importance of a third component of the Mescalero economy—raiding—is difficult to evaluate. Basehart (1974:94) notes that his informants were reluctant to discuss the subject and that none of the men would admit to having participated in raiding, even though some of them would have been of the right age at the time of the last Apache campaigns. He goes on to note that “historical data for the American period strongly suggest that plunder from raiding was important for Mescalero subsistence” (1974:96). It is likely that raiding assumed greater importance in subsistence terms as the Mescalero were coming under greater and greater pressure from the American military; deprived of their traditional livelihood by efforts to settle them on a small reservation and frequently deprived of promised nations, they would have had few alternatives. In any case, raiding is not an activity that would be recoverable archeologically. Instead it is a topic to be addressed with the historical record.

Organization of Mobility. Like most band-organized societies, the Mescalero formed very fluid sociopolitical groups. These were recognized bands, often referred to by the name of their leader or most important man, but membership in these bands was situational and ever-shifting. Unlike other Apache groups to the west, Mescalero bands did not have fixed territorial associations, although particular bands did tend to frequent a given set of places through time (see Basehart [1967] for maps of approximate band ranges). Opler (1933:428) suggests that this lack of territorialism was a result of the critical importance of access to the bison-hunting range among the Mescalero and of the difficulty of organizing individual home ranges to include this access. In fact, it is more likely that the need for access to many widely separated resources prevented the formation of home ranges. As noted in the discussion of subsistence above, preferred hunting—and-gathering areas for the various major items in the Mescalero diet tended to be geographically isolated from one another.

Rather than being organized around individual band
Angloamerican Settlement In The Roswell District

Although the Roswell District is clearly part of the greater American Southwest, its history during the American period is distinct from that of the rest of the Southwest and especially from that of the rest of New Mexico. As Meinig points out:

[T]he Pecos Valley...was shared by Texas ranchers and Middle Western agriculturists. There were no Indians and very few Hispanics, and it was a more homogeneous Anglo-Saxon Protestant population than to be found anywhere else in the Southwest. Roswell was typical of ranch-supply centers in West Texas, while Eddy (now Carlsbad)...was like a bit of Kansas transplanted. The fact that the rail lines led south to the Texas & Pacific or northeast to Amarillo and had no direct connection whatsoever with the rest of New Mexico strongly sustained the Texas-Midwest character of the area (Meinig 1971:61).

For this reason, the following brief history of Anglo settlement in southeastern New Mexico is provided to establish a context for historical cultural resources encountered within the Roswell District.

This discussion is divided into three temporally overlapping periods. The era of military exploration and protection lasted from 1848, when the United States acquired New Mexico from the Mexicans, until approximately 1881, by which time the Comanches and Mescalero Apaches had been permanently confined to reservations. The era of the cattle empires covers the period from 1866, when the first herd of Texas longhorns was driven into the Pecos Valley, until 1889, when massive droughts brought an end to the great livestock boom. The final discussion considers the era of land and water speculation, railroads, and homesteads; it covers the period from 1885 to the first decades of the twentieth century. This entire discussion owes much to the work of Tom Sheridan, who completed a brief historical survey (Sheridan 1975) of the Pecos Basin during an internship with the Roswell District BLM. Another useful overview of the historical settlement of southeastern New Mexico is presented by Katz and Katz (1985a, 1985b) in their histories of the Carlsbad Basin for the Brantley Dam project. The discussion of the history of settlement in the northern part of the Roswell District draws heavily from the work of Levine and Winter (1987).

The Military Era

The first American military exploring expedition to pass through the Roswell District was that led by Capt. Randolph B. Marcy in 1849 (Sheridan 1975:20–23). In an effort to establish a wagon route from Doña Ana to north-
ern Texas, Marcy's party crossed through the Organ, Hueco, and Cornudas mountains to the Guadalupe Mountains and Delaware Creek. They reached the Pecos some 50 mi south of the Rio Peñasco and then followed the river south into Texas, searching for a suitable ford. Eventually they built ferries and used them to cross the river, passing south of the Llano Estacado and on to northern Texas.

The next military reconnaissance of the lower Pecos was carried out in 1854 under the command of Bvt. Capt. John Pope, who was attempting to identify a suitable railroad route from the Red River country of Texas to El Paso. Leaving Doña Ana, Pope and his men followed the route taken by Marcy as far as the Pecos River. Just south of the Texas/New Mexico border, they found one of the few really good, reliable fords along the entire length of the Pecos, and Pope's Crossing (Figure 7.1), as it came to be called, was used throughout the period of settlement in the Pecos Valley. When his scouting parties reported that the Llano Estacado was impassable for wagons owing to lack of water, Pope turned south and followed the route taken by Marcy (Sheridan 1975:23–25).

Pope was persuaded that a railroad route to the Pacific along the 32nd parallel was the best choice and suggested that artesian wells could be dug to supply water along the portion of the route running across the Staked Plain. To prove his point, Pope returned to the Texas/New Mexico border in 1855 and began drilling for water on the edge of the llano some 14 mi east of the Pecos. For four years Pope struggled against technical and mechanical difficulties until he was finally forced to give up. Thirty years later technology and logistical support caught up with Pope's vision, and artesian wells supplied water to farms and ranches throughout the Pecos Valley (Sheridan 1975:25–26).

The first extensive exploration in the northern portion of the Roswell District was carried out under the command of Capt. Henry B. Judd in 1850. Judd and his men reconnoitered the upper and middle Pecos from Las Vegas to Bosque Grande (Figure 7.1), and Judd recommended that a military post be established either at Bosque Grande or at Bosque Redondo. Subsequent exploration of the middle Pecos was carried out in 1852 and 1854 by then-Bvt. Maj. James H. Carleton, who was very favorably impressed by Bosque Redondo. At that time Carleton argued that a military post at the site would offer the security and inducements needed to encourage settlers to move into this portion of the Pecos Valley. Despite the recommendations of Judd and Carleton, nothing was done immediately about establishing a fort at Bosque Redondo.

In December of 1854 a detachment of soldiers under the command of Capt. Richard S. Ewell pursued a band of Mescaleros through the Sierra Blanca and Sacramento ranges. When Col. D. S. Miles opened a wagon road from Fort Fillmore near Las Cruces to the junction of the Ruidoso and Bonito rivers in 1855, he named the fort that he established near that confluence after Capt. Henry Whiting Stanton, who had been killed during Ewell's campaign (Sheridan 1975:28).

In 1859 Capt. Thomas Claiborne passed through the middle Pecos Valley in the course of locating a route for a wagon road between Fort Stanton and Hatch's Ranch on the Gallinas River northeast of Anton Chico. Claiborne was far less enthusiastic about the two great bosques on the Pecos than Judd and Carleton had been, but his establishment of a wagon road through the Hondo Valley contributed greatly to future settlement in the area (Sheridan 1975:30–31).

In 1862 James Carleton returned to New Mexico as a general, and one of his earliest official acts was to establish Fort Sumner to provide protection for settlers in the Bosque Redondo area. True to form, Carleton ignored the fact that the land between Bosque Redondo and Anton Chico was not available for settlement since most of it already belonged to one (or more!) of several land grant holders, and he also dismissed recommendations from a board of his own officers that Aguà Negra would be a better site for a fort. Fort Sumner was established, and the tragic use that Carleton made of Bosque Redondo has been discussed in the section on Native American settlement above.

The Civil War and post–Civil War military history of the Roswell District have been discussed in the section on Native American settlement above. One aspect of military influence on settlement that has not been discussed, however, is the fact that any military post served as a major market for agricultural goods in the pre–railroad era. The establishment of a military post not only provided security from Indian raids in the early days of Anglo settlement in eastern New Mexico, the post also provided a cash market for agricultural produce and an opportunity for wage labor. For example, once a post was established at Hatch's Ranch on the Gallinas (see discussion of the Comanche campaigns in the previous section) the 1860 census records for the nearby Taylor Ranch indicate that at least half of the men in the ranch community worked as teamsters or freighters, most for the military.

Small communities grew up quickly around military posts, the residents including both new settlers and former military men who had mustered out and then remained in the vicinity of their former duty station to provide goods and services to the army. Meinig notes that many of the large Anglo commercial enterprises of the late nineteenth century Southwest began as military suppliers.

Long before any railroad had even gotten started in the direction of Santa Fe, Anglo merchants had become well established around the plazas of all the
important communities in the region. Sustained at first principally by Army contracts and payrolls and the needs of California emigrants, they later prospered from the Indian Bureau and other federal agencies, gradually captured the expanding wool trade, and in general became the complete commercial intermediaries between the industrial world and these provincial outposts (Meinig 1971:47).

Not only was the military market important to the establishment of communities in eastern New Mexico and to the development of commercial interest, Oakes (1983) argues that the establishment of Fort Sumner and the interment of the Navajos and Mescaleros at that post had a major part in ushering in the major period of historical development to be discussed below—the era of the cattle empires.

The development of the Texas cattle trade, which was the impetus for the later Anglo settlement of southeastern New Mexico, was in direct response to the need for provisions for the six companies of soldiers and the 9,000 Indians located at Fort Sumner and the Bosque Redondo... There were not sufficient cattle and sheep from the Spanish American settlements north of this area along the Pecos to fill the subsistence needs of this number of men; thus there developed an interest in obtaining cattle from Texas and Federal funds were secured to purchase cattle from this source (Oakes 1983:35).

This is overstating the case somewhat; as will be discussed in the next section of the chapter, the first Texans who drove a herd of cattle into the Pecos Valley were attempting to reach the market provided by the mining boom in Colorado, and the Indians were gone from Bosque Redondo before the cattle boom really began. Nevertheless, the military and their charges did provide a market for some of the first Texas cattle driven into New Mexico, encouraging the expansion of Texas ranchers into the Pecos Valley even if not incurring that expansion. Additionally, as will also be discussed in the next section, the profit to be made from supplying beef to the military and to Indian reservations and efforts to corner that market had a big part in shaping the history of the 1870s in Lincoln County and all of eastern New Mexico.

The Era of the Cattle Empires

The era of the great cattle empires in eastern New Mexico was very brief, lasting less than 25 years. But the impact of that period on the history, or more accurately the historical mythology, of the Southwest and of the United States as a whole has been completely out of proportion to its duration. Anglo settlement in the Roswell District during this period was concentrated in two areas: one in the Rio Hondo and Pecos River valleys between Lincoln and Seven Rivers (Figure 7.1) and the other in the Canadian River Valley. The brief history of cattle ranching in the former area presented below is largely summarized from Sheridan (1975); the Canadian Valley discussion is largely based on Wozniak (1985) and Lang (1979).

In 1866, two Texas ranchers named Oliver Loving and Charles Goodnight decided that the best way to tap into the cattle market generated by the mining boom in Colorado was to drive west to the Pecos River and then follow the river to the north. This route was far longer than the one in use at the time through north Texas to Denver, but it had several potential advantages. For one thing, once the herd reached the Pecos it had an assured water supply for much of the rest of the trip. At the same time, this route avoided the long and dangerous drive through the heart of Comanche territory. It did not, however, avoid Indian problems altogether, as Goodnight and Loving were soon to discover.

Their first trip on the route that came to bear their names was fairly uneventful, except that they lost nearly 400 head of cattle at Horsehead Crossing on the lower Pecos when thirsty animals stampeded over the high river bank. When they reached Bosque Redondo, the contractor for Fort Sumner bought most of their remaining herd, and the two cattle men began to appreciate the importance of Indian agencies as markets. While Loving took the remainder of the cattle on to Colorado, Goodnight returned to Texas to put together another herd. The partners rendezvoused at Bosque Grande, where they spent the winter delivering monthly consignments of cattle to Fort Sumner and Santa Fe.

In 1867, several other groups of Texans began moving cattle north and west on the Goodnight-Loving Trail, despite trouble with the Comanches in Texas and with the Guadalupe Mountains bands of Mescalero Apaches once they reached the Pecos. Among those suffering losses from the Indians were Goodnight and Loving themselves. In July of that year, Loving and a companion, who were traveling in advance of the herd being driven by Goodnight, were attacked by Comanches just north of the Black River, not far from what is now the town of Loving. Loving, who was seriously wounded, managed to make his way to Fort Sumner after a long ordeal but eventually died from complications after the army doctors were forced to amputate his arm.

