
A CULTURAL RESOURCES SURVEY OF APPROXIMATELY 5,625 ACRES WITHIN THE FORT SILL MILITARY RESERVATION, FORT SILL, OKLAHOMA

by
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**FORT SILL MILITARY RESERVATION TECHNICAL SERIES
REPORT OF INVESTIGATIONS
NUMBER 3**



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ERRATUM

Page 90, first paragraph, third sentence:

Instead of: The site is in poor condition, though shovel testing revealed intact subsurface deposits to at least 50 cm below the surface.

Should read: The site is in poor condition, though shovel testing revealed intact subsurface sediments to at least 50 cm below the surface.



Above: The Post Oak Cemetery ca. 1957 shortly before it was moved to Indiahoma to make room for the expansion of Fort Sill (courtesy of the Center for Mennonite Brethren Studies, Fresno, California).

Cover: A photograph of the 1906 Post Oak Mission camp meeting showing the Post Oak Church and missionary houses. The white tents have been set up for the camp meeting (courtesy of the Center for Mennonite Brethren Studies, Fresno, California).

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for
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Fort Sill Military Reservation
Fort Sill, Oklahoma
and
U.S. Army Corps of Engineers
Tulsa District

FORT SILL MILITARY RESERVATION TECHNICAL SERIES
REPORT OF INVESTIGATIONS NUMBER 3

Geo-Marine, Inc.
550 East 15th Street
Plano, Texas 75074

June 1996

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MANAGEMENT SUMMARY

This report presents the results of an intensive archeological survey of 5,625 acres located within nine parcels of land on the Fort Sill Military Reservation in Comanche County, Oklahoma. Archival research and informant interviews were also conducted to identify potential historical sites and to assess the significance of recorded historic sites. The cultural resource assessments presented here represent one phase of the efforts of the Fort Sill Military Reservation to meet its legal responsibilities for the identification, evaluation, and treatment of cultural resource properties under its jurisdiction. This research was conducted under contract with the U.S. Army Corps of Engineers, Tulsa District. The intensive survey was conducted by the Cultural Resources Division of Geo-Marine, Inc., between October and December of 1993; additional archival work was performed March 9-16, 1994, and the geoarcheological fieldwork took place from March 23-25, 1994.

The survey resulted in the identification and recording of one paleontological site, 23 archeological sites (with at least 23 site components) and 62 localities. Of the cultural resource properties, 12 site components and 20 localities date to the prehistoric period; 11 site components and 41 localities reflect historic period activities; and one locality is multicomponent in nature. Twenty-eight sites and eight historic ruins had been previously recorded within the nine parcels of land; yet, this survey was able to relocate only eight sites and three ruins. The surficial and fragile nature of the archeological record within this region and more than 100 years of military training activities have been the primary factors affecting site visibility and survival.

Although assessment of eligibility for inclusion in the National Register of Historic Places is necessarily preliminary due to the lack of test excavation data, none of the 24 sites is considered eligible for inclusion in the National Register of Historic Places at this time. The site components have been categorized as either of unknown eligibility or ineligible. Two prehistoric sites (34Cm-91 and 34Cm-519) and nine historic sites (34Cm-509, 34Cm-510, 34Cm-511, 34Cm-514, 34Cm-517, 34Cm-518, 34Cm-520, 34Cm-521, and 34Cm-522) have been designated as "unknown" in relation to National Register eligibility, as has 34Cm-350, the Adams Hill Tar Pit. Further research, the type of which varies according to the site, is necessary for a final determination of eligibility for these properties. The remaining 12 sites (two of which are of the historic period and 10 of which consist of low density prehistoric lithic scatters) were determined to be ineligible due to a lack of contextual integrity, a lack of sufficient archeological deposits, or a lack of association with important events or persons. All the localities, by definition, are ineligible for nomination to the National Register of Historic Places.

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In the field, the dedication and energy of the crew members, including Mr. Robert Barros, Ms. Kendra Quinn, Ms. Shelly Sullo, Mr. Zane Warton, and Mr. David Wolfe, were essential to the successful completion of the fieldwork. Mr. Darryl Pleasant acted as Field Supervisor during the period of fieldwork. The Field Supervisor also was responsible for summary site descriptions that provided the basic data for the report. Geological fieldwork was conducted by Mr. Floyd B. Largent, Jr., and Mr. David Shanabrook under the direction of Principal Investigator Mr. Duane E. Peter.

Artifact analysis and data input were undertaken by the staff of Geo-Marine, Inc., under the direction of Ms. Marianne Marek, Laboratory Director. The prehistoric artifacts were analyzed and described by Mr. Bob Vance, while Ms. Melissa M. Green analyzed and described the historic artifacts.

The technical editor was Ms. Sharlene N. Allday, who also supervised the layout and design of the report and was responsible for the final production. Lithic illustrations were produced by Ms. Gail S. Nsentip. Computer generated site maps and geologic profiles were provided by Ms. Sandra J. Carr, and Ms. Denise L. Pemberton was responsible for the final formatting of the document.

CHAPTER 1 INTRODUCTION

by
Floyd B. Largent, Jr.

This report represents the results of an intensive cultural resources survey of 5,625 acres located on the Fort Sill Military Reservation in Comanche County, Oklahoma (Figure 1). The Fort Sill Military Reservation, as a Federally owned installation, has a responsibility for managing approximately 95,000 acres of land in southwestern Oklahoma. The report presented herein is in compliance with several mandates connected with this management responsibility. These directives are defined in the *National Historic Preservation Act of 1966* (PL 89-665 et seq.); the *Archaeological and Historic Preservation Act of 1974* (PL 93-291 et seq.); Executive Order No. 11593, *Protection and Enhancement of the Cultural Environment*; and Army Regulation 420-40, *Historic Preservation*.

This project was carried out by the Cultural Resources Division of Geo-Marine, Inc., of Plano, Texas, under Contract No. DACW56-92-D-0010, Delivery Order No. 13, with the U.S. Army Corps of Engineers, Tulsa District. The pedestrian survey was performed between October 18, 1993, and December 10, 1993. Nine areas were selected for the 1993 cultural resource survey. Of the 6,375 acres originally designated for survey at Fort Sill (see Figure 1), all but approximately 750 acres in areas 2 and 5 were surveyed. The 750 acres that were not surveyed are located in areas bordering the Arbuckle Impact Areas, which have a high potential for containing unexploded ordnance.

Personnel from Geo-Marine, Inc., conducted the field investigations at Fort Sill under the direction of the Principal Investigator, Mr. Duane E. Peter, and the Project Archeologist, Mr. Floyd B. Largent, Jr. Mr. Darryl Pleasant acted as Field Supervisor. The survey effort was conducted by the Project Archeologist, the Field Supervisor, and five crew members. An estimated total of 200 person-days was expended between October 18, 1993, and December 10, 1993, while conducting systematic survey and selective shovel testing. An additional 12 person-days were expended in March 1994, both for additional archival research (six person-days) and geoarcheological examinations of Post Oak Creek (six person-days). As a result of the survey, 23 cultural resource sites were discovered and recorded, with a minimum of 23 components represented (12 prehistoric components and 11 historic components). In addition, 62 nonsite localities and a paleontological site, the Adams Hill Tar Pit (34Cm-350), were recorded. Almost all sites showed some degree of disturbance, ranging from light to heavy impacts. Many had been impacted within the six months prior to their discovery.

Archival research and informal interviews, relating to the historic archeological sites discovered during the field research, were conducted to supplement the field work. In some cases, this information was also used to relocate previously recorded sites. Twenty-eight sites and eight ruins had been previously recorded within

Cultural Resources Survey of 5,625 Acres within Fort Sill

the nine areas designated for this cultural resource survey. Many of the sites were recorded in the late 1950s, the early 1960s, and the late 1970s. Multiple impacts likely affected these sites and many probably have been simply collected away since this survey was able to relocate only eight of these sites and three of the ruins.

This report is presented in seven chapters. Chapter 2 presents the environmental setting of the study area. Chapter 3 documents the cultural setting for survey area, with a particular emphasis on the history of the Post Oak Mission, a Mennonite Brethren outpost located a few miles west of Quanah Parker's original Star House site. Chapter 4 outlines the conceptual framework and research methodologies that guided these research efforts. The results of geologic fieldwork conducted on the Fort Sill Military Reservation are presented in Chapter 5. Site and locality descriptions, analysis of historic and prehistoric artifacts, and the results of archival research are presented in Chapter 6. A summary of the findings and site assessments, evaluations of site predictive models, and recommendations are presented in Chapter 7. Appendix A presents the definitions of prehistoric artifact classes, the coding form used for prehistoric artifact analysis, and the summary table for prehistoric artifacts. Appendix B presents the coding form used for historic artifact analysis and the summary table of historic artifacts, and Appendix C presents the profile and backhoe trench descriptions.

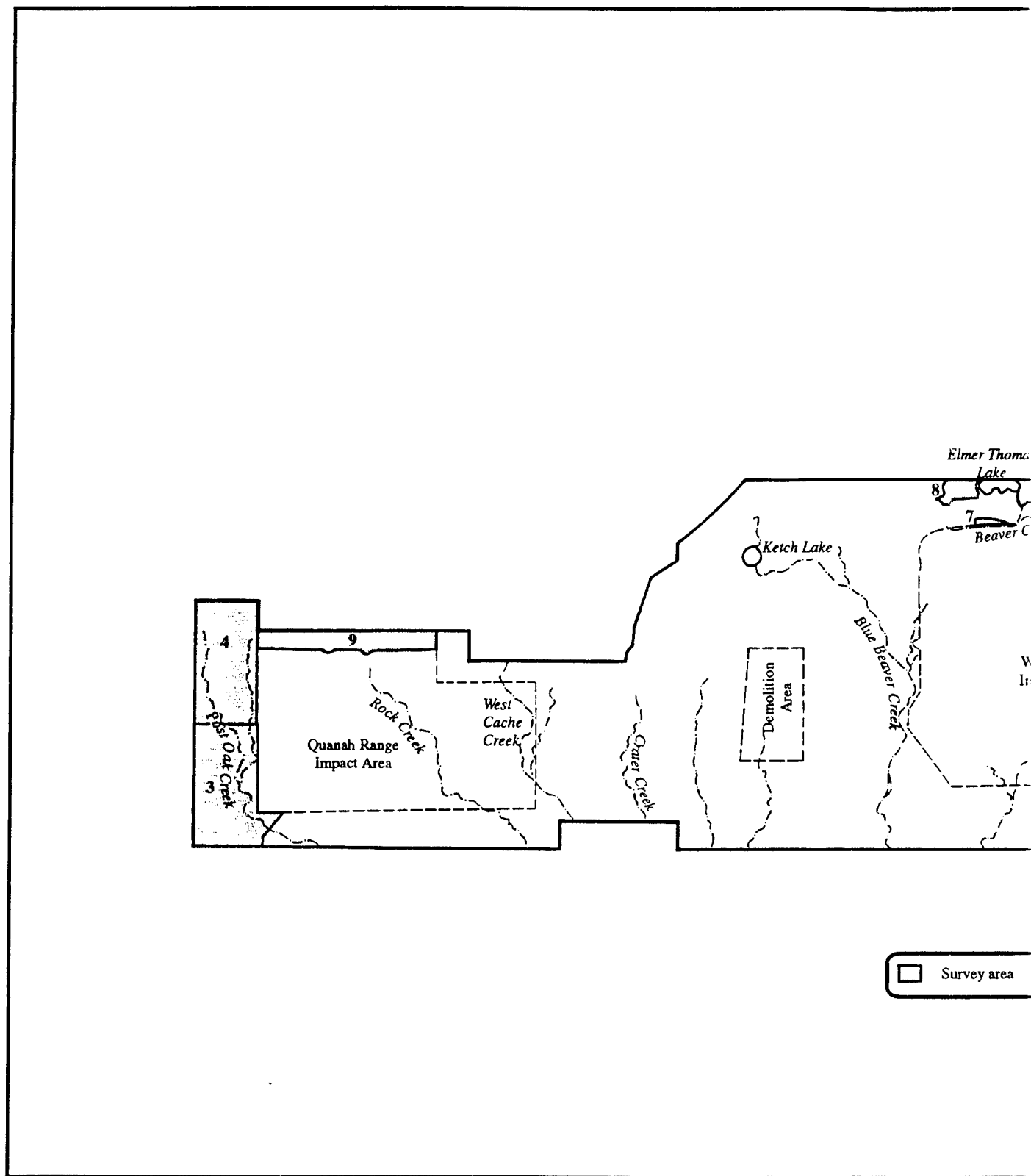
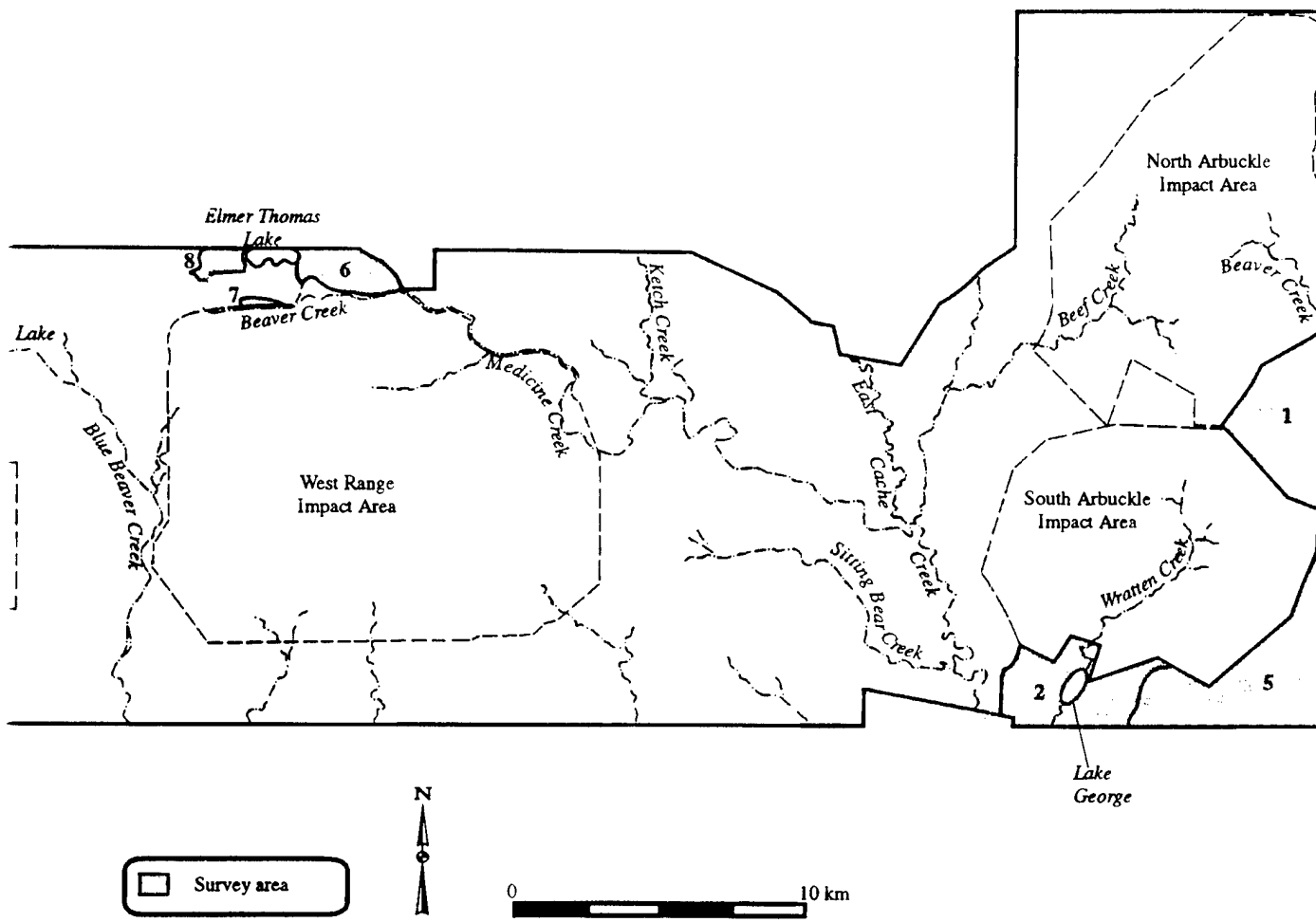


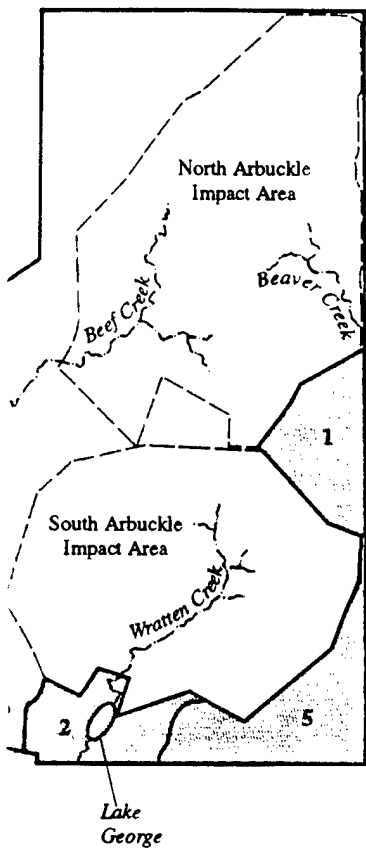
Figure 1. A map of the Fort Sill Military Reservation, showing the locations of intensive pedestrian and geological areas surveyed during the 1993



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al areas surveyed during the 1993 investigations.

2



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③

CHAPTER 2

ENVIRONMENTAL SETTING

by
Gathel M. Weston

GEOLOGY AND GEOMORPHOLOGY

The near-surface bedrock in the Fort Sill area consists of Permian age formations which extend east-west from central Oklahoma to the Llano Uplift in the Texas Panhandle, and north-south from Nebraska to central Texas (Gould and Lewis 1926). Bordered by marine deposits of Pennsylvanian age on the east and nonmarine Tertiary deposits in the west, the Permian formations are primarily level sedentary beds derived from continental deposits overlying marine deposits. However, there is much variation, including some areas that are primarily marine in origin (Weissenborn and Stenzel 1948:12).

The Permian formations correspond to a large extent with the tall grass prairie and mixed grass plains of central and western Oklahoma. The Pennsylvanian formations underlie much of the Cross Timbers and, with the Ozark and Ouachita Mountains, the eastern forests of Oklahoma. The Tertiary aged deposits to the west, formed from sediments derived from the Rocky Mountains, underlie the short grass high plains.

Within the Fort Sill Military Reservation itself, shale with some sandstone composes the bedrock east of East Cache Creek (Dames and Moore 1980:19), with the Post Oak Conglomerate of the Hennessey Group forming the bedrock of the reservation west of East Cache Creek and south of the Wichita Mountains (Coffman et al. 1986:4). This conglomerate is composed of bedded pebble to boulder sized clasts that fine outward from the Wichita Mountains (Donovan 1982:66-69). The clasts are for the most part granite and rhyolite, with sandstone and mudstone clasts in a limited area along East Cache Creek (Dames and Moore 1980:19).

The eastern range of the Wichita Mountains extends into the Fort Sill Military Reservation. Except for the section that has been exhumed by erosion, most of this mountain chain remains buried under Permian aged and older sediments. Composed of basalt, granite, rhyolite, and gabbro, these ancient mountains appear to be little more than hills, impressive by their location within the level plains rather than any absolute prominence. However, up close they present a steep and formidable terrain, with numerous cliffs, narrow gorges, and steep, boulder strewn slopes. A more detail description of this igneous formation is presented in Chapter 5.

Limestone has only a limited distribution in the Fort Sill area, but has been economically significant during historic times. Quarry Hill, Evans Knob, and McKenzie Hill are all composed of limestone and have been quarried in the past (Dames and Moore 1980:19). Kerr Hill and a few other small areas are also formed of limestone.

TOPOGRAPHY

The topography in the Fort Sill area ranges from the gently rolling plains of the Permian Red Beds to the steep and rugged terrain of the Wichita Mountains. The following discussion of the topography of Fort Sill is based on the terrain analysis conducted by Dames and Moore (1980:3-7).

The western, south central, and eastern portions of Fort Sill, including the cantonment area, consist of nearly level to gently rolling plains ranging in elevation from 329 and 466 m (1,079 to 1,525 ft) above mean sea level (amsl). The north central portion of the Fort Sill Military Reservation, the northern boundary of the western portion of the reservation, and the northern boundary of the cantonment area are dominated by gently to moderately rolling plains and hills with some areas deeply incised by upland drainages. Elevations range between 342 and 553 m (1,122 to 1,814 ft) amsl.

The Wichita Mountains dominate the west-central portion of Fort Sill. This area is characterized by moderately to strongly rolling hills exhibiting abundant rocky outcrops and rounded crests. Elevations in this area range between 380 and 673 m (1,246 to 2,207 ft) amsl.

SOILS

There are three major soil associations within the Fort Sill Military Reservation: Tillman-Vernon soils, Granitic Mountains-Tishomingo soils, and Rough broken land-Vernon soils (Oklahoma Water Resources Board 1980:54a). The dominant soil association on the reservation is the Tillman-Vernon association, dark to reddish soils with clay subsoils developing from clayey Red Beds. Confined primarily to the Wichita Mountains, Granitic Mountain-Tishomingo soils are stony granitic soils that have a thin soil layer and are brown in color. Rough broken land-Vernon soils are found east of East Cache Creek. These soils are similar to the soils found in the Tillman-Vernon association, but have a thinner soil layer and more extensive erosional areas.

According to the Conservation Plan for Fort Sill (Soil Conservation Service [SCS] 1970) the Tillman-Vernon association contains the Foard Series silt loams, Hollister Series loams, Lawton Series loams, Lucien Series loams, Stamford Series clayey soils, Tillman Series clay loams, Vernon Series clays, and Zaneis Series loams. Approximately 29.2 percent of the sites recorded during the current survey fall within areas containing these soils.

The Rough Broken land-Vernon association contains small areas of Breaks-Alluvial land complex (loamy to clayey upland soils on broken and moderately steep slopes) interspersed with Zaneis Series loams, Vernon clays, Eroded Loamy land, and the Lucien-Zaneis-Vernon complex (sloping to strongly sloping soils on dissected, erosional uplands). Only a small area containing this soil association is located within the reservation boundaries. Just one site, 34Cm-350 (4.2 percent of the sample), is mapped within this association; it lies on Lucien-Zaneis-Vernon complex soils.

The Granitic Mountain-Tishomingo soil association is confined to the Wichita Mountains in the western portion of the Fort Sill reservation. Included in this region are Granite Cobbly land, Granite outcrop, Rock land, and Stony Rock land. Granite Cobbly land can also be found in other areas outside the Granitic Mountain-Tishomingo soil association, particularly near Medicine Bluff and Rabbit Hill. Approximately 29.2 percent of the sites recorded are located on Granitic Mountain-Tishomingo soils, exclusively of the Granite Cobbly type.

Other soils occur on the Fort Sill Military Reservation that cannot be placed in the above associations. Two soils, the Konawa Series loamy fine sand and Windthorst Series sandy loam, are generally associated with each other and Lawton loam. The current survey covered only a few small areas containing Windthorst soils; a total of two sites (8.3 percent) occurred on soils of this series. A third soil series known for the area includes the alluvial loams within the Port Series. These soils are found in all the bottomlands within the reservation and along all but the lowest order of drainages. A total of 29.2 percent of the sites recorded during the current survey is on Port Series soils; in addition, a large percentage of the sites located on non-alluvial soils is located at or near the boundary with Port soils.

A fourth soil, Limestone Cobbly land, occurs in small quantities on the plains south of the Wichita Mountains. No sites were associated with this soil.

Port series soils are the most agriculturally productive soils located on the Fort Sill Reservation. Other soils that are suitable for cultivation are the Foard, Hollister, Konawa, Lawton, Stamford, Tillman, Vernon, Windthorst, and Zaneis soils. Soils on the reservation that are unsuitable for cultivation include the Breaks-Alluvial land complex, Eroded Clayey land, Eroded Loamy land, Granite Cobbly land, Limestone Cobbly land, Lucien soils, Rock land, and Stony Rock land.

HYDROLOGY

The Fort Sill area is located within the Red River drainage basin. Locally, more than 90 percent of the reservation is within the East Cache Creek basin, with a small portion of the eastern end within the Beaver Creek drainage basin (Dames and Moore 1980:3). Moving from east to west, the watercourses within the reservation are Ninemile Beaver Creek, Wratten Creek, Beef Creek, East Cache Creek, Sitting Bear Creek, Medicine Creek, Ketch Creek, East Branch Wolf Creek, Deer Creek, Blue Beaver Creek, West Branch Blue Beaver Creek, Crater Creek, Quanah Creek, West Cache Creek, Rock Creek, and Post Oak Creek. There are a number of other small ephemeral streams and over 50 reservoirs on the military reservation.

Except for Sitting Bear, Medicine, and Deer creeks, watercourses on the reservation tend to flow from north to south. East Cache Creek and Medicine Creek are the only perennial streams, with other streams having only ephemeral or seasonal flow (Dames and Moore 1980:3). The watercourses within the cantonment area have undergone extensive modification of their channels, including straightening of meanders and concrete lining of portions of Sitting Bear Creek and channelization of East Cache Creek.

The current survey included portions of Post Oak Creek, Rock Creek, Deer Creek, Wratten Creek, and Ninemile Beaver Creek.