Two years later Goodnight gave up trail driving and settled on a ranch in Colorado, but by that time the Goodnight-Loving trail had become an important route to the mines of southern Colorado and to the Indian reservations of Arizona and New Mexico. At first, those who were driving the great herds up the Pecos into New Mexico were simply passing through. One of those trail drivers saw the potential of the Pecos Valley for cattle ranching, however, and came to stay, building one of the largest cattle empires of the American West.

John Chisum first drove cattle up the Goodnight-Loving trail in 1867. After a rocky start, he formed a lucrative
partnership with Goodnight and delivered a number of large herds to the Colorado cattlemen. In 1872 Chisum established his first ranch headquarters, the Jinglebob, at Bosque Grande. Because the Navajos had returned to western New Mexico and Arizona and because two former military men named Murphy and Fritz had cornered the market for supplying beef to the Mescalero Reservation, Chisum began driving his cattle west to Arizona, gaining contracts to supply the San Carlos Reservation in the mid-1870s.

Despite constant problems with Apache raids and Anglo cattle rustlers, Chisum’s cowboys were eventually running cattle from his headquarters on the South Spring River near Roswell as far as Fort Sumner on the north and Seven Rivers on the south. Established 10 years after Chisum began ranching in New Mexico, the LFD ranch, headquartered first at Bosque Grande and later at Four Lakes on the Llano Estacado, was the only other cattle operation even approaching the magnitude of the Jinglebob ranch in the middle reaches of the Pecos. To the south, in the Seven Rivers area, the Diamond A and Eddy & Bissell Livestock Company ranches dominated the range.

There were also a number of sheep-raisers concerns in the Pecos Valley, including those belonging to Capt. Joseph Lea and Judge Edmund T. Stone, two of the most prominent early citizens of Roswell. Somehow, the Pecos Valley region, which otherwise seems to have missed no opportunity for bloodshed and violence, managed to avoid the bitter conflict between sheepmen and cattlemen that raged on so many other ranges in the West. Sheridan (1975:50) attributes this to the tolerance of John Chisum and the management of the LFD ranch, the two major cattle-ranching concerns; for whatever reason, Judge Stone and his sons were able to bring large numbers of sheep from Colorado to their range at the mouth of the Berrendo River northeast of Roswell beginning in 1878 with little or no opposition (Oakes 1983:38).

In regard to another common source of violent conflict in the American West, however, the Pecos Valley region was not so fortunate. Many of the new settlers in the valley were from Texas, and some of these had an inescapable hatred of “Mexicans,” owing both to the bitter events of the Texas war for independence and to the comanchero complicity in Comanche atrocities in Texas as discussed above. One of the worst episodes of racial violence took place in the winter of 1873-1874. The five Harrell brothers and their associates had left Texas after being involved in a bitter blood feud and had settled their families at a ranch on the Rio Ruidoso. In December of 1873 a Hispanic deputy sheriff in Lincoln attempted to arrest one of the Harrells and two other Anglos on drunk and disorderly charges. The deputy and one of the men killed each other in a gun fight; an angry Hispanic mob killed the other two Anglos.

The Harrells took their revenge by killing four Hispanic men and wounding a woman at a dance in Lincoln. Attempts to arrest them failed, and they went on to kill four Hispanic freighters and a young Anglo settler who had a Hispanic wife. Finally the whole Harrell gang left for Texas, but not before an Anglo posse from Roswell tracked down and killed at least two of them for stealing livestock as they passed through that town.

A third common source of violence and bloodshed in the American West, cattle rustling, reached epidemic proportions in eastern New Mexico. In addition to the large cattle concerns, many small ranchers also attempted to establish themselves in the Pecos Valley in the 1870s. Most of these ranches belonged to honest, hardworking men, but some were simply a front for the multiple gangs of outlaws who had migrated to New Mexico to escape the pressure being put on them in Texas by the Texas Rangers and other law enforcement personnel.

Several of these unsavory individuals settled in the Seven Rivers area, and in 1876 John Chisum’s brother, Pilot, and his foreman, Jim Highsaw, found clear proof that the Seven Rivers outlaws were rustling Jinglebob cattle. Over the winter of 1876-77 several confrontations ensued, some ending in bloodshed. In 1877 rustling by outlaws based at Seven Rivers reached major proportions, and finally Chisum and his cowboys laid siege to Beckwith’s ranch on lower Rocky Arroyo. The outcome was inconclusive, but Chisum’s enemies used the gun battle as an excuse to threaten him with arrest. Ill with smallpox and weary of the corruption and violence that were endemic in Lincoln County in those years, Chisum withdrew from any further active role in the mounting conflict that surrounded him.

The conflict culminated in what has been called the Lincoln County War. Although often romanticized as a classic range war, the conflict in Lincoln County was actually a struggle for commercial and political power. L. G. Murphy and Emil Fritz, the two former military men who had secured contracts to supply Fort Stanton and the Mescalero Reservation, moved their operations to Lincoln in 1873 and quickly extended their monopoly to encompass the civilian population as well as the Indians and the army.

In 1874 Fritz died and Murphy took Jimmy Dolan, a former clerk in the business, as his new partner. Murphy was an alcoholic, and Dolan soon took over most of the business. Because they held a monopoly, Murphy and Dolan were able to charge very high prices for their goods, and because they had most of the local lawmen on their pay-roll and had connections with the statewide political machine known as the Santa Fe Ring, they were able to run their business without concern for legal niceties.

Murphy and Dolan were buying cattle from the Seven Rivers ranchers, including Beckwith, and it was rumored that they had actually hired a gang of rustlers to special-
ize in stealing Chisum's cattle for them. It was Dolan's connections with the Santa Fe Ring that enabled him to threaten Chisum with arrest over the gun battle at Beckwith's ranch, despite Chisum's proof that the Seven Rivers outlaws were rustling his cattle.

The shooting part of the Lincoln County War started after a young Englishman named John Tunstall and a lawyer named Alexander McSween opened a rival mercantile institution in Lincoln in 1876. Their quality goods and fair prices drew a good deal of business away from Murphy and Dolan, and throughout 1877 Tunstall and his supporters received numerous threats. In February of 1878 Tunstall and four others were ambushed as they were returning from Lincoln to Tunstall's ranch on the Rio Felix. Tunstall was killed, and his companions recognized Dolan among the group of ambushers. Because the sheriff of the moment was on Dolan's payroll, a group of Tunstall's supporters organized an alternative "law enforcement" system that they termed the "Regulators," attempted to give the group quasi--legal status by having themselves deputized by the local justice of the peace, and set out to arrest the men responsible for Tunstall's murder.

Because both factions in the conflict had certain agents of the law on their side, arrest warrants and charges and counter--charges multiplied. And lawless elements on both sides ignored the legal niceties and blasted away at each other in stand--up fights and from ambushes. Finally, in July of 1878, the remnants of the Tunstall faction made a last stand in Alexander McSween's house in Lincoln. Dolan had secured the support of the commander of Fort Stanton, and with the army troopers looking on, Dolan's men surrounded and set fire to McSween's house and then killed all but two of the men, who fled.

The war was over, but the violence lingered on. Many of the honest, hardworking people of Lincoln County simply packed up and left; many of the outlaw bands that had been able to operate openly in the climate of lawlessness that prevailed during the conflict continued to be a scourge for years after. Ultimately, though, the frontier was rapidly passing on to the west, and a new era of settlement was dawning in eastern New Mexico. The great cattle empires lasted for perhaps another 10 years, but massive droughts in the late 1880s destroyed the range. Those operations that survived were smaller, and many outfits moved east onto the llano. Fenced ranges, windmills and stock tanks, and shipment by rail replaced the vast open ranges and immense cattle drives of the early years. Even the tough old Texas longhorns were being interbred with or replaced by such breeds as herefords, shorthorns, and durhams. Lincoln County was subdivided into Lincoln, Eddy, and Chaves counties, and the town of Lincoln faded into obscurity, eclipsed by the growing cities of Roswell and Eddy on the Pecos.

Though scarcely tame in any absolute sense, the era of the cattle empires in the northern portion of the Roswell District was quite peaceful in comparison with the mayhem that occurred in Lincoln County. Although the major portion of the holdings of northern New Mexico's greatest cattle baron, Lucien Maxwell, lay outside the district boundaries, Maxwell did take over Fort Sumner and turn it into a ranch headquarters after it was abandoned by the army in the early 1870s (Sheridan 1975:47). The earliest Anglo ranch on the Canadian within the Roswell District was established by William Stapp and Charles Hopkins at the mouth of Ute Creek in the early 1860s. Although they were eventually driven out by the Comanches and Kiowas, other ranchers followed, especially after the establishment of Fort Bascom in 1863.

Once the Comanches were confined to a reservation in Oklahoma and the vast herds of buffalo, which had competed with the cattle for forage, had been destroyed, the abundant grasslands of the Canadian Valley attracted many cattle and sheep--raising interests. The biggest cattle boom in the Canadian Valley and Curry County occurred in the 1880s (Wozniak 1985:50). Large cattle companies, some of them financed with foreign capital, ran vast herds on the open range of the northeastern portion of the Roswell District. In many cases those established ranches did not file claims on the land in order to avoid paying taxes (Wozniak 1985:50). They simply moved into a likely area near a water source and used the land until an influx of homesteaders forced them to either file a claim or move on. Those who did file most often did so because they had drilled deep wells or made some other expensive improvement. Ultimately the end of the open range in the 1890s brought an end to the day of the cattle barons in the northern Roswell District. They were replaced by smaller cattle operations, sheep ranches, and above all by the homesteaders.

Water Development, Railroads, and Homesteads

The next phase in the history of Anglo occupation of the Roswell District was already underway on a small scale when John Chisum and his contemporaries were still at the height of their power. Although conflicts between cattlemen and homesteaders were common, and at times violent, many cattlemen, including Chisum, regarded the eventually settlement of the Pecos by farmers as inevitable. Chisum permitted and even encouraged settlement on his range by groups and individuals whom he felt were honest and hard--working (Sheridan 1975:49). In the northern portion of the district, as described above, most of the public lands remained open for homesteading because many of the ranchers simply moved on, following the open range to the west.

Oakes (1983:25--26) provides an excellent brief summary of the development of U.S. policies for transferring public lands to private ownership. Although land had originally been sold to citizens under a variety of statutes, this
system proved unworkable owing to several types of abuses. The first Homestead Act, which was passed in 1862, permitted any individual who was the head of a household and had never borne arms against the United States to claim 160 acres of land subject to certain restrictions involving improvements to the land and residence on it. This act was an improvement, but it still left the process of acquiring public land open to fraud. The act was, however, instrumental in promoting settlement of the western frontier.

A more important limitation of the first Homestead Act from the perspective of the settler, however, was that the 160 acre figure was based on expected productivity of land in the eastern United States. In the west, 160 acres was often too small a parcel to support a family or to be worked economically. Because of the uncertainty of dry farming, the best arrangement for most homesteaders was to devote a portion of their land and energy to ranching or raising livestock—a back-up strategy not available to those attempting to live on a 160 acre plot.

In 1877 congress passed the Desert Land Act, which increased the size of a claim four-fold to 640 acres (reduced to 320 acres in 1890) but required payment ($1.25 per acre) and proof of irrigation within three years. In 1909 the Homestead Act was revised to permit free claim to 320 acres of nonirrigable land, and in 1916 the Stock Raising Homestead Act was passed to permit homesteading of 640 acre plots of land not useful for agriculture (these acts are summarized in Oakes 1983:Table 5).

Homesteading increased very slowly in New Mexico until the final years of the nineteenth century. Oakes (1983:39) notes that in 1873 no homestead claims were filed in all of New Mexico, while by 1881 only 90 claims were made in the whole state. Subsequently, land claim booms ensued in different portions of the state for different reasons. In the northern portion of the Roswell District, for example, a boom occurred just after the turn of the century as a result of the completion of the Chicago, Rock Island and Pacific railroad from Liberal, Kansas, to Santa Rosa. As Wozniak (1985:52) notes:

Most of the settlers...brought their preconceived notions about the use of the land and proceeded to break the soil, planting corn...and other Midwestern crops, only to face repeated crop failure owing to poor soil and insufficient moisture....

[Within a few years] consistent crop failures forced most of the homesteaders to sell and leave the country. Those who remained purchased the property of those who departed and began to raise cattle and sheep.