CLIMATE

Southwestern Oklahoma exhibits a semi-arid to sub-humid continental climate with influences from three upper air systems. Dry air enters the region from the Rocky Mountains to the west; cold, dry arctic air enters from the north; and warm, moist air from the Gulf of Mexico enters from the south. These three air masses meet over the Southern Plains and create a weather pattern that is marked by long, hot summers and short, mild winters, with rapid weather changes and occasional periods of intense drought. Severe winter storms are rare in the Fort Sill area, but the warmer months are often marked by strong, often violent, storm systems (Hofman et al. 1989:8).

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Mean annual rainfall ranges from approximately 86 cm (34") at the eastern edge of the southwest Oklahoma region down to 66 cm (26") at the western edge, with mean annual rainfall in the Fort Sill area measures approximately 76 cm (30") (Kawecki and Wyckoff 1984:7). Rainfall is at a maximum during the spring months with a sub-maximum in August or September (Albert and Wyckoff 1984:18-29). The observed range of annual rainfall, recorded in the Wichita Mountains Wildlife Refuge over a 55-year period, is from 38 cm (15") in 1910 to 146 cm (57.5") in 1908 (Crockett 1964:328). Evapotranspiration generally exceeds precipitation in the Southern Plains region (Hofman et al. 1989:9) with the rate exceeding 90 cm (36") annually in the Fort Sill area (Kawecki and Wyckoff 1984:7).

The mean annual temperature for the Fort Sill area is approximately 16.2° C (61.1° F) with a range of 27.8° C (82.1° F) in July and August to 4.2° C (39.6° F) in January (Crockett 1964:328). There are approximately 220 frost free days annually.

FLORA AND FAUNA

The Fort Sill Military Reservation is located within the Mixed Grass Plains of the Southern Plains, a transitional area between the Tall Grass Prairies to the east and the Short Grass Plains to the west. While this area can be considered an ecotone between the tall grass region and the short grass areas, the transition is gradual, with a slow replacement of tall grass plant species by short grass plant species from east to west as available moisture decreases. The tall and mixed grasslands are considered as a unit in some classifications (Shelford 1963:329). The entire tall grass/mixed grass region can be described as an ecotone between the eastern forests and the western high plains, with a mixture of eastern and western influences (Rice and Penfound 1959:605). Within the tall grass and mixed grass regions, the type and mix of faunal species are similar, with a transition to short grass faunal types at the boundary between the high, short grass plains and low, mixed grass plains (Shelford 1963:334-335).

The Fort Sill Military Reservation has three basic floral environments: grassland, riparian forest, and upland woodland. The grasslands consist of both mixed grass plains and tall grass prairie. The tall grass prairie is found primarily east of East Cache Creek on soils derived from the Permian Red Beds. This area is dominated by a mixture of grasses typical of a tall grass prairie (Bamforth 1988:32; Kawecki and Wyckoff 1984:3), with little blue stem and big blue stem dominating and smaller amounts of silver blue stem and switch grass present (Ferring 1978:76-117).

The grassland areas west of East Cache Creek are primarily mixed grasses types on soils derived in part from sediments from the Wichita Mountains. Little blue stem is still the dominant grass variety, but little or no big blue stem is present, and mid-grass and short grass species, such as drop seed and hairy grama grass, occur in greater numbers (Baugh 1984:16-18; Ferring 1978:76-117). Before European settlement of the region, these grasslands would have supported herds of bison, low numbers of antelope, lesser prairie chicken, and jackrabbit.

The riparian forests in the study area support a floral community similar to that recorded for bottomland forests in tall grass prairie/mixed grass plains of north-central Oklahoma (Rice 1965). On the reservation, American elm is dominant in seven of 10 stream channels surveyed by the Museum of the Great Plains (Ferring 1978:82-104) as compared to 38 of 47 bottomland forest stands surveyed in northcentral Oklahoma (Rice 1965:710). Netleaf hackberry is the dominant species on East Cache Creek but is possibly a recent invader on the disturbed floodplain (Rice and Penfound 1959:597). Bur oak dominates on Ketch Creek and occurs as a co-dominant on Medicine and Sitting Bear creeks, and Shumard's oak is the dominant woody species on Beef Creek. Neither bur oak nor Shumard's oak dominates in any of the stands studied in

northcentral Oklahoma, and neither species was recorded in the Wichita Mountains Wildlife Refuge (Buck 1964); their dominance on these two stream floodplains may be a historic phenomena.

Economically important species present on the floodplains as subdominants or lower quantities include pecan, black walnut, western hackberry, common persimmon, and red cedar. With the exception of two species of oak, the riparian forests within the study area are typical of bottomland forests within the tall grass prairie/mixed grass plain region. The undergrowth recorded during the Fort Sill survey and Rice's survey in northcentral Oklahoma is similar, with poison ivy/oak, wild rye, and coralberry common and *Smilax* spp., *Vitis* spp., and common elderberry present. Deer and turkey are two important faunal species that inhabit the riparian environment. Additional species such as opossum, squirrel, and raccoon inhabit the riparian forests, with mussels and fish available from the streams.

The upland woodlands of the study area are essentially a Cross Timbers type vegetation. The western edge of the Cross Timbers region itself is currently located approximately 25 to 30 km east of Fort Sill, with the Wichita Mountains maintaining a western isolate of this upland woodland type. On the basis of studies conducted within the Wichita Mountains Wildlife Refuge (Buck 1964), post oak is the dominant woody species within the refuge with blackjack oak a subdominant. This dominance of post oak over blackjack oak is typical of the mixture seen in the main body of the Cross Timbers, whereas other upland woodlands in western Oklahoma are dominated by blackjack oak (Rice and Penfound 1959:603). On the other hand, the upland woodlands of the Wichita Mountains are similar to other western Oklahoma upland woodlands in that none contain black hickory, an important species in the main body of the Cross Timbers (Wyckoff 1984:8). More pertinent to prehistoric utilization of the region is that the woodlands within the Wichita Mountains are more dense than the woodlands found in surrounding areas (Rice and Penfound 1959:601), offering a greater concentration of resources.

There are three species within the Wichita Mountains that are rare within the mixed grass plains. Sugar maple (Buck 1964:340) and chinquapin oak (Rice and Penfound 1959:599) occur in significant numbers on north facing slopes, and western walnut is present in valleys (Buck 1964:344). Sugar maple in particular is a rare occurrence outside the forests of eastern Oklahoma (Rice and Penfound 1959:606).

The upland woodlands in the Wichita Mountains offer excellent habitat for economically important faunal species, in particular white-tailed deer and wild turkey. White-tailed deer favor forest edges and open woodlands (Schmidly 1983:294), and this type of environment is available in abundance in the Wichita Mountains (Buck 1964). Buck (1964:340) noted the many deer within the refuge and their impact on vegetative understory.

The oaks that are dominant within the Wichita Mountains are an important food source for a variety of animals, with oak twigs and young leaves providing forage for deer and rabbits (Schmidly 1983:297) and acorns providing a large portion of the food consumed by a wide variety of animals including deer, wild turkey, prairie chicken, and squirrels (Petrides 1958:296). Both the acorns and the fauna they attracted would have provided an important food source for aboriginal populations as well.

LITHIC RESOURCES

Chert is unknown in primary outcroppings within the study area. While sedimentary formations known to contain chert occur in the area, no chert sources within these outcroppings have been located (Banks 1990:104). The primary local source of lithic raw material is gravel veneers containing quartzite and chert derived from the Ogallala/Potter formations (Banks 1990:114) and possibly from local sources such as the

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Meers quartzite. The exact distribution of these gravels within the study area, their effect on prehistoric site distribution, and the extent of aboriginal usage of these gravels are unknown. A number of sites have been identified within the study area that appear to be lithic procurement sites that were exploited for their deposits of quartzite and chert cobbles (Ferring 1978).

Igneous rocks provided a limited amount of lithic raw material but are poor material for chipped stone tools, though adequate for ground stone tools. Quartz, available as outcrops at the southern edge of the Wichita Mountains (Banks 1990:104-105) and in gravel veneers and stream channels, was often utilized by aboriginal knappers.

SUMMARY

The Wichita Mountains and the surrounding area contain a disparate range and quantity of resources. Some resources, such as faunal and floral species, were available in high quantities, while other items, in particular lithic resources, are extremely limited. Limitations are also imposed by the relatively limited water resources (Bastian 1966:3), low acreage of fertile alluvial soils, and limited lithic sources. These are balanced on the other hand by the potentially high population of white-tailed deer and other faunal species dependent on the oak forests and woodlands, and high levels of forest products, especially when compared to adjoining western and southern regions. These forest products include sugar maples that are extremely rare west of the eastern forests of Oklahoma. Floral resources would have been at their greatest potential in the fall (Ferring 1978:29), with faunal resources greatest from fall to mid-winter (Speth and Spielmann 1982).

In the Fort Sill area, floral and faunal resources are similar to those found in areas located to the northeast and east. The Washita and Canadian River valleys would have offered similar resources, along with a more dependable water resource and greater coverage of alluvial soils suitable to aboriginal horticultural practices. On the other hand, river valleys to the south and west of the study area have bottomland vegetation less suitable to the maintenance of a large population of small and medium game animals. The Red River Valley supports bottomland vegetation similar to the high plains bottomlands, with a dominance of cottonwood and scrub growth hackberry and limited stands containing elm and pecan (Sellards et al. 1923:130-131). Oak trees and wooded uplands are completely absent and the grassland contains species more typical of the short grass plains (Sellards et al. 1923:130-153).

The Wichita Mountains may have provided a wide selection of resources to the aboriginal inhabitants of the upper Red River Valley and other western regions that were otherwise unavailable or seasonally scarce. There is little evidence that the area was ever intensely occupied by horticultural groups associated with the populations that utilized river valleys to the north and west of the Fort Sill area. However, it is likely that at some time populations from this area exploited the resources available in the Wichita Mountains area. The regional affiliations of the groups that did utilize the area, particularly in late prehistoric times, is one subject that needs further work and clarification.

CHAPTER 3

CULTURAL SETTING

by
Kellie A. Krapf

INTRODUCTION

The general cultural history of Fort Sill, the history of Comanche occupation of the area, and the previous investigations conducted within the reservation have been dealt with extensively in previous volumes of this technical series (Austin and Peter 1992; Peter and Weston 1993; Weston et al. 1993); therefore, this information will not be repeated here. It seems more pertinent instead to detail the history of the Post Oak Mission, an influential Mennonite Brethren facility, once located in the immediate vicinity of the westernmost project areas, from which the Comanche were evangelized throughout the first half of the twentieth century.

HISTORY OF THE POST OAK MISSION

The history of the Post Oak Mission at Fort Sill began with the origin and development of the Mennonite Brethren Church, an institution that has its roots in the Swiss Anabaptist Movement that began in 1524. The political atmosphere in Europe at the time was such that the Anabaptists, and later the Mennonites, were created as reactionary groups against the Catholic and Reformed Protestant churches (Toews 1975:3). As religious persecution began to increase in Europe in the late 1600s, followers of the Mennonite religion were forced to migrate first to Germany, then to Holland and Russia, and finally to the United States, where they were accepted despite their religious beliefs. The Mennonite Brethren who migrated to the United States in 1774 settled in Kansas, the Dakotas, Nebraska, and Minnesota due to the availability of cheap land. Once the Mennonites settled in these areas, they were able to expand into nearby states and create a strong missionary system not only in the United States but abroad.

The Anabaptists rebelled against the established order of the Catholic and Reformed Protestant churches. The Anabaptist religious beliefs were rejected by the Protestants because "they sought to re-introduce certain practices and doctrines" that were not considered appropriate theology in the state churches (Kaylor 1981:24). The Anabaptists were concerned with establishing a new fellowship based on the idea of "living defenseless and non-resistant lives . . ." (Hostelter 1968:27). The church was to be a "voluntary group of disciplined and committed people" (Hostelter 1968:26) whose religion was based on "experimental faith," not on the theological issues of Protestantism (Kaylor 1981:25). The one religious practice of the Anabaptists that broke dramatically with the established churches was adult rebaptism, as opposed to traditional infant baptism (Kaylor 1981:25). Anabaptist religious ideals emphasized the separation of church and state, but stressed allegiance to God rather than secular authorities (Kaylor 1981:26). Among the many Anabaptists

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sects were the Swiss Brethren; their counterparts in the Netherlands were called the Mennonites, after their religious leader, Menno Simons (Hostetler 1968:27).

In the late 1690s, the Mennonites joined the Pietistic Movement, originally a non-threatening rebellion against the orthodoxy of the Reformed Church that emphasized that Christianity was a "way of life, not a creed," therefore "affirming the common experience of Christ as the definition of Christian identity" (Kaylor 1981:23). As the Pietists gained momentum among the Mennonites, the ideals of the movement became more radical, aggressively attacking the orthodoxy of the established state churches. The ideas of the Radical Pietistic leader Alexander Mack gained popularity among the Mennonites during this period, when religious persecutions began to increase throughout Europe. To avoid persecution, many of the Pietists, including Mennonites, moved to Germany, which offered them asylum and religious freedom. Once in Germany, Mack and a small group of his followers began to lead small Bible studies; this small group became the founders of the Mennonite Brethren. This group created a new baptismal method, one of total submersion rather than pouring, which is different from the baptismal tradition of the other Mennonite sects (Kaylor 1981:24). By the 1720s, Germany's political climate had changed and the Mennonite Brethren were once again faced with the prospect of religious persecution. This prompted the Brethren to migrate back to Holland, where religious freedom was granted them for a short time.

Soon the political climate in Holland began to change as well, spurring two groups of Mennonite Brethren to migrate to new geographical areas. One group moved to America, settling in Pennsylvania; the other, slightly larger group migrated onto the steppes of Russia in the present day Ukraine (Kaylor 1981:28; Loewen 1993:9). In 1772, the prominent Polish families there accepted the Mennonites onto their vast estates due to their extensive knowledge of farming skills and practices, especially land drainage. After settling in Russia, the Mennonites found life difficult for several reasons: (1) the passage of a state regulation in 1774 which stated that land could only be purchased with the consent of the King; (2) the Mennonites wanted to keep many of their old traditions; and (3) they refused to pay taxes to support the state church and the military (Toews 1975:14).

At the time the Mennonites migrated to Russia, that country's colonial policy stressed the separation of immigrants and native citizens; integral to this policy was a special charter called the *Privilegium*. The provisions in the *Privilegium* appealed to the Mennonites because it allowed them control of their own religion, as well as educational and civic laws. One of the chief provisions of the charter was a guaranteed exemption of military service and religious freedom (Toews 1975:14). After this charter was passed, the Mennonites founded two colonies, Chortitza and Molotschna, along the Dnieper River (Toews 1975:15). In Russia, the Mennonites finally found a place where they were independent from outside influences and gained control of their economic, religious, and social life.

The two colonies began to experience social and economic problems due to land shortages that were created by increased population in the late 1860s. According to Russian land regulations at this time, an estate was to consist of 175 acres or more that could not be subdivided into smaller units. Toews (1975:18) noted that by 1865 the ratio between the landed and the landless was 2,356 to 1,384 in the Molotschna colony. This division between the landed and the landless resulted in the formation of a caste system in which the landed became the leaders of the society and the church, and the landless were regulated to the outskirts of the colonies. Not only were the landless placed on the outer edges of society, but other privileges, such as the right to vote and the right to intermarry between Mennonite sects, were revoked. As the society became increasingly hierarchial, so did the Mennonite Church, which went against the historic foundation of the Mennonite religion (Toews 1975:21).

As the division between the landed and the landless expanded, many of the Mennonite members, especially the landless, split from the existing group and created a separate group that called for the revival of old Anabaptist traditions (Toews 1975:19). To alleviate the problems of the landless, the Mennonite began searching for land to purchase in nearby countries and in the Americas. Another major cause for this search was the passage of the 1870 Russian Imperial Decree, which terminated the Mennonite exemption from military service and paved the way for the Russian government to take a more active role in the Chortitza and Molotschna governments (Toews 1975:69).

Between 1874 and 1880, 18,000 Mennonites from Russia migrated to America because of socio-economic reasons (Toews 1975:79). As early as 1873, the Mennonites sent a delegation to America to look for suitable land for their settlements in Kansas, Nebraska, the Dakotas, Minnesota, and in Canada, where land was cheap and readily available (Toews 1975:80). The Mennonites received favorable responses in the states and in some cases, such as Nebraska, the state governments actively advertised their economic advantages and opportunities (Toews 1975:130). The favorable responses from these states led to the largest migration of Mennonites to the United States. In 1874, approximately 10,000 Mennonites moved to the United States; half settled in Kansas, with the other half settling in Nebraska, the Dakotas, and Minnesota (Toews 1975:132).

The Mennonites who migrated to Kansas settled in Marion, Harvey, Reno, and McPherson counties (Toews 1975:132). During the 1880s, the Mennonites in Kansas experienced many of the hardships of pioneer life, including drought, locust and grasshopper infestations, and the lack of available markets. But at the same time, they also experienced rapid growth and expanded into new areas of western and southern Kansas. In 1889, the Mennonites moved into the Oklahoma Territory when the territory was first opened to Anglo-American settlement. On April 22, 1889, the Mennonites participated in one of the first few Oklahoma "runs" in the northern portion of the territory in the Cherokee outlet or Oklahoma District (Erb 1974:359). According to Erb (1974:361) the Mennonites, as a group, expanded so rapidly into the Oklahoma Territory that by the time it became a state in 1907, there were 37 Mennonite congregations of the various branches; 12 of them were Mennonite Brethren churches, including one established near the Comanche in southwest Oklahoma near Lawton.

During the late 1870s, the Mennonite Brethren Church in Kansas experienced a strong urge to do mission work outside their own community, and began structuring a foreign mission program (Janzen 1945-1960:372). The foreign mission program was established in October 1881, for the "expression of deep compassion for the people of heathen nations, living in gross spiritual darkness and idolatry . . ." (Janzen 1945-1960:373). At that time, the Mennonite Brethren was a small organization numbering only about 1,000 members; therefore, they were unable to raise the funds to finance the establishment of a mission overseas. The members of the Brethren Church held a conference in 1889 to decide the matter of establishing a foreign mission. At this conference, a young missionary, Reverend Henry Kohfeld, expressed his deep concerns over the spirituality of the Native Americans. After the conference, the Brethren Church decided to work among the Native Americans because they felt "they owed the original inhabitants of this continent the good news of the Gospel" (Janzen 1948:3).

At a conference held in 1894, Reverend Kohfeld repeated his desire to work among the Native Americans, and the members of the Brethren Church accepted his idea of establishing a foreign mission among the Native Americans. Following the conference, the Mennonite Brethren appealed to what was then called the U.S. Department of Indian Affairs for permission to work among the Native Americans. The Department of Indian Affairs accepted the proposal and gave the Mennonites an open deed for a 160-acre tract of land that could be used near any reservation where they decided to build a mission (Janzen 1945-1960:375).

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Soon after the acceptance by the Department of Indian Affairs, Reverends Henry Kohfeld, Abraham Schellenberg, J. F. Harms, and C. P. Wedel began the search for a reservation where they could establish a mission. During the search, the reverends went to Oklahoma to visit with Rev. E. C. Deyo, who had established a Baptist mission called the Deyo Mission just west of Lawton (Janzen 1948:4). During this visit, Rev. Deyo suggested the possibility of establishing a mission among the Comanche near the home of the prominent Comanche Chief, Quanah Parker (Anonymous 1945; Janzen 1948:5). Deyo informed the Mennonites that he had tried for many years to get Parker's permission for a Baptist mission among his people, but had failed in this endeavor (Janzen 1948:5).

After spending several days with Rev. Deyo, the Mennonite reverends returned home—except for Rev. Kohfeld, who remained in Oklahoma in order to attempt to obtain Chief Parker's permission to establish a mission among the Comanche (Janzen 1945-1960:376). Some days later, Kohfeld met with the Fort Sill Indian Agent to obtain permission for the establishment of a Mennonite mission in the area. The agent reacted positively to Kohfeld's request, but informed Kohfeld that the final permission would have to come directly from Chief Parker and the Comanche (Janzen 1945-1960:376, 1948:5-6).

After meeting with the Fort Sill Indian Agent, Kohfeld purchased a pony so that he could ride daily to visit the Comanche to win their approval. Kohfeld tried for three months to talk to the Comanche, but was unable to gain their confidence due to the language barrier. Sensing Kohfeld's frustrations, the Fort Sill Indian Agent lent Kohfeld a wagon and an interpreter to communicate with the Comanche (Janzen 1948:7). The next day, Kohfeld and his new interpreter went to visit Quanah Parker, who had adamantly rejected the idea of a mission. Upon arrival at the Parker home, Kohfeld was informed that Quanah was gone, but was able to speak with two Comanche women: Tessiky, who claimed her husband had much influence with Chief Parker, and To-pay, one of Parker's wives, who was receptive to the idea of a Mennonite mission (Hagan 1993:78; Janzen 1945-1960:377).

Upon Parker's return home it is reported that To-pay said to him, "My dear husband, we have lived together 20 years and have been happy. Here is a Jesus man, sent from God to build a Jesus house and teach us the way to heaven. If you hinder him, I shall never be happy again" (Janzen 1948:8). Following his talk with To-pay, Parker held a meeting with other Comanche to discuss the establishment of a Mennonite Mission nearby (Janzen 1948:8). Parker and the group, including Rev. Kohfeld, went off to find an appropriate location for the mission. Both Hagan (1993:78) and Janzen (1948:8) reported that Parker stopped at a large post oak tree, where he carved several notches in the tree, saying, "Here build Jesus home." At this time, Kohfeld is said to have pulled out the deed given to him by the Department of Indian Affairs, handing it to Parker to sign, thus transferring ownership of 160 acres to the Mennonite Brethren Church (Janzen 1948:8). Kohfeld decided to name the mission Post Oak Mission, after the post oak tree Parker had marked, and after the nearby stream called Post Oak Creek. According to the Comanche County deed records, the U.S. Army granted the northwest quarter of Section 7, Township 2 North, Range 4 West to the American Mennonite Brethren Mission Union of Marion County, Kansas, on August 21, 1907 (Comanche County *Deed Books* 75:322). Hagan (1993:78) wrote that Kohfeld expressed his gratitude by saying to the Comanche, "the Lord has honored his promise to His servant and answered the prayers of the committee and the Conference."

Reverend Kohfeld was the first missionary to work among the Comanche at the Post Oak Mission, where he set out to learn the language and customs of the Comanche in order to convert them to Christianity. However, during Kohfeld's tenure as missionary at the Mission, there were no Comanche converts due to the language barrier and the reluctance of the Comanche to dismiss ancestral beliefs (Janzen 1948:10).

In 1895, Kohfeld was able to acquire enough money for the construction of 12 buildings at the mission. The buildings included the church (a two-story, eight-room building), a small house for the missionary help, a

two-story dining hall, an arbor for meetings, a two-story dwelling that was used by mission helpers and homeless Comanche, a dwelling for the missionary, a concrete water tower, a deacon's dwelling, a tool house, a poultry house, and a barn. One of the most unusual buildings was a small room attached to the church, known as "The Death House," which was reported to be the room where the missionaries brought the dead to wait for a casket to be constructed (Corwin 1963). The Federal Writers' Project of the WPA (1938) reported that the first buildings constructed at the mission were the homes of the missionaries, and the first church services were held in these homes. Also it was reported that the reason the construction of additional buildings at the mission took longer than expected was due to the fact that materials had to be picked up in Marlow, Oklahoma, 60 miles away, which had the closest railroad station. One of the Brethren members who participated in the construction was A. J. Becker, who would later take over the missionary duties at Post Oak Mission (Janzen 1948:10).

From 1896 to 1902, the Kohfelds were provided some assistance with their work among the Comanche. Sisters Mary Regier and Katie Penner, two deaconesses, were recruited to work at the Post Oak Mission. Sister Regier served at the mission from 1896 to 1898, and Sister Penner served from 1896 to 1902. These women were in charge of the daunting task of bringing "the Gospel to the Indians to teach them higher standards of living and Christian ethics . . ." (Janzen 1945-1960:379) by conducting personal visitations into Comanche homes, providing Christian instruction, and working with the women to teach them homemaking skills (Janzen 1948:11-12).

In 1901, Rev. A. J. Becker, with his wife and two young children, returned to Post Oak Mission to assist Rev. Kohfeld with missionary duties. Thus began 46 years of service at the mission by the Beckers (Anonymous 1968:56). The Kohfelds and Beckers ran the mission together until 1907, when the Kohfelds decided to resign from the mission, leaving the sole burden of running the mission to the Beckers. Janzen (1948:13-14) reported that the Kohfelds resigned for two reasons: (1) the failing health of Mrs. Kohfeld; and (2) the reduction in the number of workers needed at the mission, since additional missions were being established among the Native American groups nearby. After leaving the Post Oak Mission, Kohfeld and his family moved to California.

The Beckers' early work among the Comanche did not bring any converts to the mission, again because of the language barrier; they found it difficult to employ a Comanche interpreter to work for the mission. It is reported that the Beckers prayed day and night for an interpreter, and eventually Herman Asenap took on the responsibility of interpreting for the mission. The story of how the Beckers obtained their first converts was retold by Joe Kirby (1991:3), a member of the mission, in a short history of the facility. Apparently Mrs. Becker was greatly saddened by the lack of converts and left an evening meeting "to pray, to weep for The People." A Comanche woman noticed Mrs. Becker leaving and followed her outside and asked Mrs. Becker, "Why are you crying?" Kirby reported that Mrs. Becker's reply was, "Because you Indians refuse to receive Jesus so that you can go to heaven!" These words reportedly affected the Comanche woman so much that she told others about the conversation with Mrs. Becker. Several days later at a large gathering held at the Government Indian Payment Camp, at least 12 Comanche accepted the church (Janzen 1948:15).