In the lower Pecos Valley, the boom in homesteading arose in response to water development projects. Small-scale irrigation projects drawing water out of the Berrendo and North Spring and South Spring rivers in the Roswell area had been in place for years, but in the late 1880s a series of much grander schemes designed to draw water from the Rio Hondito and from the Pecos itself began to take shape. A number of small companies sprang up, many of them incorporated by various combinations of the same individuals—two of the most prominent being Pat Garrett, the former sheriff of Lincoln County, and Charles B. Eddy, one of the truly great promoters of New Mexico development.

Beginning in 1888, the major water development company in southeastern New Mexico was the Pecos Valley Irrigation and Investment Company (later the Pecos Valley Irrigation and Improvement Company), originally formed by Garrett, Eddy, and a third partner. The company’s first major project was a dam and ditch system on the Hondito that quickly exhausted the small amount of capital available from the original investors. Eddy found some big-money investors out of state, the most important of whom was James John Hagerman, a wealthy businessman from Colorado.

Sheridan notes that “[a]t its peak, the Pecos Valley Irrigation and Improvement Company was the largest privately financed irrigation project in the world” (1975:57). Under Hagerman and Eddy the company built a railroad spur linking the lower Pecos Valley with Pecos, Texas, and thence with the outside world and commenced six major water development projects: the Hondo Reservoir project south of Roswell; the Northern Canal, starting near Roswell and running south to a point below the town of Hagerman; the Eddy (Avalon) Dam and Reservoir (Figure 7.1); the Southwestern and Southeastern canals, running from the Eddy Dam down both sides of the Pecos; the Hagerman Canal on the east side of the Pecos about 12 mi below the town of Eddy (Carlsbad); and the Pecos Land and Water Company Canal, designed to irrigate lands along the New Mexico/Texas border (Sheridan 1975:57–58).

The Eddy (Avalon) Dam project attracted immigrants by the hundreds, so the company built another dam and reservoir called the McMillan Dam (Figure 7.1) between Eddy and what is now Artesia in 1893. Just as the land and water boom was reaching its peak, however, trouble appeared in multiple guises. First, in 1893, silver was demonitized and the country went into a major economic depression. Second, in August of the same year, a flood burst the Avalon Dam. Hagerman funded repairs to the dam and distribution system out of his own money, and he reorganized and pared down the holdings of the Pecos Valley Company (as it was subsequently called), jettisoning Eddy, his former partner, in the process.

Ultimately Hagerman’s efforts were in vain. The tasks that the company had taken on were too large for private capital to carry out, especially in a period of agricultural and general economic depression. At the same time, the
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effects of phosphate-poor soil, saline water, and poor irrigation practices were combining to reduce productivity and even render whole tracts of land useless for agriculture. In 1898 the Pecos Valley Company failed and went into receivership; its holdings were sold to pay its debts. In 1904 the Avalon Dam was again destroyed by a flood, and at that time the Federal Reclamation Service (later the Bureau of Reclamation) took over control of the water development projects on the lower Pecos and the Rio Hondo (Sheridan 1975:69-70).

At the same time that the Pecos Valley Company was building massive dams and huge canal systems to bring the salt-filled water of the Pecos to farm fields, artesian wells were being drilled throughout the Pecos Valley to bring fresh water to the land. The first well was sunk in 1890; by 1900 there were 153 wells in the area around Roswell alone (Sheridan 1975:68). Availability of this water led to yet another land boom, but unregulated drilling and pumping depleted the water by the 1920s (Oakes 1983:40).

By the turn of the century, the major factor in settlement and development within the Roswell District was the railroads. The Atchison, Topeka, and Santa Fe line had brought market access to the northernmost portion of the district in 1879. The El Paso joined the Chicago, Rock Island and Pacific at Santa Rosa in 1902, providing a link from southern New Mexico to the eastern plains of New Mexico and to to the Midwest. Such towns as Clovis, Vaughn, and Tucumcari, which had sprung up as a railroad construction sites, grew into commercial centers (Scurlock 1979:179).

The advent of the railroads and the concomitant access to markets provided a major boost to the sheep-raising concerns and to extractive industries like mining and lumbering. The ease of access encouraged settlement, and the cheaper transportation brought down the price of foodstuffs and other goods. The spur line linking the town of Eddy with the Texas and Pacific Railroad at Pecos, Texas, in 1890 was a boon to settlement and to the sheep industry, but when the line was extended to to Amarillo, Texas, in 1899, providing greater access to markets in the eastern United States, the local agricultural economy finally began to recover from the depression of the mid–1890s.

Historical Archeology In The Roswell District

Historical Sites

Very little archeological attention has been paid to major historical sites in the Roswell District and, until recently, even less had been devoted to smaller, vernacular sites. The Museum of New Mexico conducted excavations at the site of Fort Sumner in the late 1960s, uncovering the remains of structures and recovering numerous artifacts and faunal remains (Olsen and Wilson 1976). The Brantley Reservoir project recorded the town of Seven Rivers and numerous surrounding homesites and other structures (Gallagher and Bearden 1980), many of which were tested and reported by Katz and Katz (1985a, 1985b), Schaafsma et al. (1967) report on test excavations at the site of Missouri Plaza. In the summer of 1986 Human Systems Research of Tularosa, New Mexico, conducted excavations at the site of the Alexander McSween house in Lincoln (Kirkpatrick 1987).

In the Canadian River region and in the northern portion of the Plains region, Hammack (1965) has reported Hispanic and Angloamerican sites within the Ute Reservoir flood pool, including the remains of adobe structures. Seaman (1981) excavated two homesteads near Tucumcari. His manuscript, on file at the Laboratory of Anthropology, reports on the historical occupation and material culture of the Butcher and Wyatt homesteads. Seaman employed graphic and statistical manipulations to examine the artifacts associated with the sites and used historical documents to place the remains in a regional context. Wozniak (1985) reports on a series of ranch and homestead sites recorded along the Bravo CO2 pipeline, which runs along the very eastern edge of the district. This study is especially valuable because the site-specific histories of these Angloamerican period occupations have been researched. The sites are described, the available data on their occupational histories are presented, and then the sites are placed in a regional context. The value of this approach can be seen by comparing Wozniak's research with Lent (1982) and Harlan et al. (1986), which describe a pipeline survey and a powerline survey, respectively, in the same part of the district. While both present maps and descriptions of the features and artifacts on encountered homesteads and other historical sites, the lack of temporal and functional information and historical context in the Lent and Harlan et al. reports makes the historical data far less useful than those from the Bravo project.

In the northern portion of the Pecos Valley region the largest body of data on historical sites comes from the work of Southern Methodist University at the Los Esteros (now Santa Rosa) dam and reservoir. Two territorial era sites were excavated by SMU (Levine and Mobley 1976; Mobley 1978a); a third, the Calloway farmstead, was subsequently excavated by the Center for Anthropological Studies. A draft report on the latter excavations (Levine and Winter 1987) provides detailed analyses of faunal and artifactual remains and a history of the sometimes lively competition for this site engendered by conflicting land grant claims. CAS excavated additional historical sites at Santa Rosa Lake under contract with the National Park Service as contractors for the Corps of Engineers. Dan Scurlock excavated Hispanic ranches and sheep camps and collected some oral histories regarding
land use in the Santa Rosa-Las Colonias area. A final report is in preparation by the Center for Anthropological Studies. Scott Schermer (1982b) researched the history of the Santa Rosa Asphalt Rock Company, a mill processing site recorded by the Los Esteros Lake Survey at Site 29GU105 (Levine and Mobley 1976). Other identified historical sites in this part of the district are described by Klausner and Johnson (1978).

Historical studies from the southern portion of the Pecos Valley include not only the major site excavations at Seven Rivers and Missouri Plaza mentioned above, but several other interesting projects. Stein and Peckham (1974) report on a survey of late nineteenth- and early twentieth-century homestead and ranch sites in Chaves and Eddy counties. A detailed report on the excavation project at the Oñiberos homestead provided in Oakes (1983) is an excellent example of a project combining archeological data with documentary sources to produce a deeper understanding of the homesteading experience than could be gained from either data source alone. Kemmer and Kearns (1984) report only two small historical occurrences, but they offer a potentially useful functional typology for the types of sites likely to be encountered on public lands. Studies pertaining to the Guadalupe Mountains region include Wilson (1984), who provides good documentation and context for the historical remains identified in the course of a powerline survey for El Paso Electric.

National and State Register Properties

The State Register of Cultural Properties and the National Register of Historic Places contain a broad range of historical cultural properties within the Roswell District, but they are noticeably lacking in historical archeological sites. The town site of Seven Rivers, Pope’s Wells, and Fort Sumner State Monument—the latter including Fort Sumner, Bosque Redondo, and a grave marker for Billy the Kid—are listed on the State Register of Cultural Properties. The sites are recognized primarily for their association with events important to the state’s history. They may also contain archeological resources, but these properties were listed on the State Register at a time when little documentation of on-the-ground resources was required.

The State Historic Preservation Division has sponsored architectural surveys that have resulted in National Register nominations for commercial and residential properties and historic districts in Logan, Clovis, Portales, Carlsbad, Artesia, Roswell, Lincoln, and White Oaks. Historic ranch headquarters are also listed on the National Register of Historic Places. They include the Eddy & Bissell Livestock Company headquarters and Lusk Ranch, both near Carlsbad; Causey Ranch at Caprock; and the South Springs, Slaughter-Hill, Milne-Bush, Diamond A, and Millhiser-Baker ranches and Ur- ton Orchards near Roswell.

Facilities associated with the history of water development and resource extraction in southeastern New Mexico have been listed on the Historic American Engineering Record. These properties include the Hondo Project at Roswell; Lake Avalon, the Lake McMillan Dam, the Carlsbad Reclamation Project, and the original Potash Bullwheel in Eddy County; Baish Oil Well No. 1 in Lea County; and the Bonito Pipeline at Nogal. The Fort Sumner bridge and the Ancho and Texico depots are the only railroad-associated sites on the National Register.

Most of the residential and commercial buildings listed on the State and National registers are associated with the later Angloamerican settlement of southeastern New Mexico. Few sites represent the Hispanic or other ethnic and cultural diversity of the region. Notable exceptions include the Hormigoso Irrigation Ditch at Anton Chico, which dates to the Mexican period (ca. 1844); La Capilla de Santa Rosa; the Juan Casaus residence at Santa Rosa; and the Chihuahuita Historic District in Roswell. All of these are specifically related to the Hispanic occupation of the Roswell District.

The properties currently included on the State and National registers clearly do not represent the entire range of historic and cultural properties important to understanding the processes and events of the historical settlement of the Roswell District. No sites specifically relating to the Mescalero Apache or Comanche occupations of the area are included; no homesteads or railroad camps are listed on the National Register. Many other historical archeological sites have been determined to be eligible to the National Register of Historic Places in the course of routine historic preservation compliance procedures, but few of these sites have actually been nominated to the register. Often, archeological sites that are determined eligible for their potential to yield information important to the history of the region are then excavated to mitigate the effects of project construction. In those cases when eligible sites are not destroyed by excavation, nomination procedures should be completed. In spite of a clear mandate contained in Section 110(a)(2) of the National Historic Preservation Act of 1966, as amended, for federal agencies to nominate significant properties to the National Register, BLM budget direction has not favored the preparation of nominations. Rather, BLM policy has been to consider effects on individual sites identified by clearance surveys. Neither BLM site recording forms nor clearance survey reports have provided enough detailed recording of physical remains or consideration of contextual data to evaluate the significance of sites adequately or to consider management alternatives. In the absence of the detailed consideration given to sites in preparing National Register nominations, the BLM is not likely to plan adequately or informatively for the long-term preservation of the resource base. Future archeological surveys in the Roswell District could contribute significantly to the
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National Register of Historic Places by nominating historical archeological sites with potential for thematic studies associated with the historical occupation of the region.

Research Directions

Until recently archeological survey crews did not consistently record historical archeological sites. Whether or not historical resources were recorded often depended upon the interests and experience of the principal investigator or of particular field crews. Sites such as forts, ghost towns, stage stops, and other substantial structural remains were often recorded because they were recognized as being regionally significant or because they were too big to be ignored. It is only recently, with the expanded scope of cultural resource management studies, that house foundations, dugouts, trash scatters, and other less impressive archeological manifestations have been systematically recorded by survey crews.