Janzen (1945-1960:382) reported that in 1917 the missionaries at the Post Oak Mission had achieved personal contact with 1,600 people, and had conducted 14 marriages and three baptisms for the year. Also during 1917, the Comanche began holding their own services without being dependent on the missionaries. These services usually included scripture reading, testimonials, praying, and traditional and hymnal singing (Janzen 1945-1960:381-382). In 1923, the membership at the Post Oak Mission rose to 57, and by 1928 had risen to 109 members (Janzen 1945-1960:382).

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During the 1920s, Rev. Becker worked not only among the Comanche, but also among the nearby Mexican-American populations. At that time, large numbers of Mexican-Americans were emigrating to the area surrounding the mission. By 1937, the Mexican-American membership in the Post Oak Mission had grown to 85 members, and Rev. Becker decided to open a mission among them near the outer city limits of Lawton, Oklahoma. The Board of Foreign Missions appropriated money to finance the construction of a church and living quarters. The first missionaries at the Mexican Mission were J. J. Reimers and his wife (Janzen 1945-1960:393-395).

The written history of the Post Oak Mission has emphasized the importance of Rev. Becker, but his wife Magdalena played an important role among the Comanche women. In 1903, the U.S. government decided to send one of the missionaries as a Field Matron to the Native Americans to teach the women healthful living and housework (Janzen 1948:13). The U.S. chose Mrs. Becker for the position, and after it was sanctioned by the Brethren Conference she accepted the offer. The Field Matron had many duties to perform, including Christian instruction; instruction on ethical living; how to do house work such as sewing; household economy; cleanliness and thriftiness; and nursing the sick and dying (Janzen 1945-1960:379, 1948:13; Kirby 1991:6). Mrs. Becker held this position until 1933, when she retired due to failing health.

During the Beckers' tenure as the missionaries at the Post Oak Mission, over 500 people were buried at the Post Oak Cemetery, near the church building; and 400 Native Americans, Mexican-Americans, and Anglo-Americans were baptized (Becker 1955:30; Becker 1975:112). After Magdalena's death in 1938, Rev. Becker administered to the Comanche alone until 1941, when Rev. and Mrs. J. S. Dick joined the Post Oak Mission and took over the primary responsibilities. The Comanche responded positively to the Dicks, but their tenure last for only one year, whereupon Rev. Dick died of massive heart failure. The missionary positions were thereafter filled by Rev. and Mrs. C. E. Fast, who remained at the mission until 1944. After the Fast left, Rev. and Mrs. D. J. Gerbrandt took over the responsibilities of the Post Oak Mission. The Gerbrandts worked at the mission until 1949, when Rev. and Mrs. Herman J. Neufeld took over the mission. The Neufelds remained at the mission until 1957 (Becker 1955:31; Janzen 1948:24-32).

In 1957, the U.S. Army acquired the land encompassing the Post Oak Mission for the expansion of the Fort Sill missile firing ranges. The U.S. Army offered to pay for the removal of the mission buildings and the burials at the mission cemetery to a new location on the west side of Indianhomia, Oklahoma. On March 1, 1957, the U.S. Army paid the American Brethren Mennonite Union of Marion County, Kansas, \$57,000.00 for 160 acres of land, in order to provide them a new church (Comanche County *Deed Book* 448:197). The government also acquired the complete cost of the removal of the graves to the new cemetery location in Indianhomia (Janzen 1945-1960:387). In 1960, the missionaries withdrew from administration duties of the church and let the congregation lead the church, creating an independent Post Oak Mennonite Brethren Church. Presently, the Post Oak Church is located in Indianhomia and continues to function, with a congregation of over 100 active members.

ADDITIONAL FACILITIES AT THE POST OAK MISSION

At a Mennonite Conference in 1897, the Brethren had discussed the possibility of establishing a school at the Post Oak Mission. The possibility of a school was accepted by most members, and they began to promote the idea in the attempt to raise money for its construction. At the conference \$200.00 was raised for the school, and A. J. Becker was appointed the first teacher. In the end, the school was not constructed, as students could not be recruited due to the fact that most members lived a substantial distance from the mission and, therefore, could not send their children to school every day. Since the students lived so far away, dormitories could have been constructed near the school, but this possibility was apparently overlooked

Chapter 3: Cultural Setting

(Janzen 1948:10-11). The idea of a mission school was not discussed again until 1945, when a day school was opened at the mission. The students were mostly Comanche children in the first or second grades. In 1948, the small mission school was moved from Post Oak to the small town of Indianola where it was expanded to include all grades (Janzen 1945-1960:383).

Shortly after the Post Oak Mission was established, a cemetery was established near the mission building. The Post Oak Mission Cemetery was used to bury not only the Mennonite missionaries and their families, but also many Anglo-Americans, Mexican-Americans, and Comanche. One of the more important Comanche families, the Parkers (including Quanah and his mother Cynthia Ann), were buried at the Post Oak Mission Cemetery. In 1910, Chief Parker brought his mother's remains from Texas to rebury them at the Post Oak Mission Cemetery (Hagan 1993:120). Less than three months later, Quanah Parker was buried beside his mother (Hagan 1993:121). Many of the Post Oak Mission missionaries were also buried at the cemetery, including Rev. and Mrs. Becker. By 1950, there were an estimated 800 graves located at the Post Oak Mission Cemetery.

CHAPTER 4

RESEARCH OBJECTIVES AND METHODOLOGY

by
Floyd B. Largent, Jr., Duane E. Peter, and Stephen P. Austin

RESEARCH OBJECTIVES

At the level of survey investigations, the principal research objective is a generalized investigation of changing settlement patterns in the prehistoric and historic periods within the study area. The goal is to understand settlement choices and long-term patterns of exploitation. Therefore, adequate information on site function, context, and chronological placement from both archeological and historical perspectives is essential for the cultural investigations. Determination of site context and chronological placement of the cultural properties is a particularly important objective during the inventory process.

More specifically, the cultural resources investigations were undertaken to: (a) identify both prehistoric and historic archeological sites contained within nine selected areas of the Fort Sill Military Reservation; (b) evaluate the condition of previously recorded sites within those same areas; and (c) undertake limited geoarcheological investigations to determine the need for additional subsurface investigations. These investigations were undertaken with four primary research goals in mind:

1. to locate cultural resources within the designated areas;
2. to relocate and evaluate the condition of previously recorded sites within the designated areas;
3. to assess the significance of those resources in regard to their potential for inclusion in the National Register of Historic Places (NRHP); and
4. to provide recommendations for the treatment of the cultural resources.

The methodologies used to accomplish these goals are presented in the following pages.

RESEARCH METHODS

Prefield Research

Because this survey project was conducted in three phases, the majority of the prefield research was conducted either prior to the initiation of fieldwork in early November of 1990 or during the first field season. Consequently, much of the prefield research had been conducted before the initiation of the second season of fieldwork in 1992.

Cultural Resources Survey of 5,625 Acres within Fort Sill

Prefield research was limited to an examination of historic properties records housed at Fort Sill, examination of the archival resources maintained by the Fort Sill Museum, informant interviews with both in-service and out-service personnel, examination of the data base maintained by the Museum of the Great Plains, review of the property listings on the NRHP, and review of the pertinent literature concerning Fort Sill and the surrounding region. Relevant information concerning previously recorded sites and potential sites was entered into a computerized data base based on each survey area. Both recorded and potential sites were recorded on topographic maps of each survey area and were provided, along with print-outs of the data base for each survey area, to field supervisors.

Examination of the Historic Properties Records

In late October of 1990, the historic properties records maintained by the Directorate of Environmental Quality were examined by the Principal Investigator. All forms related to previously recorded sites within the boundaries of the Fort Sill Military Reservation were reproduced. The plottings of these sites were transferred to the appropriate USGS 7.5' quadrangles and relevant information regarding site location, estimated age, artifact content, and site condition were entered into a computerized data base.

Examination of the Archival Resources at the Fort Sill Museum

Through the cooperation of Towana Spivey, Director of the Fort Sill Museum, the Principal Investigator was permitted in 1990 to examine the historical maps related to Fort Sill and the photographic records pertaining to the Apache Prisoner-of-War (POW) villages and the Dutch Reformed Mission. This information was primarily useful during the first phase of this project, with the second and third phases primarily covering areas outside of the cantonment and Apache POW village areas.

Informant Interviews

A component of this project consisted of the use of oral informants as an approach to understanding archeological sites and site locations at Fort Sill. This research was conducted concurrently with the field research. Information collected from several sources was combined to gain some insight concerning temporal periods, locations, and ethnicity of known and predicted sites at Fort Sill. This approach has been used by several researchers (Binford 1968; Clark 1968; Gould 1971; Gould and Yellen 1987) and has demonstrated the usefulness of conducting informant interviews in relationship to archeological investigations.

Prior to the initiation of the fieldwork in 1990, interviews with Towana Spivey, Director of the Fort Sill Museum, and James Martin, member of the local chapter of the Oklahoma Archeological Society, were informative concerning the nature of the archeological record within the Fort Sill region. Both gentlemen characterized the prehistoric sites of the area as usually exhibiting a low density artifact scatter; consequently, relocation of the sites was sometimes very difficult.

No formal interviews were conducted during the 1993 field season. However, during the survey itself, a number of informal interviews were conducted with both local residents and Fort Sill personnel. Valuable information regarding site locations and potential occupants of historic sites was gained from these discussions.

Examination of the Holdings of the Museum of the Great Plains

Prior to the initiation of fieldwork in 1990, discussions were conducted with personnel of the Museum of the Great Plains concerning the available data base for Comanche County. Joseph Anderson, Staff Archeologist, was in the initial stages of developing a computerized data base for Comanche County. The Museum of the Great Plains also has the General Land Office (GLO) records for the county on file.

Review of National Register of Historic Places Listings

Examination of the files maintained by the Directorate of Environmental Quality of Fort Sill revealed a number of National Register sites within the boundaries of Fort Sill. None of these properties are within any of the 1993 survey areas and no further research was necessary prior to the initiation of fieldwork in 1993.

Review of the Pertinent Regional Literature

The literature for this region was available through many sources. Several manuscripts were obtained through the Directorate of Environmental Quality of Fort Sill. Arrangements were also made with the Museum of the Great Plains to provide copies of all manuscripts not readily available within the local or university library systems. The results of the literature review and the relevant sources are presented within the Environmental and Cultural Setting chapters of the first volume of this technical series (Peter and Weston 1993).

Pedestrian Survey

An intensive cultural resources survey was conducted to identify both prehistoric and historic sites within selected parcels comprising an area of approximately 6,375 acres within Fort Sill. Of the acreage originally designated for survey in areas 1-9 (see Figure 1), all but approximately 750 acres in areas 2 and 5 were surveyed. The 750 acres that were not surveyed are located in areas bordering the Arbuckle Impact Areas, which have a high potential for containing unexploded ordnance.

The survey methodology varied according to the ground cover, soil, and topographic conditions within each area. In most areas, survey transects were spaced 35 m apart, and shovel tests were excavated at judgmental intervals. Due to the lack of soil formation on much of this terrain, shovel testing was often quite limited. The shovel test interval was decreased to 20 m within the Post Oak Creek Valley in areas 3 and 4.

The fill from the shovel tests was screened through 6.35 mm (¼ inch) hardware cloth. More than 2,182 shovel tests were excavated by the survey crews, for an approximate average of one shovel test for less than 2.58 acres of ground covered (Table 1). More specific information concerning the survey methodology for each area is presented in Chapter 6.

Once a site was located, either on the basis of shovel testing or through the discovery of surface materials, the site limits were identified through shovel testing. Generally, a minimum of four shovel tests (each approximately 30 cm in diameter) was excavated at each site; however, in the cases of heavily disturbed sites with little soil, fewer or no shovel tests were excavated.

Cultural Resources Survey of 5,625 Acres within Fort Sill

Table 1
Summary of Intensity of Shovel Testing, 1993 Survey of Fort Sill, Oklahoma

Area	Acreage	Number of Shovel Tests	Average No. of Acres per Test
1	807	750	1.08
2	408	175	2.33
3	1,374	430	3.19
4	1,263	440	2.87
5	748	240	3.12
6	305	30	10.17
7	18	7	2.57
8	201	10	20.10
9	501	100	5.01
Totals	5,625	2,182	2.58

The soil from each shovel test was screened through 6.35 mm (¼ inch) hardware cloth. If possible, all shovel tests were excavated to the base of the culture-bearing deposits. All artifactual materials recovered both from survey and site shovel tests were collected and analyzed. The locations of all excavation units were plotted on a site map.

A site form recording locational information, vegetation cover, contextual integrity, estimated temporal period, and artifactual material was completed on the site. In addition, a scaled pace-and-compass map was prepared. A complete photographic record, including both black-and-white prints and color transparencies, was kept and was used to record identified cultural remains, the general topography and condition of the area at the time of the survey, and the field techniques and methodology employed. Each site was photographed from at least two viewpoints, and included any damage evident to the cultural property by vandalism, construction, or earth disturbances of any kind.

Surface collections of both historic and prehistoric materials were intended to involve temporally diagnostic artifacts or tools, and to provide samples of the raw materials found on each site. On historic sites with surface materials, special attention was paid to decorated ceramics, decorated and embossed glass, and pieces with maker's marks or indications of manufacturing technology. Each recorded site was identified by a permanent marker placed on the site, consisting of a circular aluminum tag given a temporary site number in the form of "93-xx" (93 indicates fiscal year 1993). Temporary site numbers ran consecutively, starting with 1 and ending with 62 during the first field season, beginning with 63 and ending with 148 in the 1992 field season, and starting at 149 and ending at 171 for the 1993 field season. Thus, the first site recorded in 1990-1991 was labeled "91-1," and the second "91-2," while the 1992 season started with site 92-63, and the 1993 season started with 93-149. Permanent site designations were later provided by the Oklahoma Archeological Survey, Norman. Site designations were applied only to clusters of artifacts containing five

Chapter 4: Research Objectives and Methodology

or more artifacts in an area 40 m or less in diameter, which gave the appearance of being preserved occupation or activity areas. Other areas that showed no evidence of preserved archeological deposits, such as isolated and very small finds, unique nonsite features, or trash dumps not associated with architectural remains, were designated as "localities." All evidence of post-1940 military activities were similarly classified. Such localities were recorded in the field as to specific locational information and field interpretations and were assigned field numbers in the form of 93-xxx, starting with 266 and ending with 327. Field notes concerning sites and localities were maintained by the Field Supervisor. The field notes, along with the Field Supervisor's survey maps, were also used to document survey conditions, vegetation cover, amount of area covered daily, and initial interpretations of the cultural resources.

Archival Research

Archival research during this project played a significant role in identifying most of the historic components found in the research areas. This research began during the survey and continued through to the production of the final report. Before the survey began, a number of local and regional sources were examined that described the historical resources of the region. Historical maps, photographs, and other historical publications and secondary sources were consulted.

Intensive archival research for this project began in January of 1991 with an examination of the extant maps and property records on file at Fort Sill. Additional research was conducted in 1992 and 1993, consisting of the examination of 1943 aerial photographs of the Fort Sill Military Reservation provided by the Directorate of Public Works. The Fort Sill Museum supplied several documents, including copies of historic photographs relating to the location of historic resources in the area, maps, and reports made by officers. The Real Property Office at Fort Sill supplied copies of land plats showing the properties acquired in 1940 and 1956 during the expansion of the reservation. This research helped place the owners of tracts of land in connection with located historic sites. An associated deed and title search was then conducted in an attempt to discover the ethnic affiliation of the individual owners of these properties.

The archival research related to this portion of the project was conducted at several locations, including the above offices, but the primary source of deed information came from the Comanche County Clerk Office in Lawton, Oklahoma. Only primary title documents were initially examined for significant occurrences or persons connected with the properties identified to contain historic components. During these title searches, the identification of the Comanche Indian allotments was discovered. Since it was reported by Nye (1969) and other informants that many of these Indian allotments were leased by tenants, other sources of information, such as census material and tax records, for the area were sought.

A portion of the archival search was conducted at the Oklahoma State Historic Preservation Officer's (SHPO) Office of Preservation in Oklahoma City. Documents discussing the region's area-wide context themes and previously recorded historic sites, both National Register sites and National Historic Landmark sites, were reviewed for the area.

Geoarcheological Investigations

Geoarcheological investigations associated with this survey were conducted from March 23-25, 1994. Mr. Floyd B. Largent, Jr., and Mr. David Shanabrook spent a total of six person-days examining four cutbank profiles and nine backhoe trenches along Post Oak Creek in the western portion of the military reservation. Physical descriptions of the soil horizons from each profile and backhoe trench were conducted in the field.

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Bulk samples for humate dating or granulometric analyses were collected from representative profiles. The results of the geoarcheological studies are presented in Chapter 5.

Prehistoric Artifact Analysis

The analysis of the prehistoric artifacts collected within the Fort Sill area by this project was designed to characterize as fully as possible the range of activities represented on each site, and makes use of artifact categories used previously in Texas and Oklahoma (see Appendix A for lithic artifact definitions and the summary table for the analyzed prehistoric artifacts). A total of 26 prehistoric artifacts was collected from the sites recorded within the present survey areas on Fort Sill. During the analysis of this material, each artifact was examined in sufficient detail to allow the identification of specific attributes and its placement into a specific artifact class (see Appendix A).

All the prehistoric artifacts recovered by the present survey consist of lithic materials (see Appendix A). The major artifact classes identified by this analysis include projectile points, bifaces, unifaces, and lithic debris. These artifacts were identified as to class and subclass, raw material type, percentage of dorsal cortex (if present), and location of use-wear (if present). In addition, the dimensions (i.e., length, width, and thickness) and the weight of all lithic tools were recorded, while the lithic debris was size-graded into six categories (i.e., less than 6.3 mm, 6.3-9.5 mm, 9.5-12.5 mm, 12.5-19 mm, 19-25 mm, and greater than 25 mm).

Historic Artifact Analysis

Fifty-seven historic artifacts were collected during the course of the current survey. The analytical framework used for the examination of recovered material from this survey was modeled after Stanley South's (1977) artifact pattern analysis method. Because of the limited sample recovered, the analysis of the artifactual material was modified so that only identifiable material was used to determine any patterns that may exist. The low density of artifacts encountered at many of the sites makes thorough descriptions of site contexts difficult. In this case, only generalizations about site types are noted because of the lack of real diversity in the assemblage across most of the sites. The limited recovered data also effectively preclude historical details relating to demography or social organization to be presented here.

Several categories were created for assignment of the recovered artifacts: Domestic, Architectural, Personal, and Activities. The domestic category designation was used for items related to food service (tableware) and food storage (including food preparation). Some ceramics and glass are not considered to be connected with food service or storage and the difficulty of assignment to particular categories was considered prior to the analysis of the artifactual assemblage from Fort Sill. Some items, such as washbasins, chamberpots, and glass motor oil jars, present a recognition problem. Separation of these objects is difficult and, because of the small sample involved here, unnecessary. Domestic material also includes household furnishings such as furniture, stoves, and lamp glass. The architectural category includes all items related to buildings such as brick, mortar, plaster, nails, window glass, and electrical items. A personal category was created for items of individual use such as clothing, buttons, shoes, dolls, and smoking pipes. The activities grouping includes any non-household items, transportation, farm related equipment, tools, and firearms. Unidentified metal fragments, questionable ceramics or glass (those artifacts that were unidentifiable as to domestic tableware or storage, architectural, personal, or activities), were not included in the final analysis and are simply identified as unknown. Additionally, because of the limited subsurface evidence present at most of

the sites located, the surface-collected diagnostic material is included in the primary analysis to help establish a beginning occupation date.

Similarly, date ranges for these sites were attempted using a modified version of South's (1972) evolution and horizon in ceramic analysis work. This type of analysis uses knowledge of production dates for ceramics and the popularity of types as a basis for understanding the temporal and spatial changes at historic sites. Because of the difficulty in analyzing sites with similar ceramic assemblages of extended periods of production, especially when the ceramic assemblages are of very low density, this analysis uses some glass as an analytical tool to assist in understanding temporal occupation spans. The discussion of each of the sites attempts to use datable glass as data to assign possible occupation periods to these sites by using the beginning manufacture time of certain types of production glass.

Standard analysis techniques for ceramics tend to assume a standard popularity curve that is placed closely to the median date of the ceramic type. Given the difficulty in assigning dates to undocumented sites with limited test data, investigations of these sites may benefit from examining more closely other datable material. It is thus possible that datable glass may serve as an additional tool. Using a statistical formula similar to that created by South for ceramic median dates, this analysis attempts to define an early occupation date for each of the sites using dates obtained from assumed popularity of use date ranges for some ceramics and the beginning dates of production for certain manufacturing attributes on glass types. These dates simply mark the beginning of a production type or process, or the assumed beginning of an item's popular appearance, termed here as the beginning production (or popularity) date (BPD). A possible early occupation date is determined by summing the known beginning production dates for certain diagnostic artifacts and dividing that number by the number of artifacts. This date is called the mean beginning date (MBD) by Lebo and Brown (1990) and is useful when the use date range of an artifact extends over a long period of time, especially when the use and manufacture of an item extends through the present. The use of this dating technique is by no means meant to be a panacea, but rather is exploratory in nature and needs substantiation by other data, such as archival information. Its use here points up some inconsistencies in the methodology. All sites with diagnostic material are analyzed on the basis of the functional types of material found and the assignment of a beginning date range based on the type of material recovered. This date is compared to other information from the archival data and previous surveys where the material is available (Appendix B).

The abundance and variety of late nineteenth and early twentieth century glass offers a unique research tool with which to evaluate sites. Mold types, embossing, glass type, and other attributes can be used to perform the same tasks as is accomplished with South's formulas. Further, it is distinctly possible that the socioeconomic status of glass types may be discoverable with further research into the use of these objects and their place in the social sphere. Simply, one needs only to understand the difference between a crystal wine glass and a "muppet" drinking glass to begin to understand where the cognitive differences are located.

One of the primary difficulties in attributing occupation periods to many of the historic sites of the late nineteenth and early twentieth centuries in this region is the available classification schemes for the ceramic assemblages present at these sites. At present only a general classification scheme is available which separates ceramics on the basis of body paste type, glazes, form, and other attributes. A similarity of types, plainwares, and extended periods of production for some ceramics makes analysis difficult. A possible lack of penetration of particular wares or, more likely, a shared set of ideas about what is proper and appropriate behavior in relation to foodways, further confounds the picture. A rural-urban distinction in foodways in North Central Texas is discussed by Journey and Moir (1987). They state in their research volume on the Richland Creek area that most households in that region tended to avoid "... highly decorated, popular, or highly commercialized ceramic vessel forms until the early twentieth century" (Journey and Moir 1987:97).

Cultural Resources Survey of 5,625 Acres within Fort Sill

Indeed, these undecorated ceramic wares do appear with more regularity in most of the assemblages recovered at Fort Sill, Oklahoma.

No economic scaling (e.g., Miller 1974, 1980) was attempted for either the ceramics or the recovered glass. However, this should not be taken to mean that an analytical framework is not possible. It is possible and necessary. Both Wobst (1977) and Hodder (1979, 1985) have discussed symbolic display between groups in relation to marking resources and social boundaries. As the size of the group, or competition, increases, and more interaction occurs with those of different status, material symbols will change in some area. These stylistic similarities and differences will appear in some shared areas and not in others. Thus, the similarity found in plainwares may be offset by material symbols of difference or status in objects not normally considered by researchers. The material recovered from the Apache villages may reflect this very process. Using this same idea, glass types may hold the same interpretive status as decorated ceramics, particularly when examining sites from the late nineteenth century through the depression era, a period when a proliferation of glassware occurs. Nothing of this magnitude was attempted here, but the structural logic exists for a framework from which to begin to examine these ideas.

Detailed descriptions of nineteenth and twentieth century ceramic types have been covered in other publications (Hughes and Hughes 1968; Lofstrom 1976; Lofstrom et al. 1982; Price 1979; and others) and will not be repeated here. Similarly, glass has been described in a great number of publications (Ferraro and Ferraro 1966; Fike 1966; McKearin and McKearin 1968; Walbridge 1969; and others) and also will not be repeated here. The results of the historic artifact analysis are presented with each site description and in Appendix B.

CHAPTER 5

GEOLOGIC STUDIES

by
David Shanabrook and Floyd B. Largent, Jr.

GENERAL GEOLOGY AND GEOMORPHOLOGY

This study examined deposits in a strip measuring roughly 1,500 m wide and 5,000 m long, located along the western side of the Fort Sill Military Reservation (Figure 2). This area encompasses a portion of the valley of Post Oak Creek, a number of its tributaries, and the adjoining higher ground. It lies along the crest of the west-northwest to east-southeast trending Wichita Arch, which in this local area is bound on the north by the Meers Fault and on the south by the Burch Fault. Locally, the Wichita Arch is composed of the North and South Fort Sill Anticlines, which are large open folds currently displaying at least 245 ft of structural relief. The near surface geology of this area consists of gabbros and basalts of the Early to Mid-Cambrian-age Roosevelt Gabbros (recently dated to 550 million yr BP; Gilbert and Donovan 1982) of the Raggedy Mountain Gabbro Group overlain and/or intruded by granites of the Mid-Cambrian-age (500 to 525 million yr BP) Wichita Granite Group.