Archeological surveys seldom record occupied structures, even when structures within survey areas are an integral part of the historical landscape. Historical architectural surveys, on the other hand, often do not record ruined structures. The resources recorded by particular surveys seem to reflect the training of the field investigators and not the intent of historic preservation legislation. The legislation clearly directs federal agencies to assess the effects of undertakings on historical and archeological properties. A working definition for historical sites to be recorded during surveys on BLM–administered land seems to be needed. Below we have considered some of the parameters that should be considered in choosing whether or not to record historical remains as "sites."

Under 36CFR800, the Advisory Council regulations for the protection of historic and cultural properties, sites that are at least 50 years old and meet other criteria of eligibility are included in the determination of project effects. This definition has often posed problems for field archeologists, who are faced with the dilemma of deciding whether to record a resource before they have complete information about the temporal place and historical context of a resource. In New Mexico, where Native American and Hispanic cultural traditions and Angloamerican settlement patterns have changed markedly since World War II, the 50-year cut-off arbitrarily eliminates sites that are important markers of cultural change. For that reason, the New Mexico Historic Preservation Division recommends 1945 as a more relevant temporal cut-off point in determining which historical structures, and features, are to be included in cultural resource inventory surveys. As a working rule, we recommend that all occupied structures, standing structures, ruins, and archeological features constructed before 1945 be recorded by archeological surveys in Roswell District. In those instances when only trash dumps or artifact scatters remain, these features should also be recorded as historical archeological remains.

The question of which resources to record is part of a larger problem—the failure of most archeological reports to place resources in their larger historical context and to provide adequate documentation of the sites. The references cited in this chapter provide an overview of events and themes that characterize the historical settlement patterns of southeastern New Mexico and can serve as a guide to the literature for survey projects throughout the Roswell District.

Publications produced by the National Park Service and the New Mexico Historic Preservation Division contain standardized terms and suggested field recording procedures for recording standing architecture and occupied historical structures, as well as procedures for documenting and evaluating archeological and historical properties. The two publications produced by the New Mexico Historic Preservation Division, New Mexico Historic Building Inventory Manual (University of New Mexico School of Architecture and Planning 1980) and Sources and Searches: Documenting Historic Buildings in New Mexico (McHugh et al. 1985), are excellent guides to regional styles, public records, and documentation procedures specifically pertaining to New Mexico properties. Derry et al. (1985) provide a technical guide for planning, surveying, evaluating, and registering archeological and historical properties according to National Register criteria.

The BLM files contain the records of the former General Land Office as well as field surveyors' notes, plats, historical indexes, and homestead entry records that are the primary sources for tracing the land-use history of specific tracts. These data, filed by township and range, are available on microfiche in each BLM District Office and at the BLM State Office. An explanatory plat and accompanying text are available from the BLM State Office in Santa Fe. These documents explain in some detail the information available in the Land Office Records and the use of Master Title Plats, Use Plats, and the Historical Index. Specific homestead case files are available through the National Archives, Records Group 49, Federal Records Center, Suitland, Maryland. Levine et al. (1983) provide a case study in the use of General Land Office records, local public records, and ethnography or oral history for researching historical homesteads on BLM land. Additional suggestions for researching local history can be found in publications of the Association for State and Local History, such as those by Felt (1976) and Jones (1980).

Perhaps the most difficult part of survey and excavation projects at historical sites is to link the data recovered from the site with the historical overview presented in the same report. We believe that this critical linkage frequently fails to happen because the overviews present a
ROSWELL OVERVIEW

regional history, while the archeological investigations focus on a household or idiosyncratic level. A focus on local history and more site-specific documentation can help to alleviate this by permitting archeologists to refine their research designs such that they investigate local and household cultural phenomenon, rather than emphasizing regional research designs that attempt to examine broad cultural processes. Finally, we believe that history and archeology are different facets of the past and should be used to complement each other, not to mirror or limit each other's understanding.
Chapter 8

ASSESSMENT OF ARCHEOLOGICAL COVERAGE

Signa Larralde

Our perception of cultural adaptations in southeastern New Mexico depends heavily on the intensity and location of archeological investigations. We cannot assume that all areas of the region have received equal attention. This chapter summarizes the archeological coverage of each region of the Roswell District, taking into account large projects prior to 1979 and the survey acreage and excavation area of large projects after 1979. The way archeologists have discovered and defined cultural remains also has a big impact on our perception of the past. This chapter relies heavily on ARMS file data for summaries of components of each culture in southeastern New Mexico: Paleoeskimoan, Archaic, Ceramic period, Protohistoric, Historical, and unknown. Because only cultural remains defined as sites are entered into the ARMS file, factors that influence site definition must be considered in evaluating these data. Figure 8.1 shows the distribution of all components in the ARMS file throughout the Roswell District. Land status (i.e., private vs state or federal ownership) is probably one of the most important factors influencing archeological coverage of any given region. Legislative and regulatory requirements at both the state and federal level dictate when and how appropriate types of archeological evaluations must be done (this volume being a case in point). Consequently, regions which have a higher percentage of federal and/or state ownership will show a proportionately higher representation of documented archeological remains.

Areal Coverage By Region

Location of Projects prior to 1979

Prior to 1979, large survey projects were related to dam or reservoir construction—e.g., the Ute Reservoir project (Hammack 1965), Los Esteros (Mobley 1978a), and Brantley Reservoir (Henderson 1976)—or to energy and minerals development—Maroon Cliffs (Hurst 1976), Mescalero Sands (Beckett 1976), and the Waste Isolation Pilot Plant survey (Nielsen 1977). These efforts, along with Jelinek’s (1967) survey of the Pecos Valley, were concentrated in the Canadian River and Pecos Valley regions. Because of biases resulting from the location of reservoir projects, the lower terraces of the Pecos and Canadian rivers are disproportionately represented in both survey and excavation coverage. The same can be said of the area between the Pecos River and the Mescalero Escarpment in Eddy and Lea counties, though biases in this case result from concerns specifically related to energy exploration.

In the Plains, Sierra Blanca, and Guadalupe Mountains regions, the focus of fieldwork has been on general reconnaissance of large areas and excavation of individual sites. In these regions, much of the archeological survey conducted to date has not been systematic. The Paleoindian occupation of the Llano Estacado is known almost exclusively from the excavation of a small number of significant sites (e.g., Blackwater Draw, Milnesand, San Jon), although two surveys that concentrated on collating data from amateur archeologists and studying their collections have contributed information about additional sites and finds (Broilo 1971a; Wendorf and Hester 1975).

In the Sierra Blanca and Guadalupe Mountains regions, general reconnaissance of large areas (S. Applegarth 1976; Kelley 1984a; Lehmer 1948; Mem 1938) was designed to identify sites for subsequent excavation (e.g., Feather Cave, Pfingsten Site No. 1, Site GS-5). Most sites excavated prior to 1979 in these regions are rock-shelters, caves, or structures. Much of what is known about the archeology of the Guadalupe and Sacramentos comes from areas outside the overview boundaries—from archeological explorations in Guadalupe Mountains National Park to the south in Texas (e.g., P. Katz 1978) and from the Mescalero Apache Reservation and other lands to the west (e.g., Bohrer 1981; Broster and Harrill 1983; Wimberly and Eidenbach 1981).

Location of Projects after 1979

When total survey acreages and excavation areas from recent projects in southeastern New Mexico are being considered, several qualifications need to be made. Survey acreage and excavation areas are taken only from reports produced after 1979 and reviewed for this overview (Appendix 2). Block survey data prior to 1979 would be included in this assessment were it not for omission of acreage and survey method information in many of these reports. Survey methodology continues to be poorly reported, and actual acreages or locations of projects are sometimes not given. Survey comparability (discussed in more detail below) is questionable because the survey intervals vary from project to project, and this information is often omitted from reports. The survey acreage totals reported below come from large projects for which reports were on file in the BLM Roswell District Office.

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FIGURE 8.1  LOCATIONS OF ALL COMPONENTS RECORDED IN THE ARMS FILE (NOVEMBER 1985)
Although small projects were included if reports were available, all but three surveys in the totals discussed below are larger than 200 acres. Small projects have undoubtedly contributed considerable acreage in the past seven years, however. The excavation area totals do not take into account the depth of excavations, only the area. Mitigation by means other than excavation is not considered in the discussion. Excavation areas are small for the Roswell District relative to other regions of New Mexico partly because of the BLM mandate to avoid rather than mitigate sites, if possible.

Tables 8.1 and 8.2 summarize total survey acreage and excavation area by archeological region. The tables report a total of almost 79 mi² (somewhat more than two townships) surveyed in the past seven years, and an excavated area equivalent to slightly more than 2025 m². Evident from both tables, but particularly striking in Table 8.2, is the preponderance of attention to the Pecos Valley region and the lack of large survey or mitigation projects in the Canadian River region. Upper Canadian region lands are predominantly private, while much of the land in the Pecos Valley is federally controlled, a factor largely responsible for this difference in the number of projects represented. Other regions are represented by low survey acreages and small excavated areas. The Abo project (Kemrer and Kearns 1984) accounts for 23.8% of the total acreage surveyed in the Roswell District since 1979. Five projects (Brantley Reservoir, Gallagher and Bearden 1980; the WIPP project, Lord and Reynolds 1985; the Ontibero Site, Oakes 1983; the Henderson Site, Speth and Speth 1986; and the Garnsey Kill Site, Speth and Parry 1980) account for 76.0% of the total excavated area in the Roswell District since 1979. Twenty-one survey projects and 35 mitigation efforts are represented in the table totals.

### Table 8.1

<table>
<thead>
<tr>
<th>Archeological Region</th>
<th>Acres</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plains Region</td>
<td>4,021.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Pecos Valley Region</td>
<td>34,550.8</td>
<td>68.6</td>
</tr>
<tr>
<td>Canadian River Region</td>
<td>1,750.0</td>
<td>3.5</td>
</tr>
<tr>
<td>Sierra Blanca Region</td>
<td>8,164.0</td>
<td>16.2</td>
</tr>
<tr>
<td>Guadalupe Mountains Region</td>
<td>1,849.6</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>50,345.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### Survey Comparability

Survey comparability is important when we try to assess archeological coverage in a region. Since survey methods vary considerably, coverage also varies from project to project and region to region. Attempts to study survey comparability must consider both discovery procedures and use of various units of observation of the surface archeological record. The choice of units of observation concerns site and isolated occurrence definitions and will be discussed below.

### Table 8.2

<table>
<thead>
<tr>
<th>Archeological Region</th>
<th>Area (m²)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plains Region</td>
<td>26.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Pecos Valley Region</td>
<td>2027.8</td>
<td>97.2</td>
</tr>
<tr>
<td>Canadian River Region</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Sierra Blanca Region</td>
<td>26.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Guadalupe Mountains Region</td>
<td>5.8</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2085.6</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Discovery Procedures

Although nearly all projects in the district since 1979 have employed systematic discovery procedures, the procedures are not standardized. It has been suggested that the best way to standardize survey coverage between projects is to measure man hours per unit of area (Plog et al. 1978; Schiffer et al. 1978). The acreage surveyed per person–day for a project is a function of both the speed at which people move across the landscape and the survey interval. Person–days per acre were not calculated as part of this overview; instead, survey comparability is discussed in terms of survey interval. Rogers (1982) has suggested that in order to ensure discovery an archeological manifestation must be twice as large as the survey interval. In the Roswell District the survey interval in evaluated projects ranged from 3 to 40 m, with a mean of 19.5 m. This survey interval mean and range may decrease the chance of discovery of ephemeral scatters and small features. What is more important, however, is that surveys conducted at different intervals may be recording different scales of archeological phenomena. Few efforts to measure survey accuracy have been made to date, so the effects of survey incomparability remain largely unknown.
An unknown fraction of the archeological record is discovered during archeological survey, owing to uncontrolled factors like crew experience, crew speed, weather conditions, and constantly changing vegetation and geomorphic surfaces. Often the very act of surveying changes surface conditions and artifact distributions by trampling and scuffling loosely consolidated deposits. From this point of view, claims of "100%" survey are not only inaccurate but misleading. These claims ignore the interval between crew members that is not being examined during the survey. Surveys can be made more precise by employing better locational controls so that measurements of ground coverage per person can be included when the sampling fraction is being estimated. Better controls also make it easier to reconstruct coverage data.

Site Definition

Basic to any analysis of the archeology of the Roswell District is the definition of the elementary unit of analysis. For most archeologists working in southeastern New Mexico this unit is the site. One problem with site definitions is that they are seldom explicitly provided in archeological reports. Archeologists should be more explicit in clearly defining what they intend to record as sites prior to and during fieldwork. These definitions should be presented in all reports. Site definition is not self-evident but needs to be spelled out for other researchers.

A second problem arises because site and isolated occurrence definitions are subjective, inconsistent, and overlapping, not only among but often within projects. Consequently, when we discuss the archeology of the Roswell district in terms of site frequencies or component frequencies, it is difficult to say which archeological manifestations are included and which are omitted or, given inconsistent recording of features, what these frequencies indicate about prehistoric population and mobility patterns. A review of site definitions from survey reports in the Roswell District reveals that the distinction between sites and isolated occurrences is usually based on one or more of the following concepts: frequency, density/dispersion, age, integrity, research potential, or disturbance.

Frequency. If artifact scatters have either too many or too few items, they are likely to be relegated to isolated occurrence status. The "too few" category may include scatters with as few as two or as many as 40 items. The "too many" category generally comprises areally dispersed sites (often quarries) with unknown artifact frequencies that may be as high as hundreds of items.

Density/Dispersion. Density is related to frequency in that a given frequency of items is located in a given amount of space. Again, large dispersed scatters, notably lithic procurement sites that are geologically defined, are apt to be recorded as isolates, along with small, low density scatters, especially ones that have difficult-to-define boundaries, given the usual discovery methods. Boundary definition, and thus site vs isolated occurrence designation, is likely to be more closely related to the project budget—i.e., to the length of time the crew is allowed to look for items—than to the frequency or distribution of items on the ground. Many archeologists define what constitutes a site in very explicit terms that specify the numbers of artifacts that need to be present within certain precise areas (e.g., Bradley 1982; Broster and Harrell 1983; Phillips et al. 1981; Roney 1985). These definitions are easier to reconstruct and interpret than definitions based on criteria of integrity, research potential, or significance as discussed below.

Age. Age is a common criterion for site definition. Most guidelines for defining sites exclude material less than 50 years old. Since the 50 year cutoff changes with each passing year, no consistent date for defining what will and will not be recorded as a site is ever determined. Historical remains in the form of scatters and dumps are more likely to be recorded as isolates than historical structures, regardless of whether or not they are more than 50 years old. [Note: The final section of Chapter 7 also deals with this problem.]

Integrity. Integrity is often cited as a criterion for defining sites, although the term itself is rarely defined. Integrity generally refers to evidence that some particular activity took place at the site, as shown by the content of the artifact assemblage or by the spatial arrangement of artifacts. Some site definitions require a great deal of integrity.

A site is characterized by the physical remains of patterned human behavior occurring in a localized, finite area, and from these physical remains postulations can be made as to the time-span involved and activities performed (P. Katz 1978:18).

If this definition were applied to the Roswell District archeological sites in the ARMS file, approximately half would have to be eliminated because they do not meet the requirements for estimating time span of occupation (as discussed in Chapter 4). If specific activities also have to be identified on sites, an additional unknown number would have to be ruled out.

When site definitions based on integrity and research potential (see below) are employed (e.g., P. Katz 1978; Lent 1982), a third class of archeological remains often termed localities or isolated artifact clusters is defined to include archeological remains that do not satisfy site requirements but are greater in frequency or density of artifacts than isolated occurrences. P. Katz (1978:13) defines localities as follows:

The lack of spatial definition, the ephemeral nature of the physical remains, and the usually inde-
terminate aspects of time and function all characterize a collecting locality....It should be emphasized that a collecting locality has no definable boundary from a cultural point of view; that is, one cannot say, "Here is where the artifactual material ceases and the locality ends." This category is a device for recording cultural items in space, where the space is artificially determined and no internal pattern of aboriginal behavior can be discerned.

This definition implies that archeologists can recognize cultural boundaries of prehistoric sites and can identify site activities based on artifact and feature distributions in the field. We know, however, that many sites in the Roswell District are in geomorphological settings (e.g., active dunes) in which blowing sands rather than prehistoric activities may determine the extent of exposed cultural materials. It is also frequently postulated that sites have been reoccupied, and reoccupation may blur and rearrange the spatial patterning of artifacts left from single occupations (e.g., Kemrer and Kearns 1984; Laumbach 1979; Schermer 1980b; Stevenson 1985). These factors indicate that field archeologists may not be able to recognize cultural boundaries and prehistoric activity areas under most circumstances. An additional problem with the use of this criterion is that, by definition, localities do not receive further analysis or protection and are not coded in the ARMS file. They are often dropped from future consideration by archeologists and managers.

Research Potential. Another common criterion for separating sites from isolates is research potential. If it is determined in the field at the time of recording that a scatter has no research potential beyond the information that is recorded at that time, the locality is often relegated to isolate status. Often "research potential" is a mysterious entity, as Lang intimates in his definition of sites at Conchas Reservoir: A site is

a locality judged to possess high internal potential for the study of past human behavior...but it may or may not have greater extent, greater artifactual or behavioral diversity or greater intensity or duration of use than isolated artifact clusters or isolated artifacts (Lang 1979:18).

Lent (1982:6) cites

potential significance in scientific, historic and/or social terms...significance to the National Register of Historic Places; and...potential for data retrieval and/or input into the local or regional archaeological record

as criteria for site definition. These criteria are vague when one tries to reconstruct the way sites are classified in the field. Research potential is not a fixed concept. As has been noted in discussions of site significance (e.g., Raab and Klinger 1979; Sharrock and Grayson 1979), research potential depends on a research design, i.e., on the questions archeologists address using the data. It would be not only surprising but dismaying if these questions did not change through time.

Disturbance. Disturbance may take the form of geological, biological, or recent human tampering with artifacts and architecture. As with integrity, the assumption here is that disturbance can be easily recognized. This assumption is based on two corollary assumptions: (a) that pristine deposits can be recognized, and (b) that the effects of disturbance are obvious in the field. Both of these assumptions are open to question. Assessments of disturbance, integrity, and research potential are often used together in deciding whether or not to designate cultural remains as a site. Further, archeologists sometimes assume that no information is available because of disturbance.

Recommendations for Definition of Analysis Units. This review of the means by which archeologists define sites is presented in order to suggest the range of criteria responsible for archeological manifestations being recorded as sites and entered in the ARMS file as opposed to those that are only recorded as isolates and usually receive no further attention. In theory, isolates could be incorporated into analysis, along with site data (see, for example, Hogan 1985). In practice, isolates are rarely included in analysis and are reported only as a list or appendix.

Many classes of features and scatters fall in the fuzzy area between sites and isolates. The probability that these features and scatters will be recorded as sites is difficult to assess, therefore, when the ARMS file is consulted, some features are likely to be underrepresented. Underrepresented features include fire-cracked rock and hearth features with no associated artifacts (especially dispersed fire-cracked rock scatters), lithic procurement sites, and small artifact scatters. All historical sites postdating the 1920s as well as historical scatters, dumps, and other nonarchitectural features from any time period may not be recorded as sites. Deposits from any period or culture that are perceived as being disturbed have a high probability of not being recorded.

The New Mexico Historic Preservation Division in Santa Fe could publish guidelines for what does and does not enter the state site file; that would be one means of assuring some baseline of consistency in ARMS file data. If the file is to continue as a useful management and research tool, however, it may be time to reevaluate the categories of data that will eventually enter the ARMS file.
Frequency Of Components In Each Region Of The Roswell District

Methods of Analysis

Looking at the proportion of components per culture may afford some clue to (a) spatial inequalities in the distribution of components by region and (b) the identification of regions that seem to be poorly represented in the overall component totals, either because of a lack of survey coverage or because of the absence of occupation.

Component totals were generated from the 1985 ARMS file tape. An estimated 42% of the recorded sites in the Roswell District are in this version of the ARMS file (Ann Ramage, personal communication 1985), but sites recorded on U.S. Forest Service projects are not entered into the file. The following discussion of component distribution and density by region is subject to revision through entry of the remaining recorded sites, entry of known but unrecorded sites, and consideration of sites on Forest Service lands. This summary is based only on ARMS file component summaries. It does not consider information available from other sources. Consequently, features known to occur in some regions may not appear in the discussion because they are not in the ARMS file.

The culture code was used to define major temporal categories because it was less ambiguous than the period code. Cultures defined for the Roswell District are Paleoindian, Archaic, Ceramic (including Anasazi and Mogollon), Protohistoric (including Navajo and Apache), Historical (including Anglo and Hispanic), and other/unknown. Components rather than sites are the units of analysis.

Roswell District Components by Cultural Period

The ARMS file reports 3941 components for the Roswell District (Table 8.3). The Pecos Valley region is the largest region in the Roswell District in terms of total area and surveyed acreage, and more than seven times as many sites have been recorded in the Pecos Valley region than in any of the other regions (Figure 8.1). As noted previously, it is the amount of public land in a region, rather than its overall size, that probably most influences the distribution of recorded archeological remains, since archeological survey for land-disturbing activities is only required on certain (usually federal and state) lands.

In the district at large, the number of components gradually increases through prehistory until the Ceramic period, when the frequency of components peaks (from 86 Paleoindian components to 302 Archaic components to 1168 Ceramic period components). Subsequent to the Ceramic period, component frequency falls abruptly to a number well below the number of Paleoindian components (41), while the number of historical components (482) is less than half the frequency of Ceramic period components.

The Pecos Valley region contributes so heavily to the total number of components (2900 of 3941) that the general trends in the district are largely determined by the trends in this region. The proportion of Paleoindian components in this region is slightly lower and the proportion of Ceramic period components is slightly higher than those for the entire district.

The Canadian River region accounts for approximately 5% of the components in the district. In comparison with the whole district, the Canadian River region has a low proportion of components from all prehistoric periods (compare 7.5% Ceramic period components with the 29.6% total district proportion), an exceptionally high proportion of historical components (19.6% compared with the district total of 12.2%), and an exceptionally high proportion of unknown components (68.8%).

Approximately 10.0% of all known components in the district are located in the Plains region. The proportion of Paleoindian components in the Plains region (12.7%) is more than five times as large as the proportion in the district at large. In addition, the Plains proportion of Archaic components is nearly twice as large as that of the whole district, the proportion of Ceramic period components is slightly greater than the district average, and the proportion of Protohistoric components on the Plains is approximately half the district total. The proportion of historical components on the Plains is less than half that of the whole district, and the proportion of unknown components is substantially lower than in the district at large.

No Paleoindian components are on file for the Guadalupe Mountains region, and the proportion of Archaic components in this region is less than half the district proportion (3.6% compared with 7.7%). The proportion of Ceramic period components is less than a third of the district proportion (8.8% vs 29.6%), and no Protohistoric components have been reported in the Guadalupe. The proportion of historical components is slightly higher than that of the district (16.6%), and the proportion of unknown components is the highest of any region in the district (71.1% compared with the district average of 47.2%). This region represents approximately 8.0% of the components in the entire district.