After a period of erosion which left a surface with as much as 100-200 m of relief, these igneous units were probably buried by a considerable thickness of sedimentary deposits of arkosic sand, shale, and shallow water carbonates ranging in age from Mid-Cambrian to Mississippian based on observed rock ages and thicknesses from surrounding areas. However, these materials have since been removed by later erosion. After a period of extensive folding, regional uplift, and renewed fault activity in the Pennsylvanian, this highly irregular post-Mississippian erosional surface was later covered by the Permian age (approximately 270 million yr BP) red shales, sands, and conglomerates of the Post Oak Conglomerate Formation of the Hennessey Group (Gilbert 1982; Gilbert and Donovan 1982:25-28). Further structural readjustments and extensive erosion over the next 200 million years produced a deeply sculpted surface on which every geologic unit named above was exposed to a greater or lesser extent. In the more recent past, Quaternary gravels, sands, silts, and clays have accumulated on this heavily eroded surface via in situ soil development, ongoing erosional processes, and alluviation in the stream valleys that cross this area. This Quaternary alluvial cover ranges in thickness from zero or less than a few centimeters to over 5 m. A more detailed and in depth discussion of this area's complex geologic history can be found in Ham et al. (1964) and Gilbert and Donovan (1982).

The pre-Quaternary geology in this portion of Fort Sill is important for two main reasons: first, its role as a source for the Quaternary sediments which are the principal object of this geologic study, and second as a control of the types of depositional environments in which the Quaternary sediments were deposited. As can be determined from an examination of the profile and backhoe trench ("BHT" or "trench") descriptions

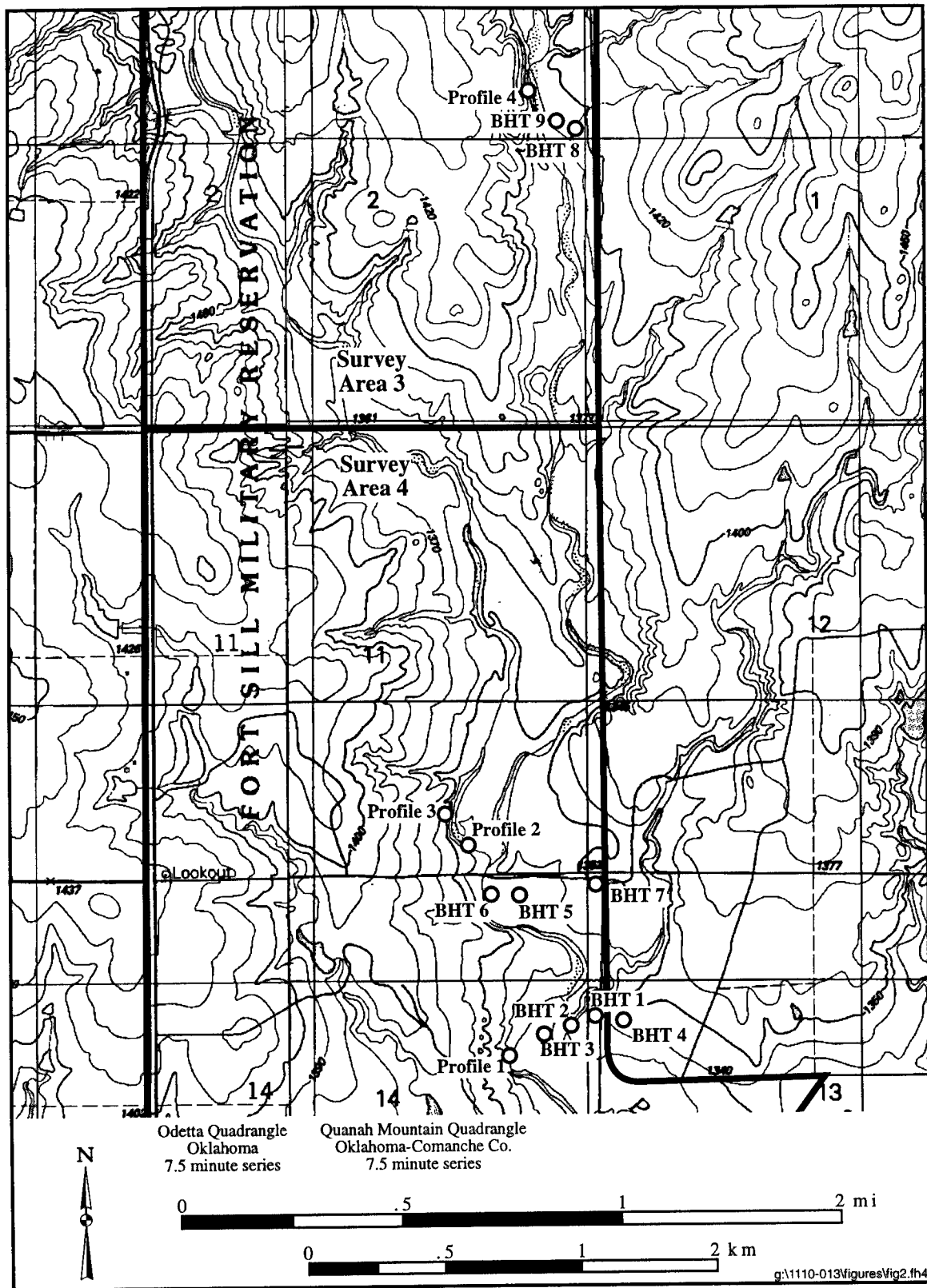


Figure 2. Excerpts from the USGS 7.5' Odetta and Quanah Mountain topographic quadrangles, showing the locations of profiles and backhoe trenches examined during the course of the geologic study.

in Appendix C, and as shown in Figure 3, a fair amount of the Quaternary alluvium observed appears to have been derived locally. This is understandable, given the close proximity of Post Oak Creek and its tributaries to the large outcrops of granite, gabbro, and Permian bedrock that form the adjacent higher ground and often underlie these streams. The depositional style of the streams examined in the study area, and hence the nature of the sedimentary deposits they have made and are making, is greatly influenced by the local geological structures and the nature of the bedrock in their valleys.

Post Oak Creek, whose channel axis trends roughly north-south in the study area, appears to be confined in a narrow trench that it is excavating into the Permian Post Oak Conglomerate, in an area where this unit has been tipped southward on the southern flank of the east-west trending South Fort Sill Anticline. The area of the South Fort Sill Anticline over which the headwaters of Post Oak Creek flow is cored by granites, gabbros, and rhyolite rocks. It is not surprising, therefore, that the sedimentary deposits encountered there contain considerable granitic and arkosic material, show evidence of frequent large scale flood events, and are relatively thin given the size of the stream (less than 5 m in thickness in many places).

The Quaternary deposits that unconformably rest on the Permian and older sedimentary and igneous rocks in the study area appear to be Holocene-age clays, silts, sands, and gravels that were deposited principally by alluvial and fluvial processes in the stream valleys in the study area.

These Holocene-age sediments form the surface layer on all the floodplains of the streams in this portion of Fort Sill, and they rest unconformably on all the older rock units described above. As noted previously, the thickness of the Holocene-age sedimentary deposits varies greatly within the study area, ranging from zero in many areas (e.g., near Profiles 2 and 4, BHT 4, the higher ground west of Post Oak Creek) to over 5 m (see Profiles 1 and 2). This variation is often an expression of variations in the topography of the bedrock surface and the width of the valley of Post Oak Creek. The average sediment thickness along Post Oak Creek appears to be in the range of 4 to 5 m, although it may be considerably thicker in some areas, such as the valley margins where circumstances may have favored the accumulation and preservation of recent sedimentary deposits (Profile 3 had roughly 8 to 10 m of Holocene valley fill). This is similar to what was observed by Hall during earlier work done along Post Oak Creek, which indicated Quaternary deposits roughly 4 to 6 m thick (Hall 1978:58-60), and more recently by Largent along Post Oak Creek just southeast of the present study area, where 1.3 to 2 m of fill was observed above Permian bedrock (Weston et al. 1993:47-54, Appendix D). Although the thicknesses observed by Largent seem thin based on what was observed in this study and earlier by Hall, all the data indicate that the Holocene-age deposits in the Post Oak Creek valley probably are relatively thin and are similar in thickness to those observed in the valleys of Medicine and Ketch creeks, but are several times thinner than the average Holocene-age fill in East Cache Creek (Shanabrook 1993a:69-70).

The Holocene sediments that were examined, which are described in more detail in a succeeding section and in Appendix C, were derived by a variety of processes ranging from extended fluvial and alluvial reworking of earlier Holocene, Pleistocene, Permian, and pre-Permian deposits to simple downwearing of exposed bedrock units. Weathering and subsequent erosion of the exposed Raggedy Mountain Gabbros, Wichita Granites, and Post Oak Conglomerates probably have provided a considerable portion of the sediment carried and deposited by Post Oak Creek in the recent past. This would be particularly true in the northern and central portions of the study area, where Post Oak Creek and its main tributary are confined to narrow valleys less than 250 m wide and approximately 10 to 20 m deep. This effect may be lessened somewhat in the southern portion of the study area, where the creek's valley widens and reworking of earlier Quaternary deposits may have played a more substantial role in forming the observed sedimentary deposits. But given the proximity of bedrock outcrops and the relative thinness of the Holocene valley fill, it is likely that much of the sediment observed even in this area was derived directly from bedrock as opposed to having

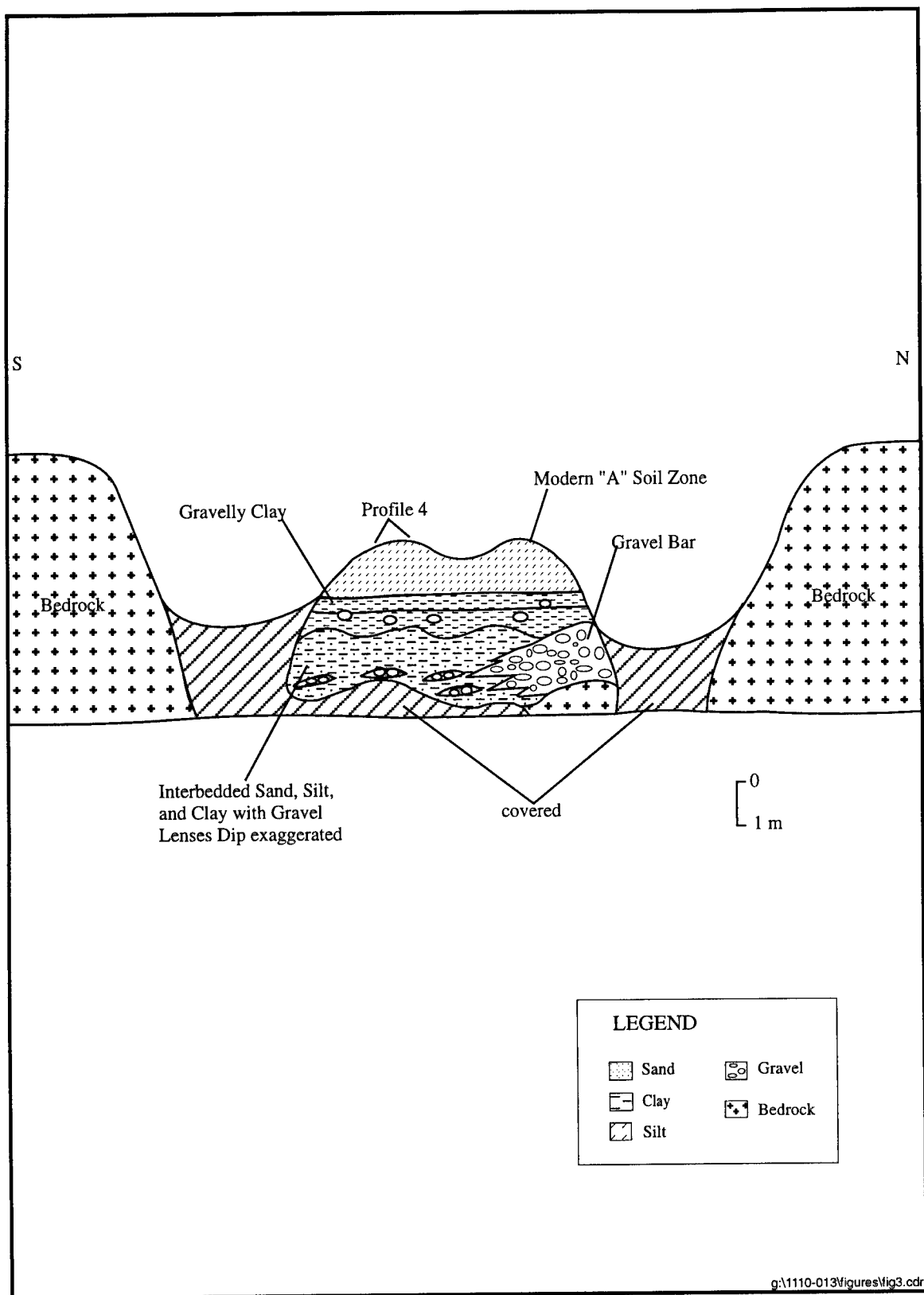


Figure 3. A portion of the Post Oak Creek valley, exposed in the area of Profile 4.

undergone considerable reworking during several cycles of deposition and erosion. There is little doubt, however, that regardless of the origin of the sediments being laid down, the dominant depositional process responsible for the sediments observed was fluvial. To be specific, the near surface Holocene sediments appear to have been laid down as a sequence of point bar, levee, back swamp, and associated deposits of sinuous, meandering streams. Further, the large number of fining upward sequences observed in the Post Oak Creek valley would tend to suggest that the active creek channel migrated with considerable frequency from one margin of its valley to the other, and that channel switching by the process of avulsion was relatively infrequent. This would seem logical given the narrowness of the streams' valleys and the constraints imposed by bedrock topography.

There are a number of features, both relic and active, located on the Post Oak Creek floodplain associated with a slightly sinuous, meandering fluvial system. An examination of the topographic map of this area reveals the somewhat sinuous but entrenched nature of the streams, particularly Post Oak Creek and its main tributary, which parallels it for a considerable distance before joining it (USGS 7.5' Quanah Mountain, OK 1975 topographic quadrangle). Field observations of the active stream channels indicated the presence of large lateral accretion (point bar) deposits compete with wash-over fans, flood by-pass chutes, and other typical features. However, the topographic maps and field observations indicate no trace of many typical fluvial features, such as oxbow lakes, abandoned channels or sloughs, and channel margin levees in the study area. The lack of channel margin levees is probably due to the deeply entrenched nature of the active stream channels. That is, with the streams' banks being from 3 to as much as 8 m above the normal water surface, the streams would only rarely be able to spill out of the banks of their active channels, a prerequisite for levee formation, since only then is material deposited on them. The lack of oxbow lakes and abandoned channels probably has to do with the relative narrowness of the streams' floodplains, which would mitigate against the preservation of these features, and the small role apparently played by avulsion in relocating the streams' channels through time. It is also possible that cultural activities, such as farming or the construction of lakes on the headwaters of Post Oak Creek, during historic times has had an effect on the current topography in this area. However, their impact is unknown and virtually unmeasurable.

FIELD METHODOLOGY

The geologic studies that were conducted at Fort Sill were oriented toward examining the near surface sediments to determine their types, their relationships to each other (if any), their environments and methods of deposition, and their relative ages. The goal was to be able to gain an understanding of the formation of the alluvial deposits and stream floodplains in this portion of Fort Sill, which in turn would allow for an assessment of the potential of these areas for containing significant cultural resource sites, either buried or on the surface. The bulk of the investigation was focused on the floodplain of Post Oak Creek and its tributaries, since a brief field reconnaissance and earlier studies conducted by Hall (1978) had indicated that these areas were most likely to be favorable sites for the location and preservation of cultural materials, either buried or on the surface, based on topographic or other considerations. Specifically, it was decided to examine and describe a number of cutbank exposures and excavate a series of backhoe trenches to examine the sediments in several areas along Post Oak Creek, in order to collect data on sediment types and stratigraphic relationships to allow for the construction of cross sections through their floodplains, as well as to test for the presence of cultural materials.

All the backhoe trenches examined (i.e., BHTs 1-9) were approximately 4-5 m long and 60 cm wide; their depths varied from 160-240 cm. The variation in depth was caused in most cases by differences in the competency of the sediments encountered, and the height of the local water table relative to the trench. Portions of the trench walls were scraped, cleaned, and examined for cultural materials or features. The

sediments encountered in each trench were described and the depth and thickness of each zone was measured. The color of each zone was determined in the field using fresh sediment samples and Munsell soil color charts. In selected cases, sediment samples were collected for later radiometric analysis. All four of the cutbank profiles that were examined and described (Profiles 1-4) were first cleaned with shovels and trowels to provide a fresh face; then the sediments encountered were described, measured, and their colors determined using a fresh soil sample and a Munsell chart. Elevations for the trenches and profiles were estimated from USGS quadrangle maps of the survey area.

SEDIMENT DESCRIPTION

A total of nine backhoe trenches was excavated in the study area and four cutbank profiles examined and described. All of the sediments observed are believed to be of Holocene age (see Figure 2). A complete profile description for each of the trenches and cutbanks is provided in Appendix C.

The dominant depositional process for the bulk of the sediment observed in the study area was fluvial. The sediments observed ranged from clays and silts to coarse-grained arkosic sands and gravels composed of cobble-size pieces of granite and rhyolite. Figures 4 through 6 show stratigraphic cross sections through three portions of the Post Oak Creek valley in the study area. Although there may have been considerable influence by colluvial/slope wash processes on the deposits observed in some areas, particularly where there is higher ground directly adjoining the stream valley, none of the sedimentary deposits observed could be directly or even indirectly attributed to them. This may be because those portions of the stream valley with adjoining uplands are also quite narrow, so the probability of depositing materials there is quite small, as is the probability of preserving them for any period of time after deposition. On the other hand, there is a fair amount of evidence of exposure and erosion of earlier deposits (e.g., BHTs 5 and 9), rapid shifts in sediment source and types (Profile 1, BHT 2), periods of slow or no alluviation and soil formation, and the deposition of channel margin or point bar sequences (for example, Profiles 1 and 2, and BHT 6). All these things would be quite typical of sediments laid down by a sinuous, meandering, fluvial system that may occasionally avulse (that is, abruptly shift the location of its main channel). There is also clear indication that the coarser and finer grained sediments have been highly segregated by the depositional process. That is to say, the trenches and profiles contain relatively few (2 to 6), comparatively thick zones of either gravel, sand, silt, or clay as opposed to numerous alternating, thin layers of varying lithology. This is a pattern that would be normal for fluvial deposits of a meandering or anastomosing river where the coarser clastics such as sand and gravel are concentrated in point bar, crevasse-splay or levee deposits in or near the meander or channel belt, while the finer sediments such as silt and clay are concentrated in backswamp or overbank flood deposits on the floodplain on either side of the active channel belt (Cant 1982:119-120; Reading 1978). A number of the examined profiles and trenches show a distinct fining-upward sequence throughout or in part (see BHTs 2, 3, 6-9, and Profiles 2 and 4). In this regard, Profile 4 and BHT 6 are particularly striking. Both grade from a very coarse-grained arkosic sand with abundant granitic gravel up to 75 mm in size to a silty or sandy clay which is developing as an "A" soil horizon (see Appendix C, and Figures 5 and 6). Some of these fining upward sequences would appear to be lateral-accretion, point bar deposits, especially those observed in Profiles 2 and 4, deposits which are common to a sinuous, meandering fluvial system. This view is supported by the fine horizontal bedding and laminations observed in a number of locations as well as the finely interbedded clay and sand units which are typical of the upper portions of lateral accretion deposits, and may represent flood events. Others of these fining upward deposits may have been laid down as channel margin levees that steadily increased in height with time (possibly some of the thicker sequences, such as BHTs 6 and 9, although these are probably point bar deposits), or as a result of a large scale catastrophic flood (potentially some of the thinner sequences such as those visible in BHTs 2 and 3). One of the trenches and one of the profiles (BHT 3 and Profile 1) exhibited coarsening upward sequences on the

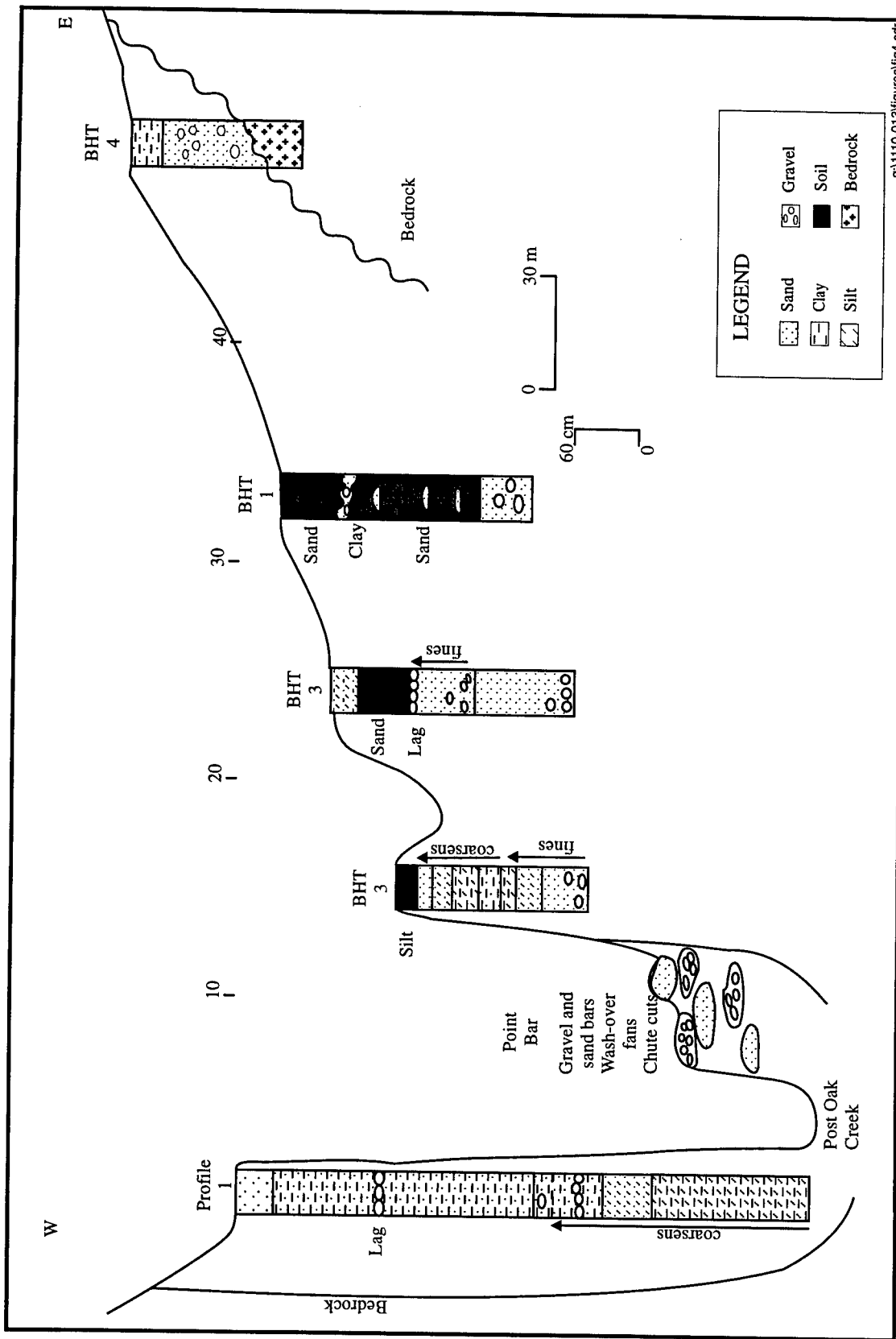


Figure 4. Generalized cross section through the south section of the study area.