The Sierra Blanca region also has no recorded Paleoindian components, and the proportion of Archaic components is very low relative to the whole district (0.7% compared with 7.7%). In contrast, the proportion of Ceramic period components in this region is the highest of any region in the district (49.3% compared with 29.6% for the district as a whole). The proportion of historical components (16.2%) is slightly higher than the district total (12.2%), and the proportion of unknown compo-
ASSESSMENT OF ARCHEOLOGICAL COVERAGE

TABLE 8.3
CULTURAL COMPONENTS IN EACH REGION*

<table>
<thead>
<tr>
<th></th>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
<th>District Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paleindian</td>
<td>35 (1.2%)</td>
<td>2 (1.0%)</td>
<td>49 (12.7%)</td>
<td>0</td>
<td>0</td>
<td>86 (2.2%)</td>
</tr>
<tr>
<td>Archaic</td>
<td>232 (8.0%)</td>
<td>5 (2.5%)</td>
<td>53 (13.7%)</td>
<td>11</td>
<td>1</td>
<td>302 (7.7%)</td>
</tr>
<tr>
<td>Ceramic</td>
<td>929 (32.0%)</td>
<td>15 (7.5%)</td>
<td>124 (32.1%)</td>
<td>27</td>
<td>73</td>
<td>1168 (29.8%)</td>
</tr>
<tr>
<td>Protohistoric</td>
<td>37 (1.3%)</td>
<td>1 (0.5%)</td>
<td>2 (0.5%)</td>
<td>0</td>
<td>1</td>
<td>41 (1.0%)</td>
</tr>
<tr>
<td>Historical</td>
<td>349 (12.0%)</td>
<td>39 (19.9%)</td>
<td>19 (4.9%)</td>
<td>51</td>
<td>24</td>
<td>482 (12.2%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>1318 (45.4%)</td>
<td>137 (88.8%)</td>
<td>139 (96.0%)</td>
<td>219</td>
<td>49</td>
<td>1862 (47.2%)</td>
</tr>
<tr>
<td>Component Totals</td>
<td>2900 (73.6%)</td>
<td>199 (5.1%)</td>
<td>386 (9.8%)</td>
<td>308</td>
<td>148</td>
<td>3941 (100.0%)</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1

...
ROSWELL OVERVIEW

TABLE 8.4
ANALYSIS OF HISTORICAL COMPONENTS FROM TABLE 8.3*

<table>
<thead>
<tr>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
<th>District Totals</th>
</tr>
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<tbody>
<tr>
<td>Hispanic</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>(2.9%)</td>
<td>(2.6%)</td>
<td></td>
<td></td>
<td>(8.3%)</td>
<td>(2.7%)</td>
</tr>
<tr>
<td>Anglo</td>
<td>339</td>
<td>38</td>
<td>19</td>
<td>51</td>
<td>22</td>
</tr>
<tr>
<td>(97.1%)</td>
<td>(97.4%)</td>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td>(91.7%)</td>
<td>(97.3%)</td>
</tr>
<tr>
<td>Total Historical</td>
<td>349</td>
<td>39</td>
<td>19</td>
<td>51</td>
<td>24</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1

region. The term occupation in this case refers to the individual cultural components that have been coded for the ARMS file.

Reuse of places through time seems to be most evident in the Pecos River Valley, where 60.0% of the Paleoindian components, 51.9% of the Archaic components, 73.0% of the protohistoric components, and 46.2% of the historical components occur on multicomponent sites. In the Canadian River Valley, the inverse is apparent: 60.0% of the Archaic components, 84.6% of the Ceramic period components, and 63.9% of the historical components occur on single-component sites, representing the spatial selection of previously unoccupied places. On the Plains, 66.0% of the Archaic components occur on multicomponent sites, but this trend is reversed for Ceramic period components, 70.0% of which occur on single-occupation sites. In the Guadalupes, 63.6% of the Archaic components, 59.1% of the Ceramic period components, and 96.1% of the historical components occur on multicomponent sites. It appears that the same sites are being reoccupied during all periods for which occupation is documented in the Guadalupes. This trend may be a function of the rugged topography of this area, which limits the number of places suitable for human activities. In the Sierra Blanca region, the incidence of single component sites is 92.7% during the Ceramic period, indicating a substantial movement to previously unoccupied locales.

Feature Types Recorded For Each Cultural Period By Region

In the following discussion, feature types are discussed by cultural period for each region. The 90 ARMS file feature types that have been recorded in the Roswell District were grouped into 12 categories for easier manipulation (Table 4.2), including such categories as hearth features, artifact scatters, and structures. Feature type proportions may provide clues not only to differences in human use of the landscape through time and across space, but also to the archeological visibility of some kinds of cultural resources.

Features at Paleoindian Components

The Paleoindian period is characterized by an extremely low diversity of feature types (Table 8.6). Only artifact scatters, hearth features, organic remains, and "other" or unknown features (including one fossil bed) are present. Paleoindian components have been recorded in three of the five regions. In the Canadian River Valley, only artifact scatters and one incidence of bone are known; no hearths have been recorded. The Pecos Valley region differs from the Plains in having a higher incidence of hearths (14.6% of recorded features in the Pecos Valley region compared with 7.8% in the Plains region). Bone beds are reported only on the Plains; this category represents 2.6% of the feature types in that region. All recovered organic remains for this cultural period are faunal. Ground stone accounts for 2.1% of all Paleoindian features recorded for the Pecos Valley region and 1.3% for the Plains. For all regions, lithic scatters represent between 71.0% and 75.0% of all features recorded for this period.

Features at Archaic Components

Archaic components exhibit a greater diversity of feature types than Paleoindian components (Table 8.7). Nonar-
<table>
<thead>
<tr>
<th>Region</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>No.</th>
<th>%</th>
<th>Total</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
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<tr>
<td><strong>Paleoindian</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>14</td>
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<td>51.2</td>
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<tr>
<td><strong>Archaic</strong></td>
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<td></td>
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</tr>
<tr>
<td>Single</td>
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<td>48.1</td>
<td>3</td>
<td>60.0</td>
<td>18</td>
<td>34.0</td>
<td>4</td>
<td>36.4</td>
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<td>136</td>
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<td>51.9</td>
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<td>40.0</td>
<td>35</td>
<td>66.0</td>
<td>7</td>
<td>63.6</td>
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<td>165</td>
<td>54.8</td>
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<td>165</td>
<td>54.8</td>
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<tr>
<td><strong>Ceramic</strong></td>
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<tr>
<td>Single</td>
<td>621</td>
<td>75.0</td>
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<td><strong>Protohistoric</strong></td>
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<tr>
<td>Single</td>
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<td>27.0</td>
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<td>100.0</td>
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<td>0</td>
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<td>26.8</td>
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<td>26.8</td>
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<td>1</td>
<td>100.0</td>
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<td>73.2</td>
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<td>3.9</td>
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<td>240</td>
<td>51.1</td>
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<td></td>
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<td>83.5</td>
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<td>17</td>
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<td>17</td>
<td>12.3</td>
<td>52</td>
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<td>12.2</td>
<td>307</td>
<td>16.5</td>
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<td>307</td>
<td>16.5</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1
### Table 8.6

**Frequency of Feature Types at Paleoindian Components by Region***

<table>
<thead>
<tr>
<th>Feature Type</th>
<th>Total Features In District</th>
<th>Total Paleoindian Features</th>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artifact Scatters</td>
<td>5308 (52.2%)</td>
<td>103 (79.8%)</td>
<td>37 (77.1%)</td>
<td>3 (75.0%)</td>
<td>63 (81.8%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hearth Features</td>
<td>2851 (28.0%)</td>
<td>13 (10.1%)</td>
<td>7 (14.6%)</td>
<td>0 (7.8%)</td>
<td>6 (7.8%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonarchitectural Features</td>
<td>297 (2.9%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Structures</td>
<td>448 (4.4%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Burials</td>
<td>41 (0.4%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rock Art</td>
<td>75 (0.7%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Caves/Rockshelters</td>
<td>196 (1.9%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Organic Remains</td>
<td>182 (1.8%)</td>
<td>6 (4.7%)</td>
<td>2 (4.2%)</td>
<td>1** (25.0%)</td>
<td>3 (3.9%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stone Circle/Tipi Ring/Wikiup</td>
<td>68 (0.7%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>701 (6.9%)</td>
<td>7 (5.4%)</td>
<td>2 (4.2%)</td>
<td>0</td>
<td>5 (0.5%)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1
**Feature type present but frequency unknown

Architectural features (representing 3.4% of all features from components of this period), structures (0.1%), burials (0.4%), and caves/rockshelters (1.0%) are added to the repertoire of feature types, although artifact scatters continue to account for 63.9% of all recorded features. Bedrock mortars are first reported in components of this period, and they account for 3.3% of all Archaic component features. The proportion of ground stone jumps from 1.6% of features at Paleoindian components to 21.6% at Archaic components (some Archaic sites may have been defined as Archaic by the presence of ground stone and the absence of ceramics, however). Lithic quarries constitute 0.8% of the Archaic component features.

In the Pecos Valley, nonarchitectural features at Archaic components include bedrock mortars (2.7% of all features) and a well. Two burials have been recorded, along with seven caves/rockshelters. Recovered organic remains consist of bone and shell, and one bone bed is present. Ground stone represents 21.8% of the Archaic features in this region. Specialized hearth features (one mescal pit, one ring midden, and one burned rock midden) are present in low proportions.

Artifact scatters constitute 77.8% of all known Archaic features in the Canadian River Valley. The remaining features are split evenly between hearths and other/unknown...
known features (11.1% each). No ground stone or nonarchitectural features have been recorded.

On the Plains, 75.7% of all Archaic features are artifact scatters. Although this proportion of artifact scatters is similar to that of the Canadian River Valley, ground stone constitutes 25.2% of the recorded Archaic features on the Plains but characterizes none of the Archaic features in the Canadian River Valley. Bone and shell are present in higher proportions in Plains region Archaic components than in those of other regions. Nonarchitectural features consist exclusively of bedrock mortars. No specialized hearth features are present.

In the Guadalupes, a lower proportion of artifact scatters than recorded in other regions (50.0% of all recorded Archaic features) balances a higher proportion of hearth features (39.3%). This area is similar to the Canadian River Valley in having a low proportion of ground stone known from Archaic components (10.0%). Specialized hearth features constitute 32.1% of all recorded Archaic features, while hearths and fire-cracked rock account for only 7.2% of the recorded Archaic features. Also present are one burial and one undefined rock alignment, the only structural feature in the Roswell District from this period. In the Sierra Blanca region, the single recorded Archaic feature is a lithic scatter.
ROSWELL OVERVIEW

TABLE 8.8
FREQUENCY OF FEATURE TYPES AT CERAMIC PERIOD COMPONENTS BY REGION*

<table>
<thead>
<tr>
<th></th>
<th>Total Features In District</th>
<th>Total Ceramic Period Features</th>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artifact Scatters</td>
<td>5308 (52.2%)</td>
<td>2091 (60.7%)</td>
<td>1705 (61.6%)</td>
<td>19 (55.9%)</td>
<td>243 (59.0%)</td>
<td>38 (76.0%)</td>
<td>86 (48.0%)</td>
</tr>
<tr>
<td>Hearth Features</td>
<td>2851 (28.0%)</td>
<td>1007 (29.2%)</td>
<td>878 (31.7%)</td>
<td>4 (11.8%)</td>
<td>115 (27.9%)</td>
<td>6 (12.0%)</td>
<td>4 (2.2%)</td>
</tr>
<tr>
<td>Nonarchitectural Features</td>
<td>297 (2.9%)</td>
<td>63 (1.8%)</td>
<td>49 (1.8%)</td>
<td>0 (2.2%)</td>
<td>9 (2.0%)</td>
<td>1 (2.0%)</td>
<td>4 (2.2%)</td>
</tr>
<tr>
<td>Structures</td>
<td>448 (4.4%)</td>
<td>144 (4.2%)</td>
<td>58 (2.1%)</td>
<td>2 (5.9%)</td>
<td>20 (4.9%)</td>
<td>0 (2.0%)</td>
<td>64 (35.8%)</td>
</tr>
<tr>
<td>Burials</td>
<td>41 (0.4%)</td>
<td>14 (0.4%)</td>
<td>4 (0.1%)</td>
<td>0 (0.5%)</td>
<td>2 (0.5%)</td>
<td>0 (0.5%)</td>
<td>8 (4.5%)</td>
</tr>
<tr>
<td>Rock Art</td>
<td>75 (0.7%)</td>
<td>28 (0.8%)</td>
<td>17 (0.8%)</td>
<td>0 (0.8%)</td>
<td>0 (0.8%)</td>
<td>0 (0.8%)</td>
<td>11 (6.1%)</td>
</tr>
<tr>
<td>Caves/Rockshelters</td>
<td>196 (1.9%)</td>
<td>17 (0.5%)</td>
<td>10 (0.4%)</td>
<td>1 (2.9%)</td>
<td>0 (6.0%)</td>
<td>4 (8.0%)</td>
<td>2 (1.1%)</td>
</tr>
<tr>
<td>Organic Remains</td>
<td>182 (1.8%)</td>
<td>65 (1.8%)</td>
<td>44 (1.8%)</td>
<td>0 (1.8%)</td>
<td>21 (5.1%)</td>
<td>0 (5.1%)</td>
<td>0 (0.8%)</td>
</tr>
<tr>
<td>Stone Circle/Tipi Ring/Wikup</td>
<td>68 (0.7%)</td>
<td>11 (0.3%)</td>
<td>3 (0.1%)</td>
<td>8 (23.5%)</td>
<td>0 (0.5%)</td>
<td>0 (0.5%)</td>
<td>0 (2.0%)</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>701 (6.9%)</td>
<td>4 (0.1%)</td>
<td>1 (0.04%)</td>
<td>0 (0.5%)</td>
<td>2 (0.5%)</td>
<td>1 (2.0%)</td>
<td>0 (2.0%)</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1
**Feature type present but frequency unknown

Features at Ceramic Period Components

During the Ceramic period, feature diversity greatly increases. Rock art and stone circles/tipi rings/wikups are first reported in components of this period (Table 8.8). Nonarchitectural features include bedrock mortars, bins/cists, and cairns. Artifact scatter feature types include a clay quarry, ground stone (representing 18.8% of all Ceramic period features compared with 21.6% of Archaic features), ceramics and ceramic scatters (13.7%), and a lithic quarry. Hearth features include a variety of specialized types, and the diversity of Ceramic period structures is high.

In the Pecos Valley, the proportions of artifact scatters and hearth features are virtually the same as in the Archaic period, but ceramic scatters account for 13.3% of all Ceramic period features, lithic/ceramic scatters account for 19.0%, and lithic scatters account for only 9.5%. The clay quarry and the lithic quarry noted above are located in the Pecos Valley region. Ground stone accounts for 19.7% of the recorded Ceramic period features in this region, while specialized hearth features make up only 1.2% of all Ceramic period features. The proportion of nonarchitectural features is lower than in the previous period, but the diversity is higher. This category comprises bedrock mortars, bins/cists, cairns, and middens.
Structures are recorded for the first time in the Pecos Valley region, and their diversity is remarkable. The following structural types are represented: depressions; fieldhouses; extant houses; isolated masonry rooms; mounds; pithouse villages; pithouses; possible adobe, jical, masonry, and subterranean structures; pueblos; jical roomblocks; and undefined rock alignments. Caves/rockshelters form a lower proportion of Ceramic period features than of Archaic features. Organic remains constitute a lower proportion of all Ceramic period features than they did during the Archaic period (1.6% compared with 2.4%), but actual frequency is higher (44 occurrences in Ceramic period components compared with 15 from Archaic components). The Ceramic period organic remains consist of shell, bone, and one bone bed. Stone circles appear in low proportions.

In the Canadian River Valley, artifact scatters form a substantially lower proportion of the known Ceramic period features than of Archaic features, and ceramic scatters account for 26.5% of features recorded. Lithic/ceramic scatters make up 14.7% of all features, while scatters of lithics alone constitute only 2.9%. Ground stone represents 11.8% of the Ceramic period features, a proportion considerably less than that for the Pecos Valley. No specialized hearth features are present. A possible masonry structure and a wall are the only structural features. No nonarchitectural features, burials, rock art, or organic remains have been recorded. The proportion of stone circles is exceptionally high (23.5%).

On the Plains, the proportion of artifact scatters and hearth features is similar to that for the total district for this period. Lithic scatters make up 7.0% of recorded features; ceramic scatters, 5.8%; and lithic/ceramic scatters, 26.0%. Ground stone accounts for 20.2%, a proportion similar to that for the Pecos Valley region during the Ceramic period. No specialized hearth features have been recorded on Ceramic period components in the Plains region. Nonarchitectural features are present in low proportions (down from 7.8% in the Archaic to 2.2% in the Ceramic period) and include bedrock mortars, a bin/cist, and middens. Structural features include depressions, isolated jical rooms, pithouses, and masonry and subterranean structures, a lower diversity of forms than is recorded for the Pecos Valley during this period. A high proportion of organic remains, consisting of bone (4.6% of all known Ceramic period features) and shell (0.5%), is documented.

In the Guadalupe Mountains region, the proportion of artifact scatters to hearth features during the Ceramic period is the inverse of the Archaic period proportion: 76.0% of all features are artifact scatters and 12.0% are hearth features. Ceramic scatters make up 52.0% of all features, compared with 13.3% of all recorded features in the Pecos Valley, 26.5% in the Canadian River Valley, and 5.8% on the Plains. Lithic/ceramic scatters account for 2.0% of all features in the Guadalupe, and lithic scatters account for 12.0%. Ground stone constitutes 10.0% of the Ceramic period features, a low proportion similar to that for the Canadian River Valley for this period. The only hearth features recorded in the Guadalupe for this period are ring middens (constituting 12.0% of all known features). A single midden is the only recorded nonarchitectural feature. The proportion of caves/rockshelters (8.0% of all Ceramic period features) far exceeds that for other regions. No structures, burials, rock art, organic remains, or stone circles have been entered into the ARMS file.

In the Sierra Blanca region, the proportion of artifact scatters is high (48.0% of all recorded Ceramic period features), and the proportion of hearth features is extremely low (2.2%). Ceramic scatters account for 24% of all Ceramic period features, a proportion similar to those for the Pecos Valley and Plains regions. Lithic/ceramic scatters make up 15.6% of the recorded features, and lithic scatters represent a low 2.2%. Ground stone constitutes 6.2% of known features, an extremely low proportion when compared with those for the Pecos Valley (19.7% of the Ceramic period features) or Plains (20.2%). No specialized hearth features are present. All recorded nonarchitectural features are middens.

The most striking aspect of the proportions of feature types for this period is the high proportion of structures in the Sierra Blanca region—35.8%, which is at least six times higher than the proportion for any other region. The diversity of structure types is also high; 11 structural types are present in this region, while 14 are present in the Pecos Valley during the Ceramic period. Structural types recorded in the Sierra Blanca region include depressions; isolated jical rooms; isolated masonry rooms; kivas; pithouses; possible jical and masonry structures; pueblos; and adobe, jical, and masonry roomblocks. Types known from the Pecos Valley region but not recorded in the Sierra Blanca region are fieldhouses, extant houses, mounds, pithouse villages, possible adobe structures, and undefined rock alignments; types known in the Sierra Blanca but not recorded in the Pecos are isolated jical rooms, kivas, and adobe and masonry roomblocks. The proportion of burials among the Sierra Blanca features is high (4.5% compared with the Ceramic period proportion of 0.4% for the whole district) as is the proportion of rock art (6.1% compared with 0.8% for the district).

Features at Protohistoric Components

The frequency and diversity of recorded features plummet during the Protohistoric period (Table 8.9). Hearth features disappear completely everywhere but in the Pecos Valley, along with rock art, organic remains, and tipi rings/wikups. Structures have been recorded only in the Pecos and Canadian river valleys. This period is represented on the Plains by one lithic feature and one
ROSWELL OVERVIEW

TABLE 8.9

FREQUENCY OF FEATURE TYPES AT PROTOHISTORIC PERIOD COMPONENTS BY REGION*

<table>
<thead>
<tr>
<th>Total Features In District</th>
<th>Total Protohistoric Features</th>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artifact Scatters</td>
<td>5308</td>
<td>(35.4%)</td>
<td>(36.0%)</td>
<td>(40.0%)</td>
<td>(50.0%)</td>
<td>0</td>
</tr>
<tr>
<td>Hearth Features</td>
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<td>(16.9%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nonarchitectural Features</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Structures</td>
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<td>(4.5%)</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>0</td>
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<td>(1.1%)</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Caves/Rockshelters</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>Organic Remains</td>
<td>182</td>
<td>(8.1%)</td>
<td>(9.0%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stone Circle/Tipi Ring/Wikup</td>
<td>68</td>
<td>(24.2%)</td>
<td>(27.0%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Historical Nonstructural</td>
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<td>(4.5%)</td>
<td>0</td>
<td>0</td>
<td>1**</td>
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<tr>
<td>Other/Unknown</td>
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<td>(1.1%)</td>
<td>0</td>
<td>1**</td>
<td>0</td>
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</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1
**Feature type present but frequency unknown

unknown feature. In the Guadalupe region, no protohistoric features are present, and in the Sierra Blanca region, historical trash accounts for one feature while the two remaining features are other unspecified types. Nonarchitectural features, burials, and caves/rockshelters are not recorded for the Roswell District during this period. The Protohistoric and Paleoindian periods are the least archeologically visible in the Roswell District.

In the Pecos Valley, protohistoric artifact scatters drop to 36.0% of all features types from a high of 62.3% in the Archaic and 61.6% in the Ceramic period. Ceramic scatters account for 5.6% of all recorded feature types in this region during the Protohistoric period; lithic/ceramic scatters make up 1.1% and lithic scatters represent 27.0%. This proportion of lithic scatters is higher than for any other region during the Ceramic period. The proportion of ground stone drops to 2.3% of recorded features, the lowest since Paleoindian times. Hearth features account for 16.9% of all features; two protohistoric mescal pits have been recorded. Structural remains con-
### Frequency of Feature Types at Historical Period Components by Region*

<table>
<thead>
<tr>
<th>Feature Type</th>
<th>Total Features In District</th>
<th>Total Historical Features</th>
<th>Pecos Valley</th>
<th>Canadian River</th>
<th>Plains</th>
<th>Guadalupe Mountains</th>
<th>Sierra Blanca</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Artifact Scatters</strong></td>
<td>5308</td>
<td>17</td>
<td>16</td>
<td>0</td>
<td>1**</td>
<td>0</td>
<td>0</td>
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<tr>
<td></td>
<td>(52.2%)</td>
<td>(1.8%)</td>
<td>(2.3%)</td>
<td>(2.7%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hearth Features</strong></td>
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<td>16</td>
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<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
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<tr>
<td></td>
<td>(28.0%)</td>
<td>(1.7%)</td>
<td>(1.4%)</td>
<td>(2.7%)</td>
<td>(8.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonarchitectural Features</strong></td>
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<td>59</td>
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<td>1**</td>
<td>0</td>
<td>1**</td>
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<tr>
<td></td>
<td>(2.9%)</td>
<td>(6.8%)</td>
<td>(8.3%)</td>
<td>(3.1%)</td>
<td>(2.7%)</td>
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<td>(2.1%)</td>
</tr>
<tr>
<td><strong>Structures</strong></td>
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<td>175</td>
<td>14</td>
<td>1**</td>
<td>1**</td>
<td>3</td>
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<td>(4.4%)</td>
<td>(20.9%)</td>
<td>(24.8%)</td>
<td>(21.9%)</td>
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<td>(1.4%)</td>
<td>(6.4%)</td>
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<tr>
<td><strong>Burials</strong></td>
<td>41</td>
<td>3</td>
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<td>2</td>
<td>0</td>
<td>0</td>
<td>1**</td>
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<td>(0.4%)</td>
<td>(0.3%)</td>
<td>(3.1%)</td>
<td>(2.7%)</td>
<td>(2.7%)</td>
<td></td>
<td>(2.1%)</td>
</tr>
<tr>
<td><strong>Rock Art</strong></td>
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<td>0</td>
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<tr>
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<td>(0.7%)</td>
<td>(1.5%)</td>
<td>(1.6%)</td>
<td>(4.7%)</td>
<td>(2.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Caves/Rockshelters</strong></td>
<td>196</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(1.9%)</td>
<td>(0.1%)</td>
<td>(0.1%)</td>
<td>(2.7%)</td>
<td>(0.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Organic Remains</strong></td>
<td>182</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(1.8%)</td>
<td>(0.3%)</td>
<td>(0.4%)</td>
<td>(2.7%)</td>
<td>(0.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stone Circle/Tipi Ring/Wikiup</strong></td>
<td>68</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(0.7%)</td>
<td>(0.2%)</td>
<td>(0.3%)</td>
<td>(2.7%)</td>
<td>(0.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Historical Nonstructural</strong></td>
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<td>466</td>
<td>335</td>
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<td>64</td>
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<td>(4.7%)</td>
<td>(50.3%)</td>
<td>(47.4%)</td>
<td>(37.5%)</td>
<td>(59.5%)</td>
<td>(88.9%)</td>
<td>(44.7%)</td>
</tr>
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<td><strong>Historical Structures</strong></td>
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<td>119</td>
<td>79</td>
<td>17</td>
<td>12</td>
<td>1**</td>
<td>10</td>
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<tr>
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<td>(1.2%)</td>
<td>(12.8%)</td>
<td>(11.2%)</td>
<td>(26.6%)</td>
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<td>(1.4%)</td>
<td>(21.3%)</td>
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<tr>
<td><strong>Other/Unknown</strong></td>
<td>99</td>
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<td>0</td>
<td>11</td>
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<tr>
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<td>(1.0%)</td>
<td>(3.1%)</td>
<td>(2.3%)</td>
<td>(3.1%)</td>
<td>(2.3%)</td>
<td></td>
<td>(23.4%)</td>
</tr>
</tbody>
</table>

*Region boundaries are illustrated in Figure 3.1
**Feature type present but frequency unknown

The absence of tipi rings or stone circles is noteworthy, since these features were prominent in this region during the Ceramic period.