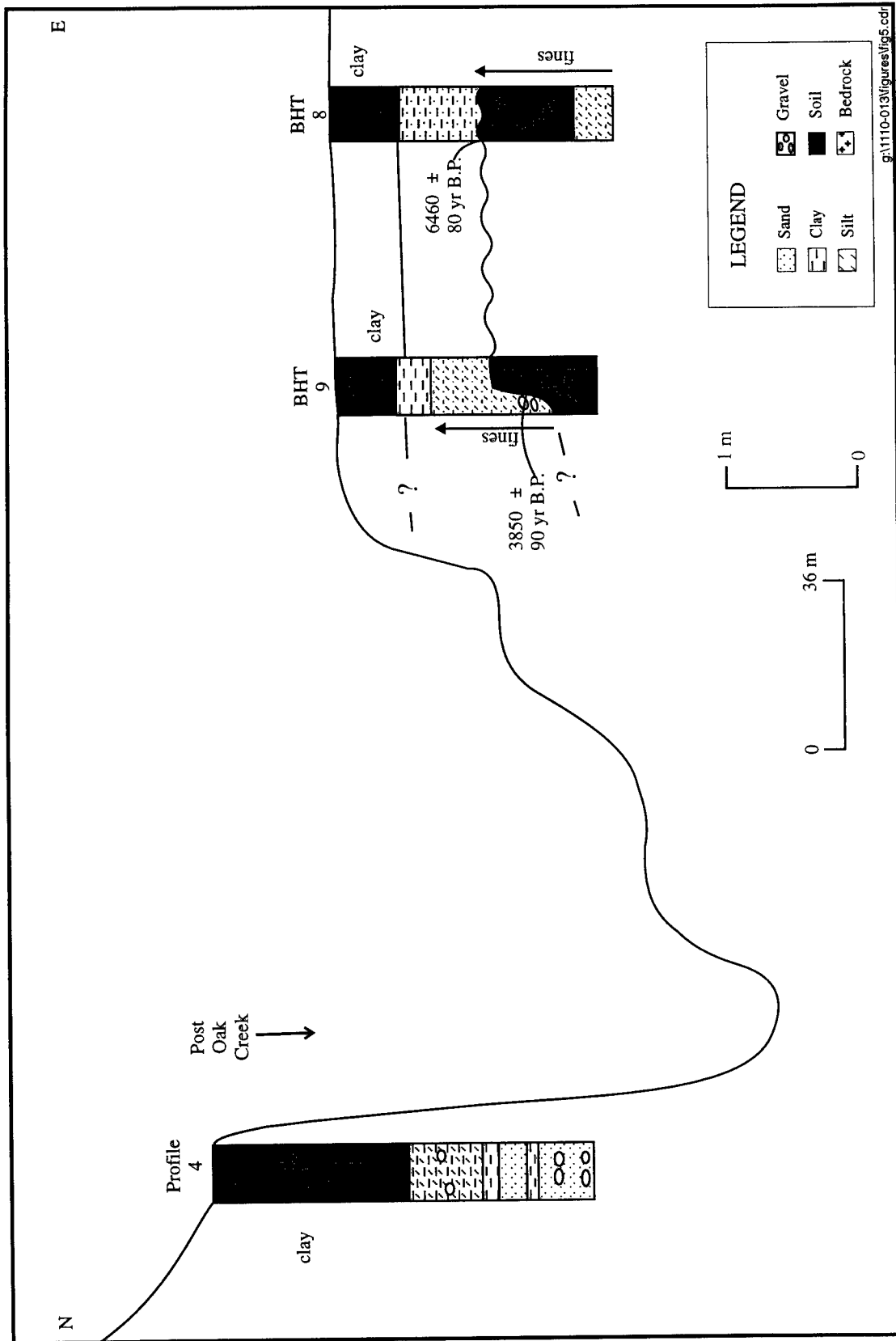


Figure 5. Generalized cross section through the north section of the study area.

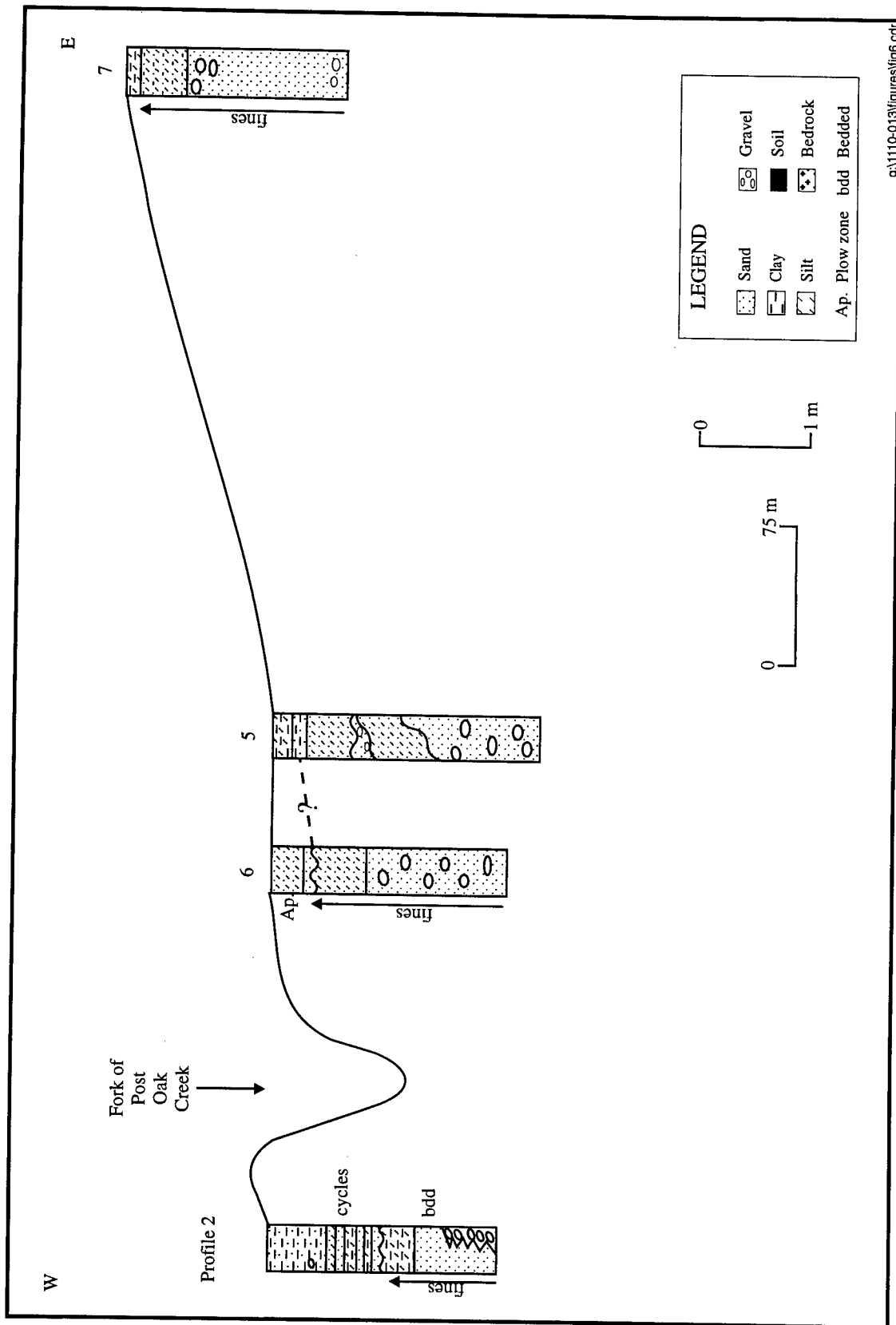


Figure 6. Generalized cross section through the center of the study area.

order of 1 to 2 m in thickness. It is possible that these might be crevasse-splay deposits; however, the thickness of the units, the lack of fine clay interbeds, and the absence of other characteristic crevasse-splay features would tend to argue against this. A more likely possibility is that they represent deposition in a laterally migrating channel margin levee that slowly moved toward the site of the sediments observed through time. That is, as the channel axis slowly moved closer with time, the sediment deposited gradually became coarser. This type of deposit is relatively rare, because the only way for them to be preserved is for either the channel to reach a certain point and then stabilize, or begin moving in the opposite direction, or for it to avulse to a new location elsewhere, since if the channel continues to approach the deposition site, the deposits would eventually be destroyed. It is interesting to note that in Profile 1, located at the westernmost edge of the valley, there is an abrupt change in the sediment type at the top of the coarsening upwards sequence that would be the typical signature of an sudden avulsion of the stream axis away from this location. Similarly, BHT 3 exhibits an abrupt break above the coarsening upward sequence, indicating a rapid change in sedimentary source and energy level. This would seem to indicate that avulsion is occurring in the Post Oak Creek valley (albeit at a modest rate), even though no abandoned channels or sloughs are preserved, probably due to the narrowness of the stream valley.

The remaining sediments observed in the profiles and backhoe trenches were clays and silts, some of which were sandy or gravelly in part. These sediments also displayed evidence of periodic hiatuses or diastems in sedimentation or large reduction in the average rate of sedimentation, either in the form of buried surfaces that displayed evidence of organic enrichment and soil formation (note the buried soils encountered in Profiles 2 and 4, and BHTs 1, 8, and 9) or prominent lag gravels (Profile 1 at a depth of 138 cm, and BHT 2 at 74 cm are good examples of this). All of these factors—very fine average grain size, variation in sedimentation rates, exposure to sub-areal erosion and removal of fines to produce lag gravels—indicate that these clayey units probably were laid down outside of the active channel belt, most likely in the back-swamp/overbank floodplain depositional environment. The silts, clays, silty clay, and sandy clay sediments probably represent deposition during periodic inundation of the back-swamp by floodwaters. Some of these sediments may have been carried onto the floodplain by the intermittent streams that drain the high ground on either side of the valley, and later reworked by floodwaters. Some of these units may also represent sedimentation in ox-bow lakes and abandoned channels, although there is no direct evidence of this. The relationship of the sandy and clayey facies, and the ratio of coarsening upward to fining upward sequences, indicates that the streams in the study area shifted their active meander belts with some degree of frequency over time but that the shifts were more often gradual than abrupt avulsions (see Figures 4 through 6). In other words, the evidence would tend to indicate that the shifts tend to occur by lateral channel migration rather than by the process of avulsion. This is somewhat unusual in fluvial systems, and is not the situation that appears to have occurred even along streams, particularly East Cache Creek, just to the east in this immediate area (Shanabrook 1993a:70, 74-75). It is possible that the narrowness of the Post Oak Creek valley has led to the destruction of much of the evidence of avulsion events, but seems more likely that local factors—again the limited width of the valley, coupled with the abundance of coarse clastics as opposed to silts and clays—have caused lateral channel migration to be favored over abrupt channel switching.

The soil profiles of the observed deposits range from relatively well-developed to very poorly developed. In fact, other than the area tested by BHTs 8 and 9, the entire Post Oak Creek valley exhibits only poor soil development with C, AC-C, A-C, and A-C-2A-2C soil profiles being common. This lack of pedogenic development may be due to the deposits being of relatively recent age. However, it should also be noted that soil development may have been severely retarded first by the constant wetting and poor drainage common to an active floodplain, second by the frequent, periodic erosion and removal of the organic-rich upper members of the soil (i.e., the O, A, and B horizons) by flood and stream action, and third by the periodic deposition of fresh alluvium on portions of the existing surface. The effects of the erosional scouring and

deposition of fresh alluvium are readily apparent in BHTs 4, 5, and 7, and Profiles 1, 2, and 3 where there is no or very minimal soil development and little accumulation of organic rich zones. Several of the paleosols that were observed (BHTs 8 and 9) had been truncated by erosion before being buried, while others were extremely thin (often less than 15 cm thick), indicating a constant influx of fresh alluvium at rates higher than organic accumulation. It is likely, given the width of the valley, the local topography, and the limited amount of soil cover over bedrock, that this area is subject to intense, periodic episodes of large scale flooding and that surfaces several meters above normal creek level could be subject to severe erosion and subsequent deposition of fresh alluvium. Even surfaces from 5.4 to over 10 m above Post Oak Creek display little or no present soil development (Profiles 1 and 3) indicating that these surfaces are and have been undergoing erosion for some time, or that periodic deposition of fresh alluvium is retarding pedogenesis or some combination of these two processes (erosion and deposition) is taking place in these areas. All of this indicates that the "youthful" appearance of the sediment could be due to many things other than just the age of the deposits being very recent. However, given the radiocarbon humate dates obtained from similar sediments in the eastern and central portions of the Fort Sill Military Reservation, it is probably safe to conclude that most of these sediments are Late Holocene or younger in age (Shanabrook 1993a; Weston et al. 1993).

As noted above, soil development in the area of BHTs 8 and 9 appears to be somewhat better on average than elsewhere along Post Oak Creek. Although the soil profile from BHT 8 (A-AC-2A-2C) is relatively similar to that observed in much of the study area, taken in combination with that of BHT 9 (A-Bt-C-2A) it appears to be somewhat more developed than the average (Figure 7). The 2A horizons in BHT 8 and BHT 9 date from $6,460 \pm 80$ and $3,850 \pm 90$ yr BP, respectively (Beta-76099 and 76100). It was originally assumed that the two 2A horizons represented the same paleosol, or were at least directly related to one another, as the trenches were spaced only 60 m apart; however, their dissimilar radiocarbon ages would argue otherwise. In order for them to represent the same buried soil, the soil would either have to be extremely time-transgressive over a very short distance (which is possible, but seems unlikely), or would have suffered extreme differential erosion that removed much of the upper portion of the soil in BHT 8. Additional research is necessary here in order to resolve this issue. Whatever the case, the presence of the 3,850 yr old soil in BHT 8, sealed as it is beneath a clay-rich Bt horizon, lends credence to the recent hypothesis that, given the right conditions, a Bt horizon can develop in as little as 3,000-5,000 years, rather than the 10,000 or more years previously thought required (Saunders et al. 1992; Shanabrook 1992).

The observed radiocarbon ages of $6,460 \pm 80$ and $3,850 \pm 90$ yr BP for these 2A horizons would appear to be significantly older than anything else observed in the study area, or on most of the Fort Sill Military Reservation for that matter (Shanabrook 1993a:75-81), although there are deposits of this vintage along East Cache Creek south of Fort Sill (Northcutt et al. 1989:11). The more mature soil profiles observed at BHTs 8 and 9 indicate that the process of pedogenesis has been allowed to work with less hindrance here than elsewhere on Post Oak Creek.

To summarize, soil development in the study area ranges from none to moderate. The low level of development would tend to indicate that much, if not all, the sediment observed is Late Holocene in age (younger than 3,500 yr BP), although some of the sediments in BHTs 8 and 9 are older, based on their more fully developed soil profiles and radiometric dates. The available data also indicates that some of the soil profiles' "youthful" appearance is probably due to factors other than strictly recent deposition.

Without additional data it is not currently possible to determine precise rates of deposition for this area, but the evidence certainly suggests that there has been considerable variation in sedimentation rates and styles over time in this narrow valley.

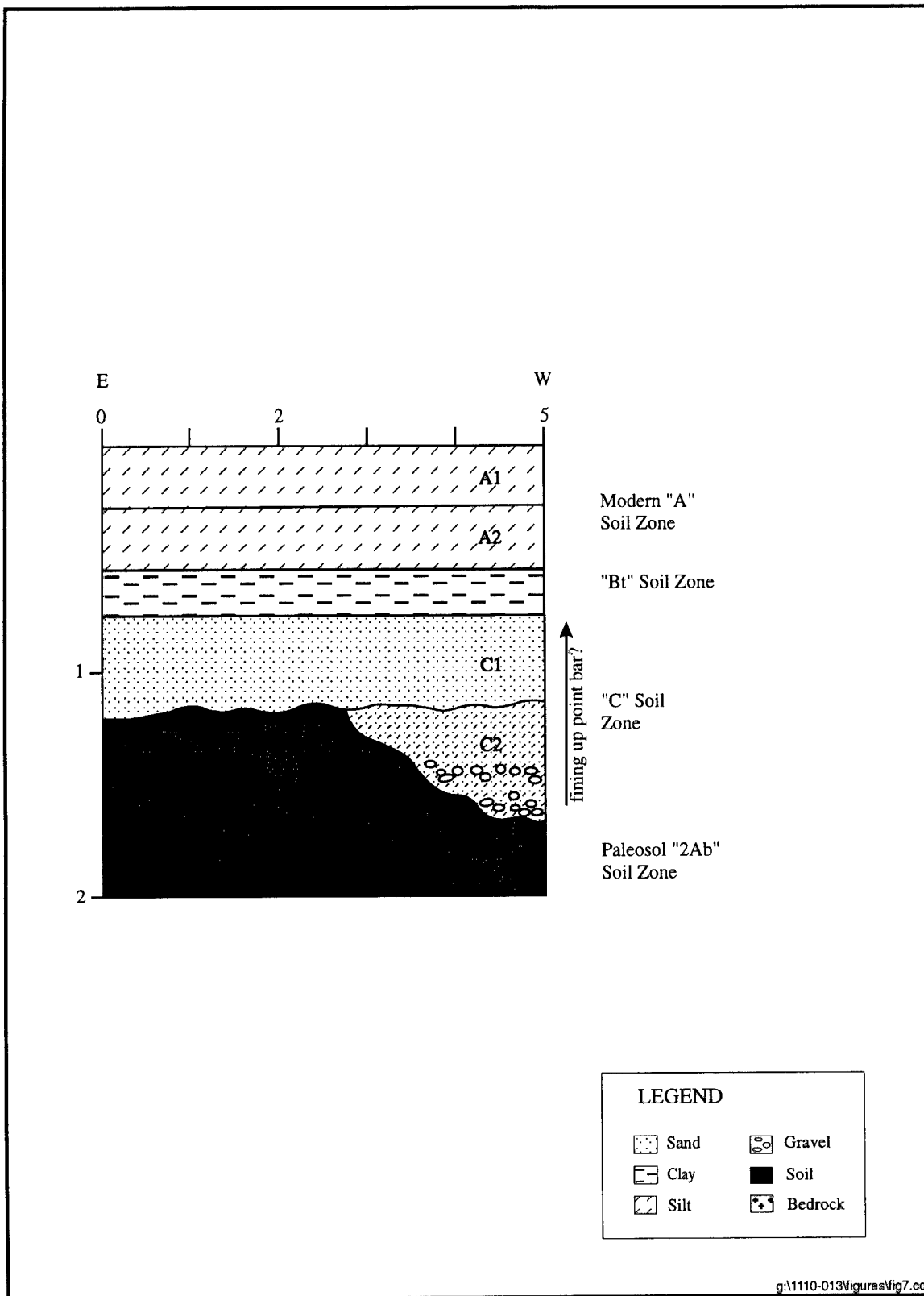


Figure 7. Profile of the south wall of Backhoe Trench 9.

DISCUSSION

Using the data and observations from this and other studies as a guide, the following section will attempt to interpret the Quaternary geologic history of this portion of Fort Sill in a manner consistent with the information that is currently available.

At present it is impossible to reconstruct in any detail the geologic history of this area for the Pleistocene and early Holocene, due to a general lack of data. Based on data from other studies done in this region (Madole 1988), it is likely that there were alternating cycles of erosion and deposition during the Pleistocene associated with the climatic and sea-level changes caused by the waxing and waning of glacial cycles. Some of these deposits are exposed to the northeast in the area of Brown's Creek and to the east in the area between East Cache and Beef creeks. However, the Pleistocene deposits that are exposed apparently predate 80,000 yr BP, and so were stable surfaces well before the arrival of man in this region. It is unlikely that remnants of these and other Pleistocene-age deposits are either exposed or buried under younger Holocene-age floodplain sediments in the study area, given the limited width of the Post Oak Creek valley, the limited depth of the valley above bedrock, and the considerable relief of the surrounding topography, although Hall (1978:58) indicates that there may be a Pleistocene gravel terrace located roughly 6 m above the valley floor at the upstream end of the study area. However, this was not observed during the course of this study. All that is known for certain is that there was deposition in portions of the region adjoining the study area during the Pleistocene, particularly along the ancestral East Cache Creek, and that most of these sediments have probably been either removed by erosion or reduced to small remnants buried at the margins of the areas examined in this study.

It is also difficult to say much about the types of depositional environments active in the study area during the Early and Middle Holocene. As noted previously, most of the Quaternary deposits observed along Post Oak Creek and its tributaries appear to be younger for the most part than 3,000 or 4,000 yr BP, the end of the Middle Holocene, although one 2A horizon from BHT 8 is known to date from 6460 ± 80 yr BP, comfortable within the Middle Holocene. Further, data from drainages just to the east of this area indicate that there could have been considerable fluvial deposition during these periods, and that some of these deposits may be preserved at depths beneath the Late Holocene fill, at the valley margins, or in other favorable topographic areas (Hall 1978; Northcutt et al. 1989; Shanabrook 1993a:77- 81). However, the limited depth to bedrock in most of the study area (3 to 5 m on average) and the narrowness of the stream valleys in many areas would argue against the burial and preservation of large portions of earlier sedimentary units, since these valleys would tend to be periodically "swept clean" by periods of erosion or increased stream channel downcutting and migration, particularly in light of the relatively well-documented period of catastrophic erosion and large-scale downwasting caused by regional climatic changes that occurred in this portion of North America between approximately 6,000 and 4,000 yr BP (Abbott 1990:56-57; Holliday 1989; Shanabrook 1993b:126-131). If any remain, it is likely that these earlier deposits will exist only as small floodplain remnants or inset terraces located along valley margins buried under younger sediments. It is also likely that they will strongly resemble the younger deposits that were observed, since the currently available data from this region would tend to indicate that the style of fluvial deposition has remained constant over the latter part of the Quaternary (Shanabrook 1993a:77-78).

The vast majority of the sediment examined is thought to be of Late Holocene age, and appears to have been laid down by a somewhat sinuous, meandering stream. As noted previously, there is considerable evidence of this—apparent point bar and levee deposits, channel cut and fill, rapid shifts in sediment type, and so on—in much of the study area. However, there are some portions of the study area along Post Oak Creek in which the deposits encountered appear more typical of those to be expected from a braided stream or a low-sinuosity, meandering stream (Cant 1982:119; Reading 1978:38, 53). That is to say, there is little

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evidence of lateral migration of differing facies and the amount of coarse grained material (sand and gravel) is much greater than the finer grained sediments present (see Figure 6, BHT 5 and the modern point bar in Figure 4 in particular).

Depositional styles of this nature would not seem unusual given the relative narrowness of the Post Oak Creek valley, the small thickness of sediment above bedrock, the high topography that borders it, and the ready supply of coarse clastics available from the granite, gabbro, and conglomerate outcrops that surround it on all sides. This style of deposition does not prevail everywhere along Post Oak Creek, nor apparently at all times (recall the considerable number of fining and coarsening upward sequences noted above which indicate gradual, lateral shifting of environments), but it does indicate that the stream has behaved differently over time and/or in differing portions of the study area, with variations in energy levels, sediment load and types, and the width of its floodplain. In this respect, it resembles the situation observed in earlier studies along Medicine Creek just to the east, in which that stream's depositional style appeared to vary between that of a sinuous, meandering system and that of a braided, low-sinuosity system from area to area over time (Hall 1978:63-65; Shanabrook 1993a:78-80).

A low-sinuosity depositional style would also support the view expressed earlier in this report and in the study done by Hall (1978:59-60) that much of the sediment observed along Post Oak Creek is late or very late Holocene in age, probably being less than 2,000 years and in some cases less than 1,000 years old. This would in turn imply that portions of this creek valley have undergone a continuous cycle of rapid erosion and deposition throughout the Holocene, as fresh deposits of alluvium are laid down and older deposits are eroded and re-worked. However, as noted previously, most of the sediments observed appear to be more typical of the pattern expected from a sinuous, meandering stream that avulses on occasion (see Figures 3 through 7). Further, even though the sediments appear relatively young based on their level of pedogenic development, this apparent depositional style would allow for the preservation of some amount of older sediment (as expressed in BHTs 8 and 9), although this ability to preserve previous deposits would have been limited by the small total thickness of sediment above bedrock (probably less than 5 m). If this analysis is correct, then during the last 3,000 to 4,000 years, Post Oak Creek has been meandering and avulsing back and forth across its floodplain, slowly infilling its valley with from 3 to 5 m of alluvium, and in the process destroying much of the earlier deposits that may have been located there prior to the start of the Late Holocene (if, indeed, any still existed after the postulated Middle Holocene erosional episode).

One problem that is unresolved is whether the current Post Oak Creek channel is reflective of its typical size through time, or whether it represents a recent entrenching of a Late Holocene channel into bedrock and portions of the pre-existing floodplain. Data from the study Hall (1978:58) conducted indicate that the modern Post Oak Creek is currently widening and entrenching its present channel, and data from the present study do not refute this view. Data from other streams in this area are mixed, with some indicating ancient stream channels being fully as wide and deep as the current ones (Hall 1978:64-65), while other observations would tend to argue that the average channels were not as deep as the present ones (Northcutt et al. 1989). In either case, the deeply entrenched modern channel would tend to imply increased rates of erosion coupled with decreased rates of deposition, probably related to decreased average rates of water flow in the stream (i.e., climatic conditions drier than in prior times, punctuated by brief periods of heavy rainfall and flooding). If this is in fact the case, then a similar argument can be made for increased rates of erosion of the surrounding floodplains and uplands by alluvial sheetwash. It appears from other studies done in this region (Abbott 1990:57; Baumgardner 1986:20-27; Hall 1982:47-63; Shanabrook 1993b) that the period of Late Holocene floodplain aggradation ended between 1,000 and 800 yr BP, and a period of channel incision ensued. This period of channel downcutting was followed by a brief period of relative floodplain stability between 600 and 400 yr BP (Abbott 1990; Hall 1982; Pheasant 1982) after which channel incision and floodplain erosion resumed. Which (if either) of these periods of erosion is responsible for the current

entrenched nature of the streams in the study area is unknown. In general, however, the Late Holocene depositional history proposed for the study area using the available data—moderate to rapid deposition ending in the formation of a Late Holocene soil followed by a period of renewed erosion and channel incision—appears to be quite common for much of southwestern Oklahoma and western Texas, based on studies done at Justiceburg Reservoir (Abbott 1990; Blum 1989), along the Little Red River (Baumgardner 1986:20-27), in Delaware Canyon (Hall 1982; Pheasant 1982), and at the proposed Lowrance Reservoir (Shanabrook 1993b).