**Features at Historical Components**

Compared with prehistoric and protohistoric feature proportions, artifact scatters and hearth features are extremely rare on historical sites (Table 8.10). On the other hand, isolated masonry rooms. The absence of tipi rings or stone circles is noteworthy, since these features were prominent in this region during the Ceramic period.

For the Canadian River Valley, one ceramic and one lithic scatter constitute 40.0% of all features recorded for the Protohistoric period. The remaining 60.0% are isolated masonry rooms. The absence of tipi rings or stone circles is noteworthy, since these features were prominent in this region during the Ceramic period.
hand, nonarchitectural features and structures are more common. Rock art is twice as well represented as during the earlier periods, but caves/rockshelters and organic remains are less well represented. Nonstructural historical features constitute 50.3% of all feature types from this period, while historical structures account for an additional 12.8%.

In the Pecos River Valley, 64.0% of all recorded historical features are nonstructural features. Cairns account for 5.0% of all historical features, wells for another 1.0%. Nonstructural historical features include car bodies, cemeteries, corrals, fences, graffiti, historical trash, kilns, mines, reservoirs, roads/trails, tanks, tent bases, water catchment and control devices, windmills, and dumps. A wide variety of structures has been recorded, including depressions, extant houses, isolated masonry rooms, mounds, possible masonry and subterranean structures, adobe and masonry roomblocks, undefined rock alignments, and walls. Structural types clearly dating to this period include churches, dugouts, fired brick structures, house foundations, outhouses, ranch complexes, outbuildings and villages/towns. Together, these structures make up 36.0% of all recorded historical features in the Pecos Valley. Rock art accounts for 1.6% of all historical features. All recorded organic remains are bone.

The Canadian River Valley has a low proportion of nonstructural historical features (51.5% of all recorded features compared with 66.3% for the entire district). Nonarchitectural historical features consist of cairns, wells, corrals, fences, graffiti, historical trash, reservoirs, and windmills. The proportion of structural features is exceptionally high (48.5% of all recorded historical features compared with 33.7% for the Roswell District). Included are isolated masonry rooms, possible masonry structures, masonry roomblocks, undefined rock alignments, walls, dugouts, house foundations, ranch complexes, sheds, and trading posts. Rock art represents a high proportion of the Canadian Valley features (4.7% compared with 1.5% for the whole district).

On the Plains, nonarchitectural historical features (64.9% of all features) include wells, car bodies, corrals, fences, historical trash, roads/trails, tanks, and windmills. Structural features, which make up 35.1% of all historical features, include mounds, barns, dugouts, house foundations, milled lumber structures, ranch complexes, and sheds. The proportion of structural to nonstructural features in Plains region historical components is similar to that for the Pecos Valley.

In the Guadalupe, the proportion of hearth features (8.3% of all historical features recorded) continues to be higher than that for other regions, as in earlier periods. The proportion of nonstructural features in the Guadalupe is extremely high (97.2% of all recorded historical features) and includes fences, graffiti, historical trash, mines, roads/trails (31.9% of all historical features—an unusually high proportion), tanks, water-control devices, windmills, and metal. Historical structures account for only 2.8% of the features, the lowest proportion in the district during this period. Structures consist of an undefined rock alignment and a house foundation.

In the Sierra Blanca region, nonstructural historical remains represent a low 48.9% of all recorded features during this period, compared with the proportion of 66.3% for the whole district. Included in this category are corrals, historical trash, middens, and windmills. Structures make up 27.7% of all historical feature types, which is also a low proportion in comparison with the district figure of 33.7%. Included are a depression, an extant house, house foundations, military installations, a milled lumber structure, a mound, sheds, and a village/town. Other or unknown features account for the remaining 23.4% of the historical features in this region.

Summary Observations And Management Recommendations

Small projects undoubtedly represent most of the projects in the Roswell District, given the volume of oil and gas exploration projects (especially access roads and drill pads) in the late 1970s and early 1980s. Until recently, the areal coverage represented by small projects was not systematically recorded on maps or files at any one agency, nor were data on small project sites, isolated occurrences, or environmental observations. Small projects take the form of isolated linear or tiny block surveys. Powell and Rice (1981) present a statistical means of collating small project data so that they can be used for recognizing patterns in site placement. Their methods were successfully employed on lands in and around Phoenix, but no small amount of effort went into making these data useful. Without similar effort, the only data readily available from this large portion of the archaeological coverage of southeastern New Mexico is in the form of recorded sites that appear in the ARMS file.

The analyses reported earlier in this chapter bring to light several problems inherent in using the ARMS file. Perhaps the major problem is the high probability of coder inconsistency and the difficulty of determining how the coder has interpreted the ARMS code choices. In order to verify a correct coding, the original report must be checked. Although a certain amount of coding error is to be expected, the lack of definitions for period, culture, and feature codes in the ARMS guidebook contributes to the problem of inconsistency. The problem of packing the "general unknown" category with features that can at least be determined to be prehistoric or historical could be alleviated by offering "prehistoric unknown" and "historical unknown" categories. If guidelines consisting of period, culture, feature, landform, and vegetation community definitions were issued along with coding
choices, many problems with data inconsistency would be eliminated.

What we know about the archeology of a region does not directly correspond to the amount of work that has been conducted there. An assessment of the amount of archeological attention different parts of a region have received may, however, highlight blank areas that have not been investigated. Such an assessment may also suggest changes in research strategies that are in order for those areas that have been heavily investigated but for which no new information seems to be forthcoming. Perhaps most importantly, such an assessment permits us to quantify the basis for our inferences about the archeology of a region.

The total amount of survey and excavation for southeastern New Mexico is miniscule in comparison with the vast area covered by the Roswell District. Within this area, the Plains, Guadalupe Mountains, and Sierra Blanca regions are the least well investigated areas, especially in terms of recent projects and systematic survey. While the Pecos Valley region is the most heavily investigated region, few efforts have been made to synthesize or interpret the often redundant results of this work. Additional fieldwork in the less well known regions, as well as research directed at understanding large-scale settlement patterns in the better known regions, will enhance our interpretations of the prehistory of the entire district. The objective of conducting more fieldwork in the less well known regions may be hindered by the relatively small amount of public land in the Plains, Canadian River, and Sierra Blanca regions, since most archaeological fieldwork is presently conducted under federal mandate.

The preceding ARMS file summary presents some provocative patterns in component and feature distribution through time in the Roswell District. Some of the patterns are readily explained by hydrology and topography: for example, the concentration of historical components along the Canadian River. Other patterns are not as readily interpreted: for example, the changing proportions of ground stone in different cultural periods and regions. Despite such factors as land status and uneven survey coverage among regions, patterns in component and feature distribution begin to emerge as archeological data are quantified. In the acknowledgment that our current understanding of the archeological record of the Roswell District is incomplete, archeologists may still find these patterns useful in generating hypotheses about the occupation of southeastern New Mexico from Paleoindian times through the present.
Appendix 1

ARMS CODES AND FEATURE TYPES USED IN CHAPTERS 4 AND 8

Signa Larralde and Peter N. Eschman
**Table A1.1**

ARMS Codes and Feature Types Used in Chapters 4 and 8 Component Summaries

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<tr>
<th>Feature Group</th>
<th>ARMS Code</th>
<th>Feature Type</th>
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<td></td>
<td>17</td>
<td>ceramic scatter</td>
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<tr>
<td></td>
<td>19</td>
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<td>lithic scatter</td>
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## APPENDIX 1

### TABLE A1.1 (continued)

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<td><strong>Historical Nonstructural Features</strong></td>
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<td>13</td>
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<td>76</td>
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<td>92</td>
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<td>93</td>
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<td>trailer</td>
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<td>water catchment device</td>
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<td>102</td>
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<td>water-control device</td>
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<td>windmill</td>
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<td>106</td>
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<td>wood chips/cuttings</td>
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<td>107</td>
<td></td>
<td>dump</td>
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<td>109</td>
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<td>112</td>
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<td><strong>Other/Unknown Features</strong></td>
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<td>other</td>
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Appendix 2

COVERAGE DATA

Signa Larralde
**ROSWELL OVERVIEW**

**TABLE A2.1**

**SURVEY COVERAGE SINCE 1979***

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length</th>
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<td>Plains Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lent 1982</td>
<td>ca. 153 mi (75 ft r-o-w**)</td>
<td>1,371.0</td>
</tr>
<tr>
<td>Beck and Schermer 1981</td>
<td></td>
<td>2,650.0</td>
</tr>
<tr>
<td>Pecos Valley Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Etchieson 1983</td>
<td></td>
<td>5,085.0</td>
</tr>
<tr>
<td>Kemrer and Kearns 1984</td>
<td></td>
<td>12,000.0</td>
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<tr>
<td>Laumbach 1979</td>
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</tr>
<tr>
<td>Bond 1979a</td>
<td></td>
<td>4,902.0</td>
</tr>
<tr>
<td>Ford and Sciscienti 1982</td>
<td></td>
<td>65.5</td>
</tr>
<tr>
<td>Hilley 1982**</td>
<td>80 mi (5 m r-o-w)</td>
<td>153.6</td>
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<tr>
<td>Wilson 1984***</td>
<td>ca. 76 mi (100 ft r-o-w**)</td>
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<tr>
<td>Phillips et al. 1981</td>
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<tr>
<td>Bond 1979b</td>
<td></td>
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<td>Fifield 1981</td>
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<td>136.2</td>
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<td>Hester et al. 1982</td>
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<td>729.6</td>
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<td>275.7</td>
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<td>Landis et al. 1985</td>
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<td>Higgins 1984</td>
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<td>Dunham 1980</td>
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<td>Guadalupe Mountains Region</td>
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<tr>
<td>Roney 1985</td>
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<td>1,849.6</td>
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*Does not include small projects (e.g., well pads, access roads)
**Approximation of portion of linear survey within overview boundaries
***Wilson 1984 includes portions of the Guadalupe Mountains region as well as the middle Pecos Valley region
****Liberal estimate, based on available data
## APPENDIX 2

### TABLE A2.2

MITIGATION PROJECTS SINCE 1979—EXCAVATION AREA

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<th>Reference</th>
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<td>Winter 1983</td>
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<tr>
<td>Hicks 1982</td>
<td>6.0</td>
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<tr>
<td>Schermer 1980a</td>
<td>27.0</td>
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<tr>
<td>Oakes 1982</td>
<td>14.64</td>
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<tr>
<td>Duran and Laumbach 1981</td>
<td>8.0</td>
<td>+ augering*</td>
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<tr>
<td>Alexander 1982</td>
<td>1.0</td>
<td>+ 2 shovel tests</td>
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<td>Alexander 1983a</td>
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<td>Alexander 1983b</td>
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<td>Parry and Speth 1984</td>
<td>52.0</td>
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<td>1984b</td>
<td>61.0</td>
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<td>+ 15 backhoe trenches + augering</td>
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<td>Lord and Reynolds 1985</td>
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<td>+ 4 backhoe trenches and augering</td>
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<td>Kauffman 1983a</td>
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<td>Wiseman 1981</td>
<td>8.0</td>
<td>+ augering</td>
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<td>Kyte 1984a</td>
<td>8.5</td>
<td>+ augering</td>
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<td>Schermer 1982b</td>
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<td>Self and Hunt 1984</td>
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<td>Schermer and Brett 1983</td>
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<td>Kyte 1984c</td>
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<td>Oakes 1983</td>
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<td>Anderson n.d.</td>
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*Estimated 8 m² based on available data
**Includes 114 m² of shoveling to paleosol and screening
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