SUMMARY AND ARCHEOLOGICAL IMPLICATIONS

In summary, the Quaternary geologic history of the study area indicates that during the Pleistocene, alluvial sediments may have accumulated in the valley of the ancestral Post Oak Creek as they did in other areas to the east. Sediments of this period may have accumulated in other portions of the study area as well. It is believed that most if not all of these deposits were removed by later erosion or have gone unrecognized. Any that remain will be exposed along the margins of the study area or deeply buried under portions of the current Post Oak Creek floodplain. It is likely that the floodplain of the ancestral Post Oak Creek began to aggrade during the late Pleistocene or Early Holocene. During the Early and Middle Holocene, this aggradation probably took the form of sedimentary deposition by a meandering, moderately sinuous stream. It is likely that there were a number of hiatuses or breaks in sedimentation during this 7,000 year period, marked by intervals of erosion and channel entrenchment, particularly during the long hot, dry period in the Middle Holocene noted above. While it is certain that there was deposition in the valley of Post Oak Creek during this period given the ages of the 2A horizons in BHTs 8 and 9, it is equally certain that most of the sediment deposited was removed by later cycles of erosion and deposition. The Late Holocene saw continued aggradation in the valley of Post Oak Creek as sediment laid down by sinuous, meandering and braided, low-sinuosity streams continued to accumulate. Episodic periods of erosion and changes in deposition rates affected sedimentation in differing portions of the valley to one degree or another. The most recent portion of the Holocene has experienced the onset of drier conditions, which have apparently caused the pronounced entrenching of the stream channels, particularly the main channel of Post Oak Creek and its main tributary, and potentially has changed the balance between the rates of erosion and deposition.

The Quaternary depositional and erosional history of the study area has a number of important implications for the location and preservation of cultural sites. The most important of these is that there is little likelihood of finding single-component, sealed, buried sites in the vast bulk of the Post Oak Creek valley that predates the Late Holocene. The narrowness of the valley, the limited thickness of the Quaternary sediments, and the rugged topography all indicate that it would be highly unlikely that many pre-Late Holocene deposits remain in the study area, particularly in the southern and central portions. This view is reinforced by the large number of fining and coarsening upward sequences observed which would tend to indicate that the Post Oak Creek valley has been swept thoroughly clean of pre-existing deposits by the action of a meandering fluvial system. However, the presence of a thick paleosol in the northern portion of the study area (see Figure 6), just southeast of the study area (Weston et al. 1993:52-53, 57-59), in the area of site Cm-240 (Hall 1978:58-60; Hall mentions cultural materials in the paleosol), and in the area of BHTs 8 and 9 indicates the existence of one or more ancient stable surfaces dating from some time either in or prior to the Late Holocene in portions of the Post Oak Creek valley, which could have served as habitation surfaces. Further, none of these paleo-surfaces is buried to any great extent, with the deepest being only 1.4 m from the current ground surface. Thus, the potential for buried, sealed sites at reasonable depths exists, although it is limited by the factors noted above. Additional investigation of certain portions of the Post Oak Creek valley would probably help define the extent of the paleosols and reveal their ages and potential for containing prehistoric sites. Nonetheless, the potential for buried, sealed Pleistocene, Early Holocene, and Middle Holocene age

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sites remains very small, although there is some potential for buried Late Holocene sites, particularly in the area of the known paleosols. However, given the width of the valley, the availability of higher wooded uplands directly adjacent to the streams, and the frequency with which the stream appears to have flooded, it is not unreasonable to suppose that the ancient inhabitants of this area may have avoided living on the floodplain or nearby surfaces altogether and that only very small, seasonal occupation sites may be found there. Further, although there is potential for buried archeological deposits, these deposits will be relatively difficult to locate because of the lack of surface expression of the potential habitation sites and the uncertainty as to the extent and location of the paleo-surfaces on which they might be located. This problem is not unusual for buried sites, which are difficult to find even in the best of circumstances, but the lack of surface features to serve as reliable guides for locating these relatively shallowly buried sites is a severe handicap. Given (1) the limited size of the preserved paleo-surfaces within the study area; (2) the portion of these surfaces that formed a portion of the facies belt containing the most favored occupational sites (i.e., the active channel belt); and (3) the rate at which this belt could shift with time, predicting the location of areas that might have a higher probability for buried cultural resources would be nearly impossible with the data now available. Only further work, based on the acquisition of additional data in the form of sediment profiles and radiocarbon ages, will help alleviate this problem.

CHAPTER 6

RESEARCH RESULTS

by
Floyd B. Largent, Jr., and Kellie A. Krapf

A total of 5,625 acres was examined during the 1993 survey of selected areas of Fort Sill (see Figure 1). During the course of the survey, 24 sites and 62 nonsite localities were recorded. Seven of the sites are previously recorded prehistoric lithic scatters; an eighth is the Adams Hill Tar Pit, a paleontological site known for its excellent Miocene faunal assemblage. A total of 16 new sites was recorded, with 11 exhibiting a historic component and 12 sites exhibiting a prehistoric component. Twenty of the nonsite localities were of the prehistoric period, 40 were historic, and one was multicomponent in nature.

SITE AND LOCALITY DESCRIPTIONS

Survey Area 1

Survey Area 1 consists of an 807-acre parcel of land located on the east-central boundary of the Fort Sill Military Reservation (Figure 8). Topography of the survey area consists primarily of level to gently rolling plains, with several flat-topped, mesa-like low hills located on the western side. The near surface bedrock consists of shale with some sandstone (Dames and Moore 1980). Soils in the area are dominated by the Vernon soil series, with smaller areas of Foard and Tillman soils, Eroded loamy land, Lucien-Zaneis-Vernon complex soils, and Zaneis loam. Limited areas of alluvial soils (Port loam and Breaks-Alluvial land complex) are found along an intermittent branch of Ninemile Beaver Creek in the extreme northern portion of the survey area (Soil Conservation Service [SCS] 1970). The natural vegetation within Survey Area 1 consists of mixed grasses, dispersed mesquite trees, and dense gallery forests along the intermittent branches of Ninemile Beaver Creek, which form the only waterways within the survey area.

In 1977, an archeological survey of Fort Sill was conducted by personnel from the Museum of the Great Plains; during the course of this survey, a series of 60-acre quadrats (measuring 500 m on a side) was examined for cultural resources. Portions of seven of these quadrats, comprising approximately 330 acres, fall within the present survey area. The 1977 survey resulted in the documentation of one site, 34Cm-309, within what is now Survey Area 1. This site, which is recorded as a prehistoric lithic scatter of unknown affiliation, was not relocated during the 1993 Fort Sill survey. Only one new site, a prehistoric lithic scatter designated as 34Cm-507, was located. In addition, a total of 11 localities, designated 93-266 through 93-276, was recorded within Survey Area 1.

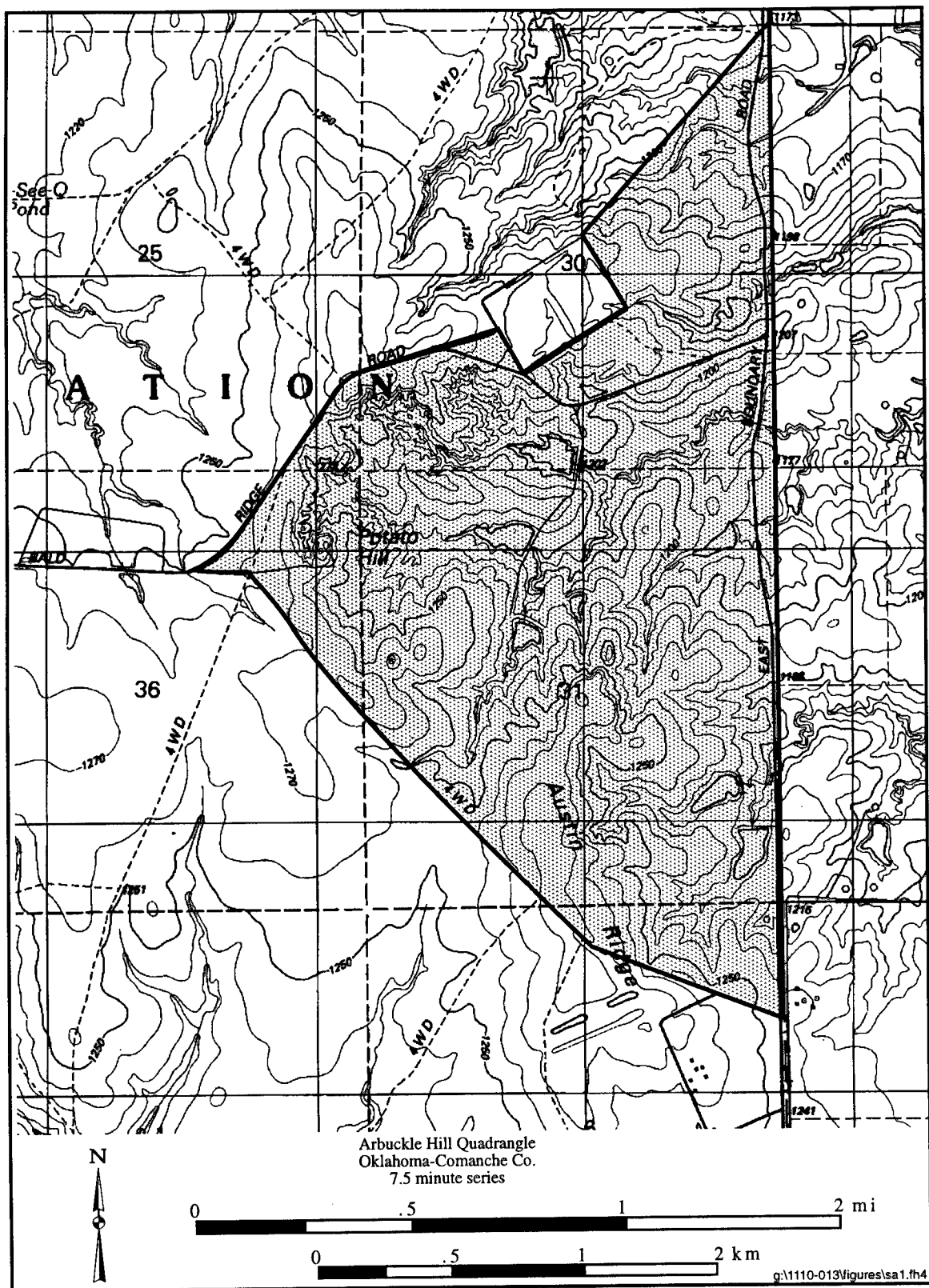


Figure 8. Location of Survey Area 1 within the Fort Sill Military Reservation.

Site 34Cm-507: Potato Hill Site

This site consists of a low density prehistoric lithic scatter located atop Potato Hill, a prominent physiographic feature situated in the west-central portion of the survey area. The crest of this mesa-like hill is located at an elevation of approximately 387 m (1,270 ft) above mean sea level (amsl). Vegetation in this area consists exclusively of short grasses; the soils are mapped as Vernon soils, 5 to 12 percent slopes.

This site is located on a hill which has been in continuous use by the military as a firing point, lookout area, and training center for more than 100 years; during that time, the hill top has suffered from extensive erosion as well as impacts caused by foot traffic, vehicular traffic, and construction. However, sufficient artifactual material was present on the surface to recognize this locality as a prehistoric site. Ground visibility is generally good, ranging from approximately 50-100 percent across the surface of the hill. Soil consists primarily of shallow, dark brown to brown, sandy loam, covered with a thin veneer of sand that was brought onto the site to serve as fill for sandbags and to build up the top of the hill as it continued to erode.

Four flakes, two core fragments, and a chert side scraper were observed on the ground surface. The scraper, one quartzite flake, and one chalcedony core fragment were collected. Raw materials included cherts, quartzite, and chalcedony. A total of seven shovel tests was excavated at the site; Shovel Test 3 yielded a single angular fragment of quartz that may be of cultural origin. Site area is estimated at 3,120 m² or 93 m NS by 40 m EW (Figure 9).

Prehistoric Artifacts

One quartzite flake, one chalcedony core fragment, and one chert side scraper were collected from the surface of the site; a single angular quartz fragment, of dubious cultural origin, was collected from one shovel test. Additional chert and quartzite debris were observed on the surface, but not collected.

The side scraper has been unifacially retouched along one excurvate lateral edge. It is manufactured from a coarse-grained, light gray chert, which is marked with occasional milky white inclusions. This specimen is somewhat thick; its measurements are 47.5 mm in length (l) by 24 mm in width (w) by 15 mm in thickness (t), with a weight of 21.7 g (Figure 10). Cortex is visible on the lateral edge opposite the retouched edge.

The core fragment is made of gray to milky white chalcedony, and bares traces of cortex in small vesicles on one face of the piece. This artifact measures 28 mm (l) by 24 mm (w) by 19 mm (t), and weighs 9.6 g. A single quartzite flake was collected from the surface at this site. This rough secondary flake measures between 6.3 and 9.5 mm in size, and weighs .8 g.

One potential artifact was collected from a shovel test. This piece is an angular fragment of transparent quartz measuring between 9.5 and 12.5 mm in length. It was collected because the material type, which is found in the nearby Wichita Mountains, is nevertheless exotic to the site and was most likely brought onto the site by an aboriginal inhabitant.

Summary

This site most likely served as an upland hunting station or lookout area in prehistoric times; however, it is not possible to determine its exact function or cultural affiliation. During the course of the past century, military use of Potato Hill has destroyed most of the site's original contextual integrity; disturbance has been

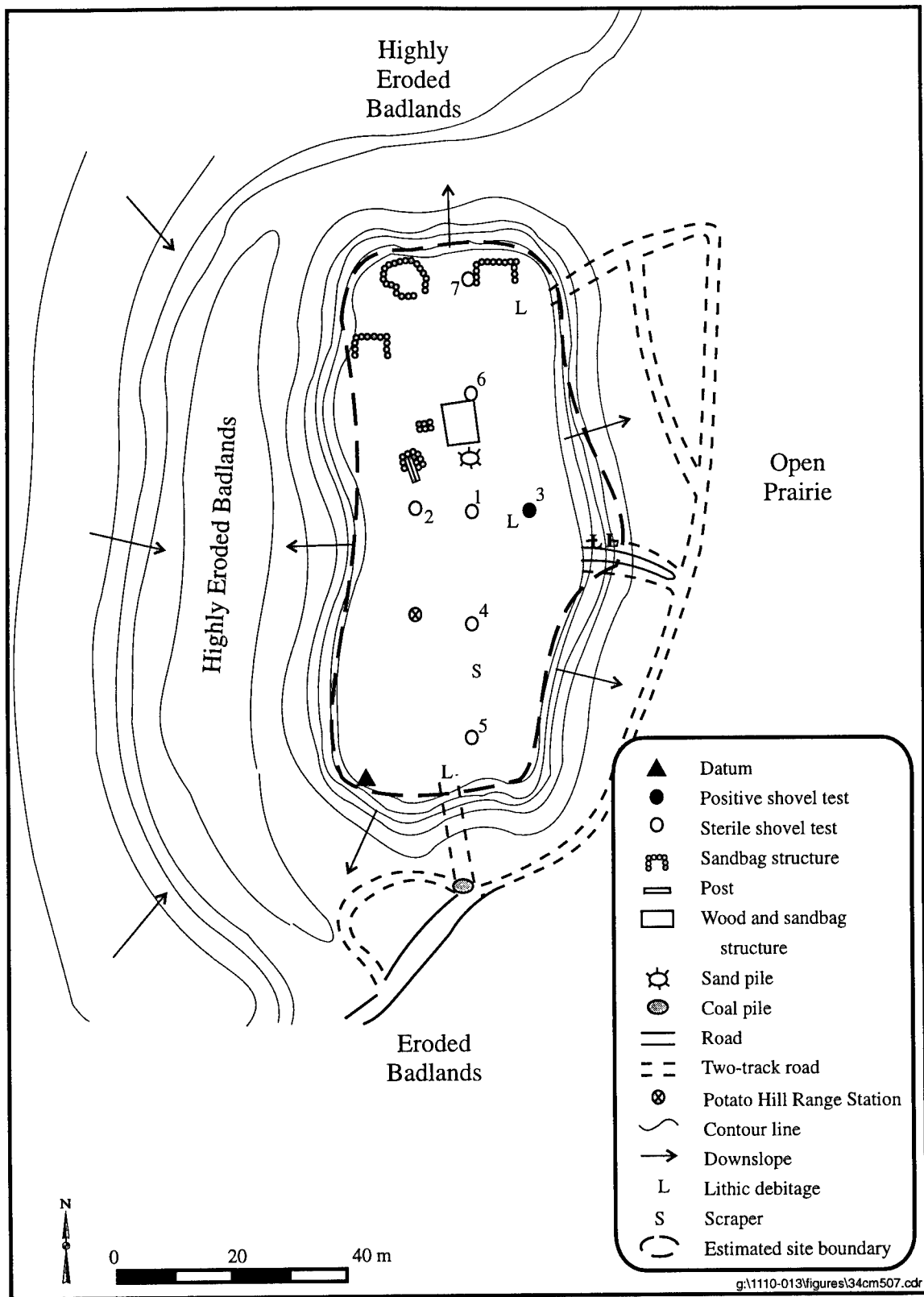


Figure 9. Plan map of site 34Cm-507, the Potato Hill Site.

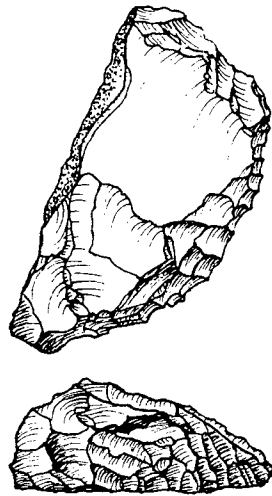


Figure 10. Lithic artifact recovered from 34Cm-507 during the 1993 survey: Chert side scraper. (Scale 1:1)

heavy and widespread. If any intact subsurface deposits remain, they are minimal and spotty in nature. In addition, many of the diagnostic artifacts originally present on the hilltop have undoubtedly been removed by relic collectors. As it exists today, this site offers little in the way of research potential, and, thus, is not recommended for inclusion in the National Register of Historic Places (NRHP). No further work is recommended for the Potato Hill site.

Locality 93-266

This locality yielded a single small quartzite flake that was found on a highly eroded surface in the northernmost portion of the survey area. No other cultural materials were found at this locality; however, Locality 93-267 is situated less than 50 m to the north. A single negative shovel test was excavated in the vicinity of the find. The nearest prehistoric site, 34Cm-301, is located approximately 300 m to the west.

Locality 93-267

This locality is located less than 50 m north of Locality 93-266 and consists of a single possible flake of gray quartzite. No other cultural material was found nearby on the surface or in the single negative shovel test which was excavated nearby. The nearest prehistoric site, 34Cm-300, is located approximately 301 m to the west.

Locality 93-268

Examination of this locality revealed the remnants of a temporary bunker fashioned from wooden boards, sawn logs, and old-fashioned cloth sandbags. This structure, which measures approximately 10 m long, consists of two concentrations of sandbags and wood located within a dense oak/hickory stand along the bank of an intermittent drainage. The find appears to date at least from the early 1970s. No other cultural

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material, military or otherwise, was observed in the immediate area. No historic sites are recorded within 5 km of this locality.

Locality 93-269

Survey of this locality revealed a rectangular concrete slab that measures approximately 6.5 m north-south by approximately 1.5 m east-west. This slab, which may be a part of a foundation or retaining wall, exhibits a metal reinforcement network and seems to have been poured into a plywood mold; this construction technology post-dates the mid-1950s. Therefore, the find appears to be military in nature; it also appears to be in secondary context. No other cultural material was observed in this locality's vicinity.

Locality 93-270

This find, which was recovered from the side-wall of a large erosion gully, consists of the distal portion of a prehistoric projectile point. The artifact is made of an opaque, brown-speckled white Tecovas jasper, and exhibits fine workmanship. The gully system from which the point fragment was recovered was examined intensively, but no additional cultural materials were recovered; in addition, two shovel tests excavated on nearby bluffs overlooking the gully proved negative. If there was a site here at one time, it has since been destroyed by natural erosion. The nearest known prehistoric site, 34Cm-309, is located approximately 1,200 m to the south.

Locality 93-271

This find consists of a large chunk of highly weathered concrete that appears to date from the World War I era. The concrete fragment, which was found in the bottom of an erosional gully, bears the impression of a post in one side and is undoubtedly of military origin. No other cultural materials were found.

Locality 93-272

This locality consists of an incomplete building located in a wooded area next to an intermittent stream. The building, which is constructed of cinder blocks and concrete, appears to have been abandoned and partially destroyed before it was completed. The northeast and southeast corners of the structure consist of reinforced, poured concrete plinths which appear to have been broken shortly after construction. There is no east wall. The fragmentary west, north, and south walls are constructed of 30 cm x 12 cm cinder blocks mortared with concrete, to a current maximum height of eight courses. The first course of each wall is cemented into a shallow trench in the ground. When complete, the structure would have measured approximately 4 m north-south by 6 m east-west. A rusty six-ounce tin can, measuring 10 cm in diameter and 4 cm in depth, was found within the remains of the structure. The structure is believed to postdate 1960.

Locality 93-273

A single quartzite hammerstone was observed at this locality. The artifact was found on the western slope of a ridge overlooking an intermittent drainage and represents the only cultural material found at this locality. The nearest recorded prehistoric site, 34Cm-309, is located 300 m to the southwest.

Locality 93-274

This locality yielded a fine-grained quartzite flake and a possible quartz hammerstone; as with Locality 93-274, this find was discovered on the western slope of a ridge overlooking an intermittent drainage. The ridge is an extension of Austin Ridge. No other cultural materials were found in the area. The nearest recorded prehistoric site, 34Cm-302, is located approximately 1,100 m to the southwest.

Locality 93-275

Survey of this locality revealed more than 50 shell casings for a 105-mm cannon in association with the body of a 1946 Chevrolet automobile. The car lacks both a motor and a front end; the year model was obtained from the Vehicle Identification Number (VIN) embossed on a plate on the dashboard. The car was placed in this area for use during military training exercises and has apparently been employed as a gun emplacement. No historic sites are located within 1,000 m of the site, although 34Cm-309, a prehistoric site, is located 500 m to the northwest.

Locality 93-276

This locality yielded a single quartzite flake that was approximately 150 m east of an intermittent drainage. The flake was observed within an old, overgrown firebreak atop a small upland ridge. An intensive examination of the immediate area revealed no additional cultural materials nor did the excavation of a single shovel test at this location. The nearest recorded prehistoric site, 34Cm-302, is located approximately 1,100 m to the southwest.

Survey Area 2

Survey Area 2 consists of a 608-acre tract located on the southern boundary of the military reservation immediately south of the South Arbuckle Impact Area (Figure 11). Approximately 408 acres of this project area were surveyed; about 200 acres were not surveyed, since they were located within the impact area and have a high potential for containing unexploded ordnance. The entire project area consists primarily of gently rolling plains, although a long ridge feature including Arbuckle Hill is located on the east-central portion of the project area and Adams Hill falls on the west-central border of the project area. Lake George is situated near the center of the project area. Underlying near surface geology consists mostly of sandstone and mudstone conglomerates, although the eastern portion of the survey area is described as exhibiting shale with some sandstone (Dames and Moore 1980).

Vegetation for this area is dominated by tall prairie grasses, although thick blackjack oak and post oak forests are present along Wrattan Creek and along some portions of Lake George's banks (Dames and Moore 1980); willows are also present in the lake's vicinity. Soils consist of large stretches of the Lucien-Zaneis-Vernon series, particularly in the eastern portion of the survey area, with the western soils including Zaneis-Slickspots complex, Zaneis loam, and Vernon soils, with small areas of Port clay loams and Broken alluvial lands located in the bottomland areas around Wrattan Creek (SCS 1970). Wrattan Creek and its tributaries are the only watercourses that drain Survey Area 2.

In 1977, portions of seven 60-acre quadrats were surveyed by the Museum of the Great Plains in what is now Survey Area 2; these amounted to a total of approximately 280 acres. The Museum recorded only one site

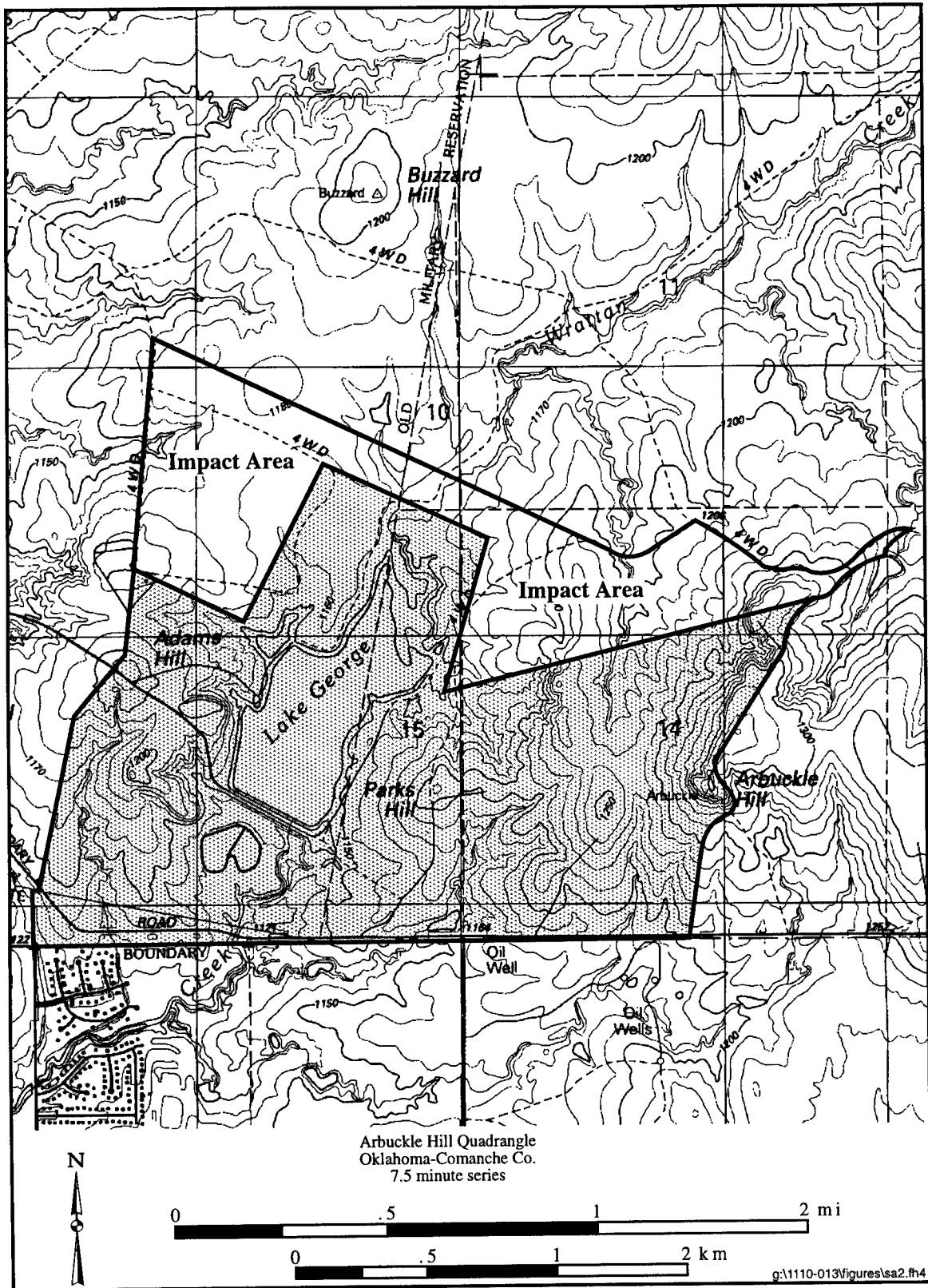


Figure 11. Location of Survey Area 2 within the Fort Sill Military Reservation.

for this survey area: the Adams Hill Tar Pit, a Miocene-age paleontological site which may have served as a source of petroleum adhesives during prehistoric times. This site was re-recorded during the course of the current survey; one locality, 93-326, was also recorded.

34Cm-350: Adams Hill Tar Pit

This site lies near the crest of Adams Hill, on the western edge of the survey area. The locale lies at an elevation of approximately 372 m (1,220 ft) amsl; vegetation is dominated by tall grasses. The soils are mapped as Lucien-Zaneis-Vernon complex, 5-12 percent slopes.

Although it remains poorly known, the Adams Hill Tar Pit is considered one of the oldest such features in North America. An excellent paleontological site that has yielded faunal material from the Miocene period onward (Towana Spivey, personal communication 1993), the tar pit has been assigned archeological site number 34Cm-350 despite the fact that no archeological materials have ever been collected from or observed at the site. It is believed to be very likely that this site was well known to prehistoric peoples, and was used as a source of adhesives for the hafting of projectile points and other prehistoric tools.

The tar pit was relocated during the course of the survey; however, no cultural materials, except for recent trash, were observed in its vicinity. The site consists of a small pool of tar, measuring some 14 m NS by 30 m EW, from which a small stream of tar exits on the south side and flows downhill. A shallow accumulation of water overlies the tar in both the pond and the stream. A small tar seep lies immediately south of the main accumulation. Flagpoles, a stone marker, and a small parking area are located immediately to the north of the site. In all, the site covers some 60 m EW by 80 m NS, or 4,800 m² (Figure 12). Considering the nature of the site, no shovel tests were excavated here.

Summary

This site is considered to be potentially eligible for inclusion in the NRHP, although it is primarily a paleontological site and has yielded no cultural material thus far. It is a prominent geological feature and may have been used as a source of petroleum adhesives by local aboriginal groups. Further, it is believed probable that the tar pit was a significant part of the prehistoric cultural landscape of the region, much like Medicine Bluffs. Unfortunately, neither hypothesis is easily provable, since no prehistoric visitors left evidence of their presence here. Archeological testing is not recommended for the site; given its nature, such research would be of limited usefulness. However, it is recommended that the Adams Hill Tar Pit be preserved through avoidance, in light of its proven paleontological importance and its potential cultural significance. In order to clarify its NRHP status, it would be advisable to perform extensive archival investigations and to interview older Comanche and Apache informants about the site, in order to determine if it was of any true cultural or functional significance during protohistoric and historic times.

Locality 93-326

This is the only locality reported for Survey Area 2; it consists of a jumble of concrete slabs (most likely foundation remnants) found in the bottom of a depression immediately east of the Lake George Dam. These slabs appear to have been dumped into this area, which lies between the dam and a high (>3 m) berm for erosion control purposes. The dumping episode appears to have occurred prior to 1965, as natural processes have partially or completely buried a number of the slabs, and oak and willow trees greater than one foot (.30

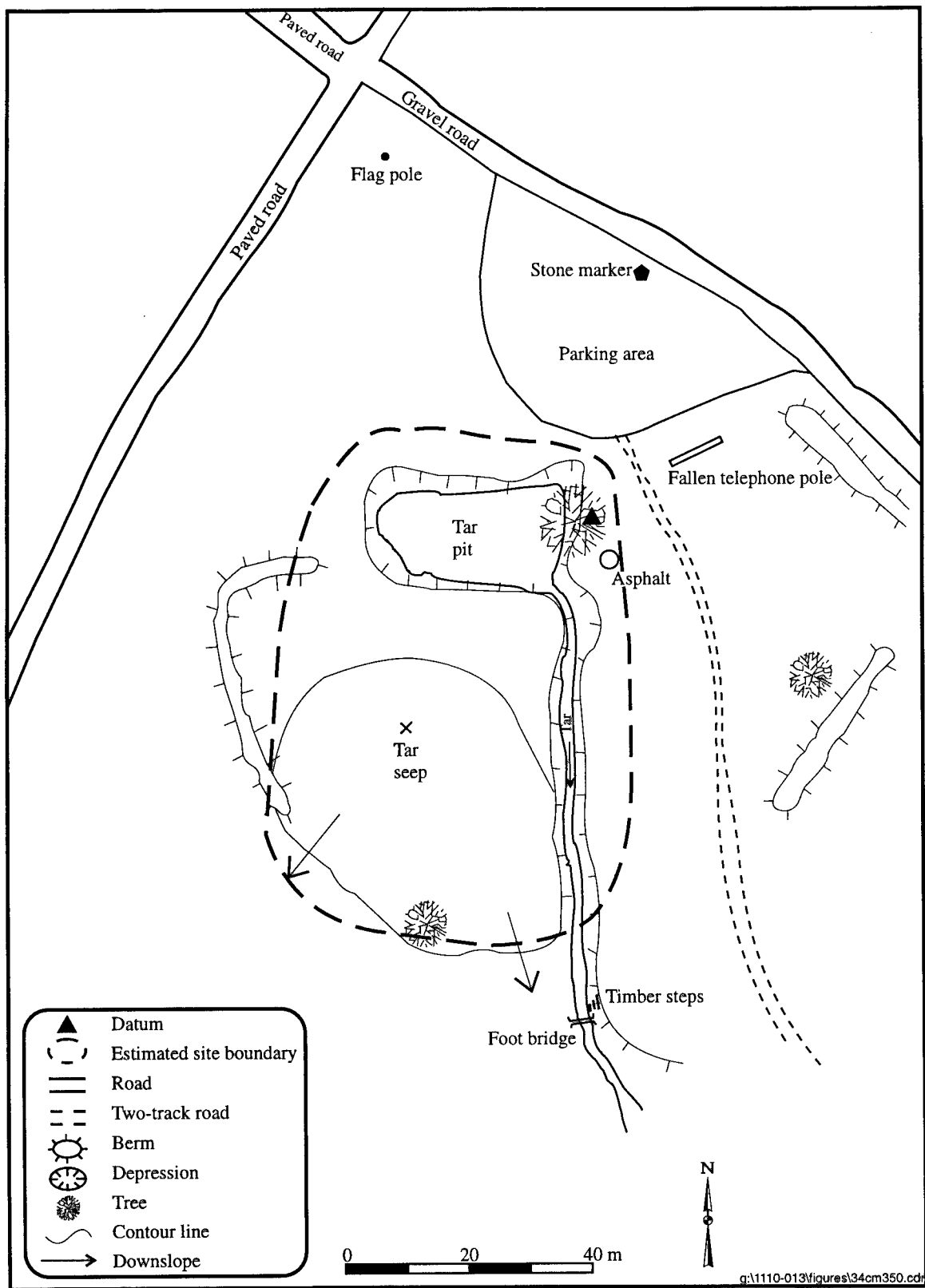


Figure 12. Plan map of site 34Cm-350, the Adams Hill Tar Pit.

m) in diameter are growing upon the slabs and up through cracks in the slabs. Lake George is known to have existed in 1956, as it appears on the USGS 7.5' Arbuckle Hill, OK quad map of that year; these slabs may have been dumped into the depression at the time of the lake construction or at any time thereafter. The excavation of six shovel tests revealed the buried nature of some of the slabs; otherwise, no artifacts or features were observed at this locality. Although this find was originally recorded as a site, it has been downgraded to a locality, as it became evident that the context of the slabs was entirely secondary.

Survey Area 3

Survey Area 3 consists of a 1,374-acre parcel located on the extreme western boundary of the Fort Sill Military Reservation in the vicinity of the Quanah Range (Figure 13). Its southern border is contiguous with the southern boundary of the military reservation. The entire area consists almost entirely of flat to very gently rolling plains, interspersed with deep erosional gullies along the various drainages of Post Oak Creek, the primary drainage for this project area. Underlying near surface geology is dominated by granite and rhyolite porphyry conglomerate overlain by a thin veneer of sand and gravel (Dames and Moore 1980).

The soils for this survey area consist of a varied mixture of Foard silt loams; Foard-Slickspots complex; Foard and Tillman soils; Lawton loams; Konawa loamy fine sands; Granite Cobbly land; Vernon soils; and Windthorst fine sandy loams. In addition, extensive stretches of Port loams and Breaks Alluvial land complex can be found in the bottomlands along the floodplains of Post Oak Creek and its various tributaries (SCS 1970). Vegetation is dominated by short prairie grasses in the areas between drainages; in the vicinity of the drainages is found a mixture of deciduous broadleaf trees, mostly post and blackjack oak. In some places, the forests become almost impossibly thick (Dames and Moore 1980).

During the 1977 Fort Sill survey, personnel from the Museum of the Great Plains examined approximately three and one-half 60-acre quadrats, and three half-kilometer stream transects approximating 60 acres each, within Survey Area 3; altogether, these totaled to about 390 acres. Six sites are known for this survey area. Four of the sites, 34Cm-89, 34Cm-90, 34Cm-91, and 34Cm-321, are recorded as prehistoric lithic scatters. The other two sites, 34Cm-244 and 34Cm-245, are both low density scatters of historic debris. In addition, a mid-century aviation map indicates the presence of three historic farmsteads. Only two of the sites, 34Cm-91 and 34Cm-321, and none of the purported farmsteads were relocated during the 1993 Fort Sill survey. However, five additional sites and 32 localities (93-280 through 93-311) were recorded. Four of the new sites, 34Cm-509 through 34Cm-512, date to the historic period; one site, 34Cm-513, is a prehistoric lithic scatter.

34Cm-509

This historic homestead site is located atop the crest of a hill just 300 m east of the western boundary of the Fort Sill Military Reservation. Two two-track dirt roads run through the site. The hill crest, which is situated at an elevation of approximately 433 m (1,420 ft) amsl, is covered with mixed grasses; the soil is mapped as Lawton loam, 3 to 5 percent slopes. Soil depth is moderate, extending from 15-30 cm below the surface.

A number of features were noted at this site. Among these were three identifiable, roofless foundation remnants, seven clusters of stone and concrete rubble that may represent building remains, and two wells or cisterns. In addition, a number of isolated concrete wall fragments were observed scattered throughout the site area. A military radio booster tower is located along the extreme eastern boundary of the site. The

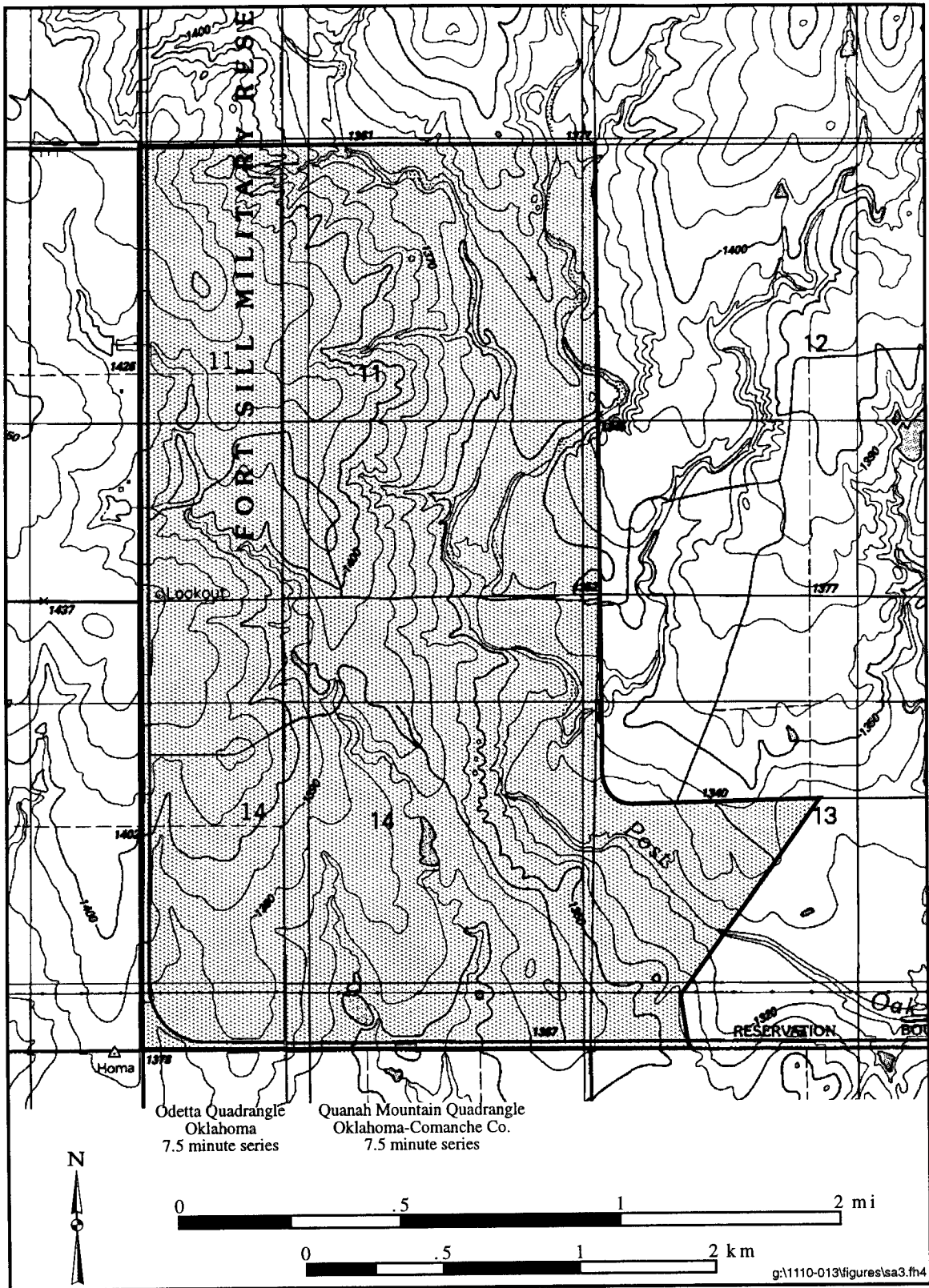


Figure 13. Location of Survey Area 3 within the Fort Sill Military Reservation.

site datum was placed on an oak tree near the center of the site, which covers approximately 7,650 m² (Figure 14).

The first foundation feature consists of a cement pad, which measures 8 m NE-SW by 3 m NW-SE; two associated piles of rubble, most likely representing wall fragments from a building, are located 5 m north and 12 m south. Two other possibly related rubble piles are located 17 m and 20 m to the east, and a lengthy rubble pile, which has been scattered along the northern border of a small two-track dirt road, is located 20 m to the north. This last rubble pile is associated with a lengthy scatter of glass and historic ceramics. The original use of this building remains unknown at this time; however, given that a cement foundation pad is present, it seems possible that this feature functioned as a dwelling.

The second foundation feature consists of two parallel concrete-and-stone walls located near the center of the site immediately south of the larger of the dirt roads. Five gaps, possibly representing doorways, were observed in the walls. These walls measure 13 m EW in length and are spaced 5 m apart; no floor was evident. One of the two wells on the site is located 6 m to the northwest. This well, which is constructed of concrete and stone, also exhibits several wall remnants in its immediate vicinity, indicating that it once included a well house that has since been destroyed. The well itself measures 2.5 m in diameter; the central shaft is square and measures approximately 1 m².

The third foundation feature occurs on the eastern side of the site, approximately 10 m due east of the well. This rectangular feature measures 7 m NS by 5 m EW. One large pile of rubble, located 3 m to the north, is associated with this feature and includes wall remnants.

One of the rubble piles, which is located in the extreme northern portion of the site, bears a vaguely rectangular configuration and may also represent a foundation feature. The configuration measures approximately 3 m NW-SE by 3 m NE-SW.

The final major feature is located in the south-central portion of the site and appears to represent a capped well. It is square and measures approximately 2.5 m on a side. The central shaft is circular, measuring approximately 1 m in diameter.

Historic Artifacts

A total of four shovel tests was excavated at this site; all proved negative. However, a wide variety of whiteware, clear glass, and miscellaneous metal fragments, none of it particularly diagnostic, was observed on the surface at this site. Given the nondiagnostic nature of the assemblage, none of this material was collected.

Archival Research

Site 34Cm-509 is situated in the NE quarter of the SW quarter of the NW quarter of Section 14, Township 2N, Range 15W. The entire northwest quarter of Section 14 was allotted in 1901 to Ho-se-to-sa-vit, a Comanche man (Anonymous n.d.:8). Surprisingly, Ho-se-to-sa-vit retained the entire property until government acquisition in 1957. The next record connected with this property was a Notice of Suit Pending filed by the U.S. Army to the Public in June 1957 (Comanche County *Deed Book* 452:322). This was a notice that the U.S. Army was condemning the property, although no dollar amount was given and no one was listed as the owner of this section. However, on the Fort Sill land acquisition map for this area, Lillie

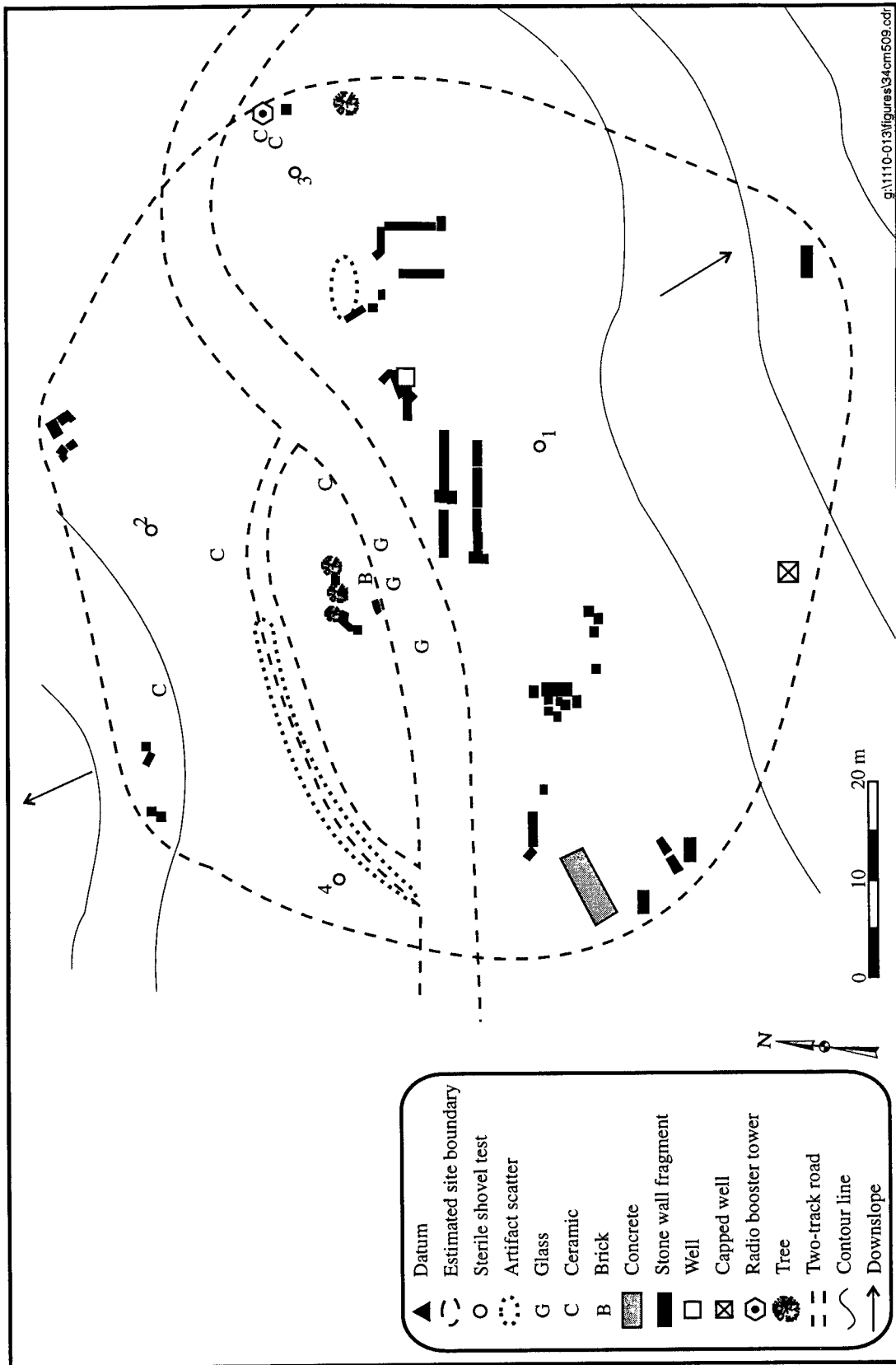


Figure 14. Plan map of site 34Cm-509.

Hosetosavit is listed as the last owner of the section. She was apparently the heir to the family property, and may have been Ho-se-to-sa-vit's wife or daughter (Land Acquisition map, Fort Sill Real Property Office n.d.).

Summary

Like nearly all the historic sites on the western part of the fort, this site dates to between 1901 (allotment) and 1957 (government acquisition). It was apparently occupied for the entire period by a single Comanche family. It retains a significant number of intact architectural features; the most important of these are the two wells, which may well contain undisturbed cultural material. The site has, unfortunately, suffered greatly from the military training conducted in this portion of Fort Sill, and may indeed have been razed when the land was acquired by the government; for this reason, no further archeological testing is recommended. However, given the fact that this site lies on an original Comanche allotment that was occupied by the same Comanche family until government acquisition, it is felt that further testing and archival research is necessary in order to clarify this site's potential for inclusion in the NRHP. Before NRHP status can be properly assessed, an attempt should be made to conduct additional archival work, particularly in the form of oral interviews, census records, and a history of the Hosetosavit family.

34Cm-510

This site is located immediately south of an east-west dirt section road on a level grassy plain some 100 m east of the main channel of Post Oak Creek at an elevation of approximately 409 m (1,340 ft) amsl. The soil is mapped as Port clay loam; soil depth is moderate, extending more than 50 cm below the surface.

This site consists of the remains of single historic structure, measuring approximately 10 m EW by 4 m NS. Only the north and south walls are intact; one gap in the north wall and two in the south wall may represent doorways. The east and west walls are almost entirely destroyed; only a few wall fragments remain. The walls and foundation fragments consist of stone cobbles in mortar (Figure 15). The original use of this structure remains unknown at this time; however, it most likely represents a building associated with an early farmstead.

Historic Artifacts

A total of six shovel tests was excavated in the vicinity of the find. One of these tests, Shovel Test 5, yielded a total of 10 fragments of nondiagnostic clear bottle glass. No other cultural materials were found in association with the structural remains.

Archival Research

This site is situated in the NW quarter of the NE quarter of the NE quarter of Section 14, Township 2N, Range 15W. In 1901, a Comanche named Oats-sec was allotted the northeast quarter of Section 14 (Anonymous n.d.:8). The next deed for this property is a Notice of Suit Pending for the condemnation of the property by the U.S. Army for the expansion of Fort Sill. The deed does not record from whom the U.S. Army acquired the property nor does it record a price for the property (Comanche County *Deed Book* 452:322). However, the Fort Sill land acquisition map lists Lillie Hosetosavit as the last owner (Land

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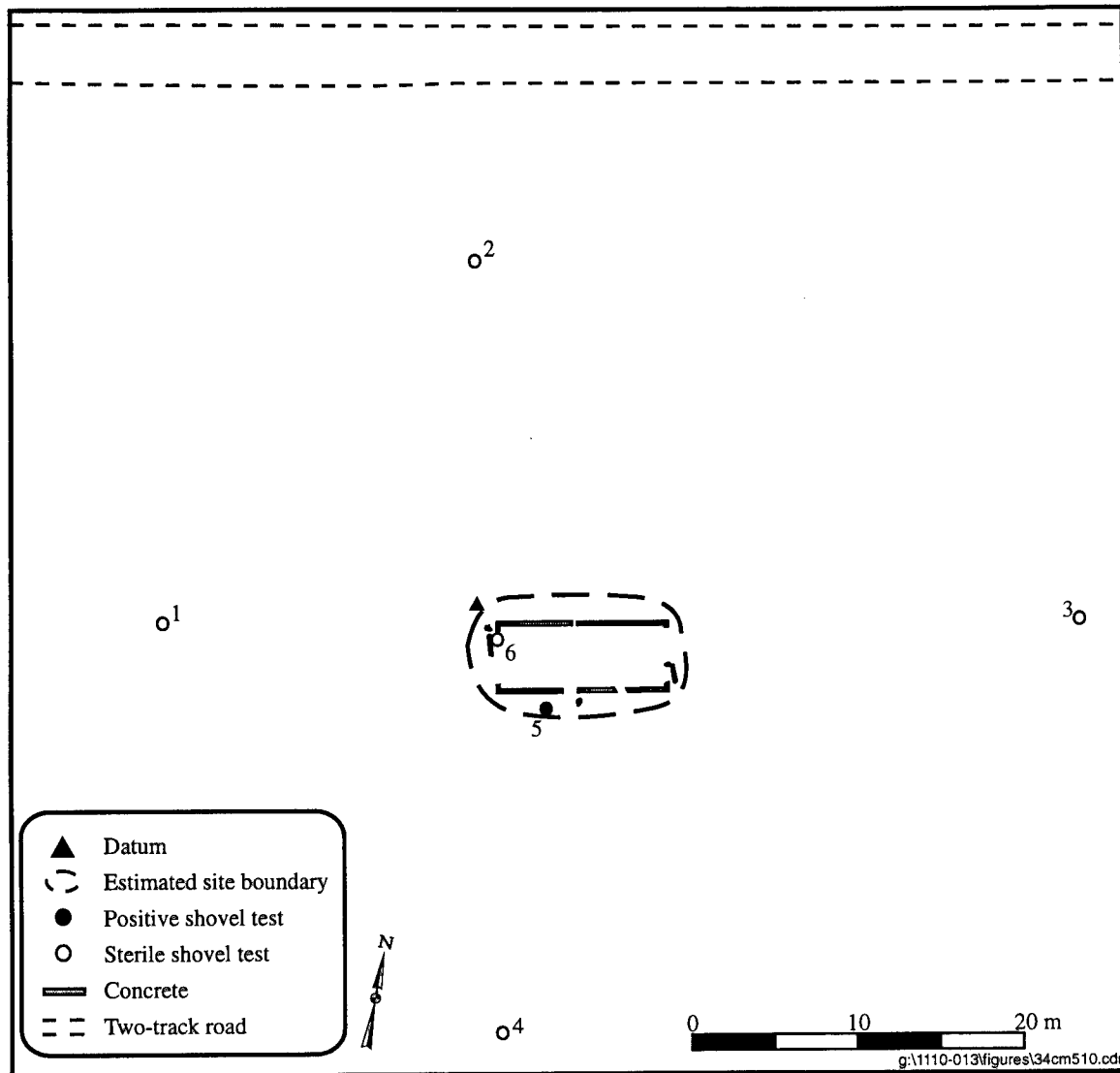


Figure 15. Plan map of site 34Cm-510.

Acquisition Map on file at the Fort Sill Real Estate Office). Hosetosavit may have been an heir to Oats-sec, but it seems more likely her family purchased the property from Oats-sec in order to increase their land holdings, as they already owned the northwest quarter of the same section.

This property was probably continually owned by Comanche families throughout the period between allotment and government acquisition. However, additional archival research at the Bureau of Indian Affairs office in Anadarko and an examination of the census and probate records need to be conducted. Since the Ho-se-to-sa-vit family owned the northwest quarter of this section for over 55 years, it seems likely that they lived in that section and the foundation found on this site was constructed by Oats-sec. When the Hosetosavit family acquired the property, they probably rented the structure to either non-Native Americans or other Comanche.

Summary

This site represents the isolated remains of a single structure, apparently dating from the early to mid-twentieth century. It lies on a tract that was continuously owned by Comanche families from allotment (1901) to government acquisition (1957) and was most likely used as a dwelling. Considering its Comanche affiliation, it is believed that additional archival research is necessary in order to fully assess the potential of this site for inclusion in the NRHP.

34Cm-511

This site also appears to represent the remains of an early twentieth century farmstead. The site is located on the crest and south slope of a hill leading down to a small intermittent drainage of Post Oak Creek. The elevation ranges between 420 m (1,380 ft) and 427 m (1,400 ft) amsl. The soil type is mapped as Windthorst sandy loam, 1 to 3 percent slopes, while the vegetation observed at the site included mixed grasses, post oak, blackjack oak, and what appeared to be black locust. The surface deposits are moderately deep, i.e., extending more than 50 cm below ground surface.

This site retains a number of features. The most obvious feature is a small, rubble-filled depression, measuring approximately 4 m NE-SW by 2 m NW-SE. This feature appears to be a small dugout; bricks are present among the rubble and appear to have been used to face at least one wall of the dugout. The remainder of the rubble consists of pieces of metal sheeting, some of which were signs advertising products such as automobile tires; a small automobile hood, such as might come from a Ford Model A or Model T; wooden beams or fence posts; wire; and clear and brown glass. Another small depression west of the dugout has also been filled with rubble, consisting predominantly of glass and metal. A third, empty depression lies approximately 20 m to the southwest of the dugout (Figure 16). An erect wooden post stands 50 m to the northeast of the dugout; a hinge connects it to another wooden post. This most likely represents the remains of a fence gate; the beams used to fill the dugout appear to be uprooted fenceposts from the fence itself. A board, a sheet of tin, and a large snarl of hogwire were found 35 m north of the dugout. The site, which measures about 120 m NS by 60 m EW, covers approximately 7,200 m².

Historic Artifacts

A total of nine shovel tests was excavated in the vicinity of the site. All were negative. In exposed areas caused by tank traffic east and south of the dugout, however, large quantities of clear, aqua, brown, amethyst (purple), milk, and window glass were noted, as were whiteware fragments. A metal wrench was also recovered. Of these artifacts, the wrench, an amethyst glass fragment, two milk glass fragments, one brown glass fragment, and one whiteware fragment were collected.

Archival Research

Site 34Cm-511 is located in the NW quarter of the SW quarter of the SW quarter of Section 11, Township 2N, Range 15W. The land on which it lies was continuously owned by Comanche settlers between allotment in 1901 and government acquisition of the land in 1957. All the southwest quarter of Section 11 was allotted to an individual named To-wis-chy (Anonymous n.d.:19). The next recorded transaction for this property was a grazing lease agreement between Annie Tohpay (Cable), probably an heir to To-wis-chy, and Hugh

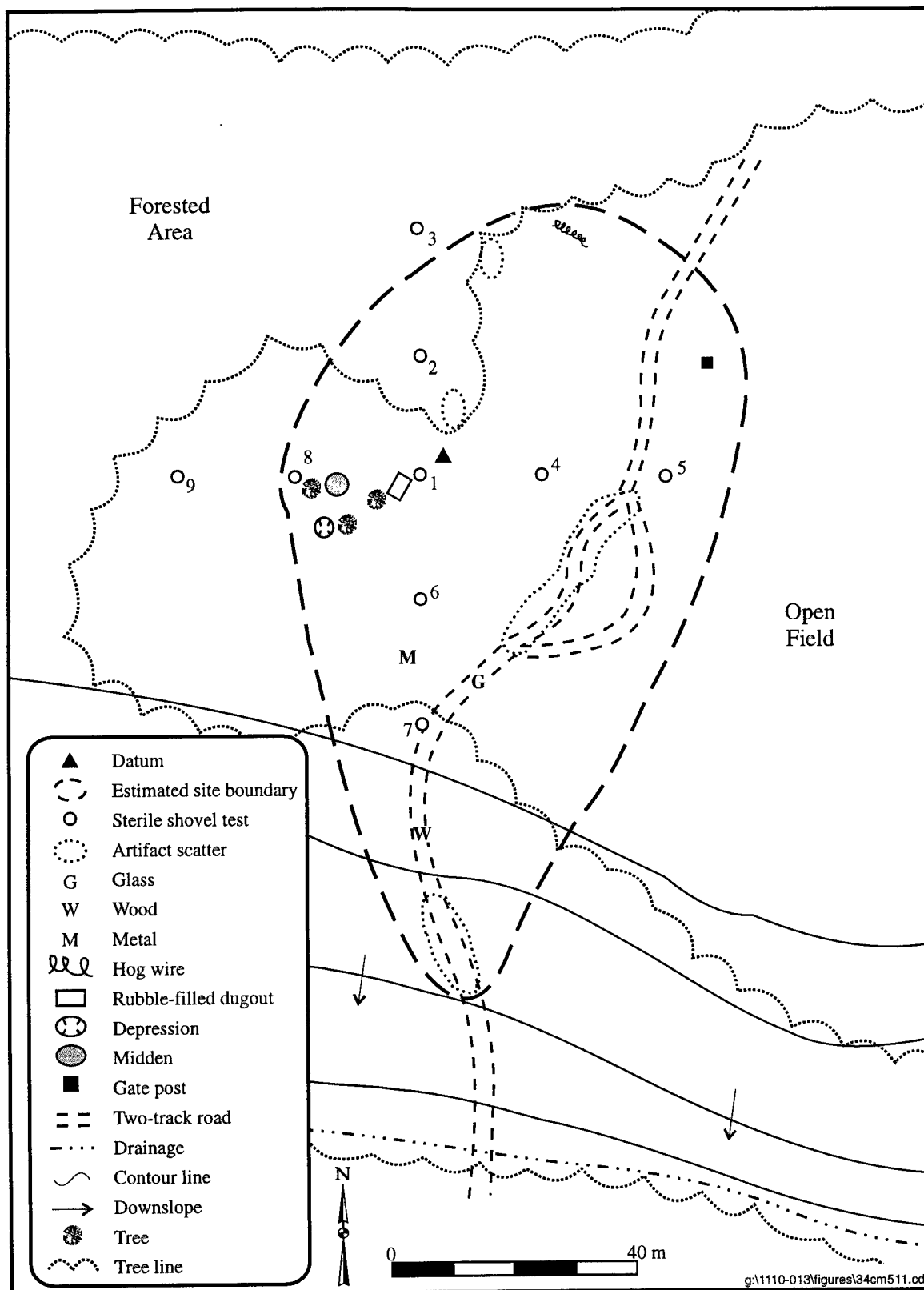


Figure 16. Plan map of site 34Cm-511.

Carothers of Indianola, Oklahoma. Carothers signed a three-year grazing lease for \$200.00 a year beginning on January 1, 1956 (Comanche County *Deed Book* 446:513).

In April 1957, the U.S. Army acquired the land for the expansion of the Artillery and Guided Missile Center at Fort Sill. Tohpay and her husband, Bruner Cable, were given \$9,000.00 for the property (Comanche County *Deed Book* 450:381). Four months later, the U.S. Army filed a Notice of Suit Pending, civil docket #7608, for the acquisition of the southwest quarter of Section 11 (Comanche County *Deed Book* 454:280). In January 1958 the final deed transaction was recorded, in which the U.S. Army made a judgement on Hugh Carothers' grazing interest in the property. Carothers received \$425.00 for his interest in the land, since the U.S. Army had acquired the land before the termination of the three-year grazing lease (Comanche County *Deed Book* 459:567).

It is apparent from the title/deed research that this section of land remained in the hands of Comanche settlers—most likely a single family—for over 55 years. Although the land may have been leased to non-Native Americans for grazing, they more than likely did not reside on the site. The probability that the farmstead was constructed by Comanche settlers who stayed on the land for a long period suggests that the site is worthy of additional archival work. Further archival work that could reveal more about the property would include an examination of the census records, probate records and tax rolls; oral interviews with family members or neighbors; and additional title/work at the Bureau of Indian Affairs in Anadarko, which might provide additional inheritance records and which could provide evidence confirming or disproving whether or not a single Comanche family owned the section.

Summary

This site appears to represent the remains of a long-term Comanche farmstead. However, the presence of several artifacts, including the wrench, the tin signs bearing tire advertisements, and the automobile hood, may indicate the remains of a commercial auto garage. Indeed, the site may have served both functions while it was occupied. Further archival research should be conducted in order to better understand the nature of the occupation(s) at the site, and in order to clarify the site's NRHP-eligibility status.

34Cm-512

This historic site is located on the southern end of a north-south trending finger ridge located above an intermittent tributary of Post Oak Creek at an elevation of approximately 424 m (1,390 ft) amsl. The soil type is mapped as Windthorst sandy loam, 1 to 3 percent, and the vegetation consists of mixed grasses and oak-hickory forest. Soil depth is greater than 50 cm.

This site represents the remains of a single small dugout structure; it consists of a 1-m deep depression, measuring 16 m NW-SE by 7 m NE-SW, and the associated concrete wall remains. Several pieces of rebar are embedded within the wall remains. The wall fragments are widely scattered, particularly to the north of the depression, indicating that the structure was deliberately destroyed, perhaps after government acquisition of the land in 1957. However, there is a strong possibility that this site consists of the remains of an old army bunker. The site is heavily overgrown and heavily disturbed; it covers an area of about 988 m² (Figure 17).

A total of four shovel tests was excavated at this site. All proved negative.

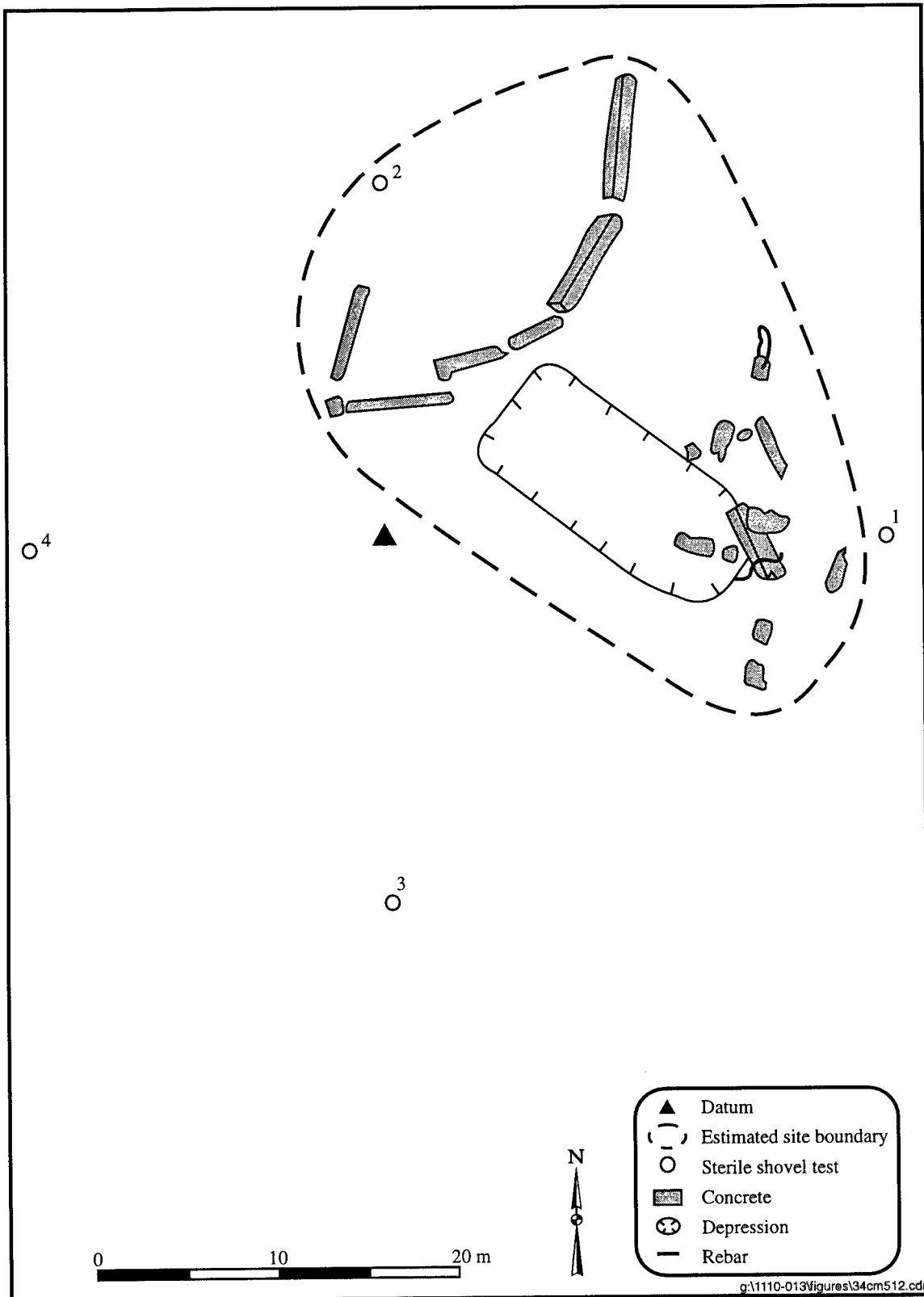


Figure 17. Plan map of site 34Cm-512.

Archival Research

Site 34Cm-512 is situated in the NE quarter of the NE quarter of the NW quarter of Section 14, Township 2N, Range 15W, and, like site 34Cm-509, lies within the area that was originally allotted to Ho-se-to-sa-vit and was held by his family until government acquisition; the title/deed history of that section is detailed above. However, the building materials used in this structure (particularly the high-grade concrete and rebar) indicate the use of post-World War II construction methods. Site 34Cm-512 is believed to be the remains of a defunct Army bunker, although the possibility remains that it may be from a building used on the Ho-se-to-sa-vit farm.

Summary

This site is in very poor condition. Currently, it is believed to represent the remains of an army bunker; archival research did not indicate that it was used as part of a farmstead in the past. This site is recommended as ineligible for inclusion in the NRHP.

34Cm-513

Site 34Cm-513 is located on the edge of a ridge overlooking the main channel of Post Oak Creek to the west. A north-south dirt section road runs directly through the center of the site. Soils are mapped as Granite Cobbly land; the elevation of the site is approximately 418 m (1,370 ft) amsl. The vegetation at the site is sparse, but consists mostly of mixed grasses and Cross-Timbers vegetation. Soil depth is greater than 50 cm below the surface.

This site consists of a highly disturbed surface scatter of chert debris, most of which was observed within the road; it covers approximately 2,000 m² (Figure 18). The single diagnostic artifact is a complete Ellis dart point made of chert and was collected from the site surface. A total of seven shovel tests was excavated in and around the site, but none yielded cultural materials.

Prehistoric Artifacts

Eight unmodified chert flakes and one retouched chert flake were observed on the surface, but were not collected. The single artifact collected from this site is an Ellis projectile point, with one lateral edge that has been extensively reworked. It was made from a milky white, opaque novaculite and is relatively thick. Its dimensions are 32 mm (l) by 20 mm (w) by 5 mm (t), and has a weight of 3.0 g (Figure 19).

Summary

This site represents a highly disturbed, low density prehistoric lithic scatter. Given the presence of the Ellis point, the site most likely dates from the Archaic or Woodland periods (4,000 to 1,300 yr BP; Turner and Hester 1993) and may have served as an upland hunting station or temporary base camp. However, few, if any, subsurface deposits remain intact due to extensive impacts caused by road construction. Because of the limited nature and lack of integrity of cultural deposition, this site is considered ineligible for inclusion in the NRHP. No further work is recommended.

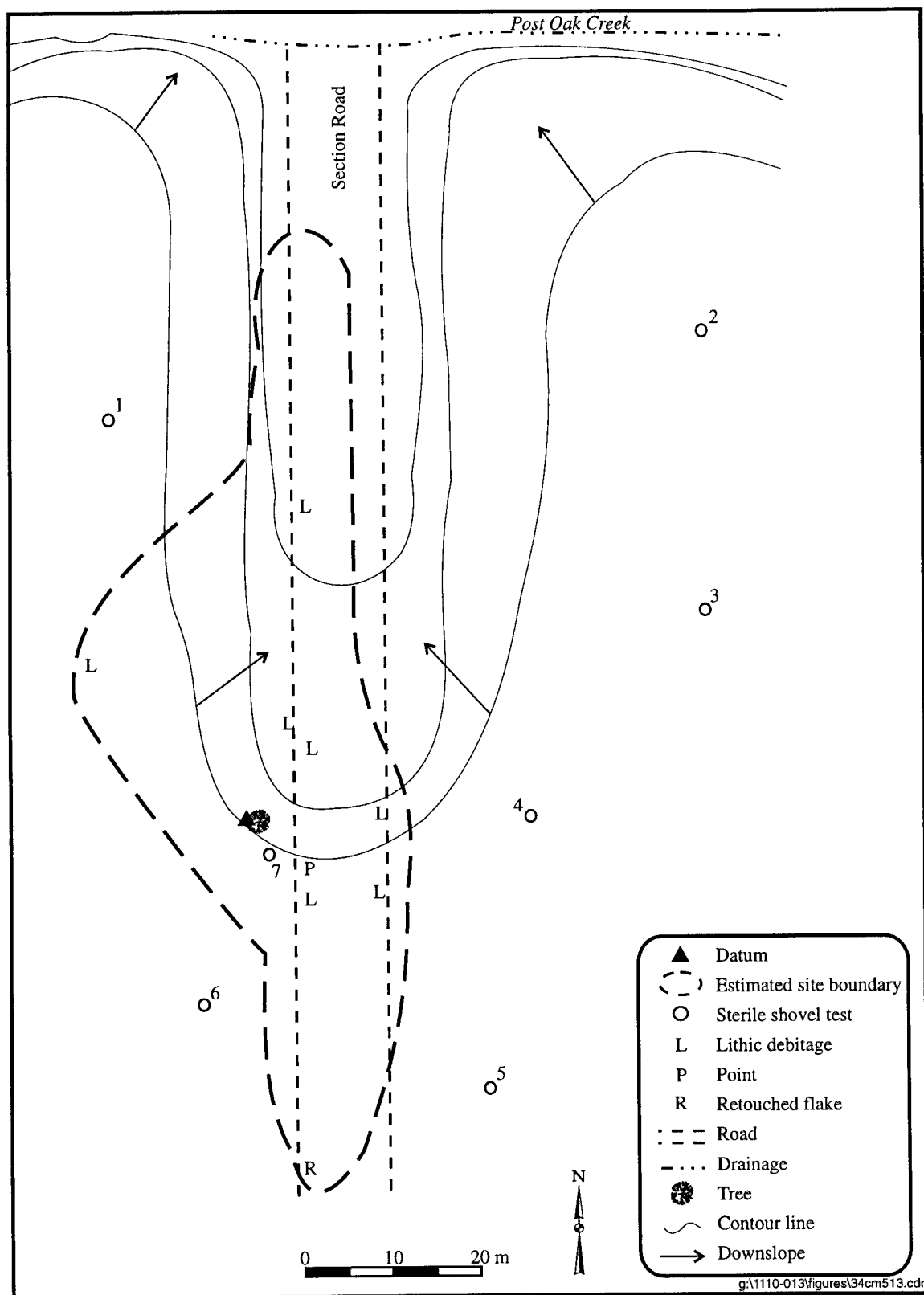


Figure 18. Plan map of site 34Cm-513.

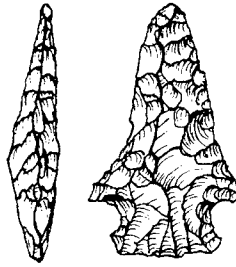


Figure 19. Diagnostic lithic artifact recovered from 34Cm-513 (93-155) during the 1993 survey: chert Ellis dart point. (Scale 1:1)

34Cm-91

This site, which represents the remains of Shaeffer's (1959) previously recorded site 34Cm-91, is located on a ridge overlooking the main channel of Post Oak Creek, which is immediately to the northwest, at an elevation of approximately 415 m (1,360 ft) amsl. The vegetation is recorded as Cross-Timbers, while the soil is mapped as Port loam. Soil depth exceeds 50 cm below the surface.

This site consists of a low density surface scatter of quartz and quartzite flakes and shatter covering an area of approximately 1,500 m² (Figure 20). A total of five flakes and one shatter fragment was observed on the surface at this location; in addition, two of the five shovel tests excavated were positive, yielding a single quartzite flake and a quartz shatter fragment. Both of these artifacts were lost in heavy underbrush at the site.

Summary

Site 34Cm-91 apparently represents a small upland hunting station or base camp; however, the cultural origin of this site is not possible to determine. It remains in fairly good condition at this time; the thickness of the brush indicates that it has not been subjected to military training for a long while. In addition, significant amounts of subsurface deposits remain intact. Therefore, this site is recommended for additional testing in order to more fully evaluate its potential for inclusion in the NRHP.

34Cm-321

This location represents the remains of 34Cm-321, a small prehistoric lithic scatter located by the Museum of the Great Plains in 1977 (Ferring 1978). The site occurs at an elevation of 421 m (1,380 ft) amsl and is covered with vegetation recorded as Cross-Timbers. The soils are mapped as Port loam and measure 20-30 cm in depth.

Very little can be said about this site other than it was relocated. A chert side scraper and a quartz flake were the only artifacts observed on the surface. This site was originally described as a "light artifact scatter exposed along approximately 50 m of a dirt road . . ."; the description relates that "the site was totally collected without sectioning the road exposure due to the sparsity of materials" (Ferring 1978). Apparently an excellent job was done of collecting the artifacts, as very few artifacts remained for future researchers

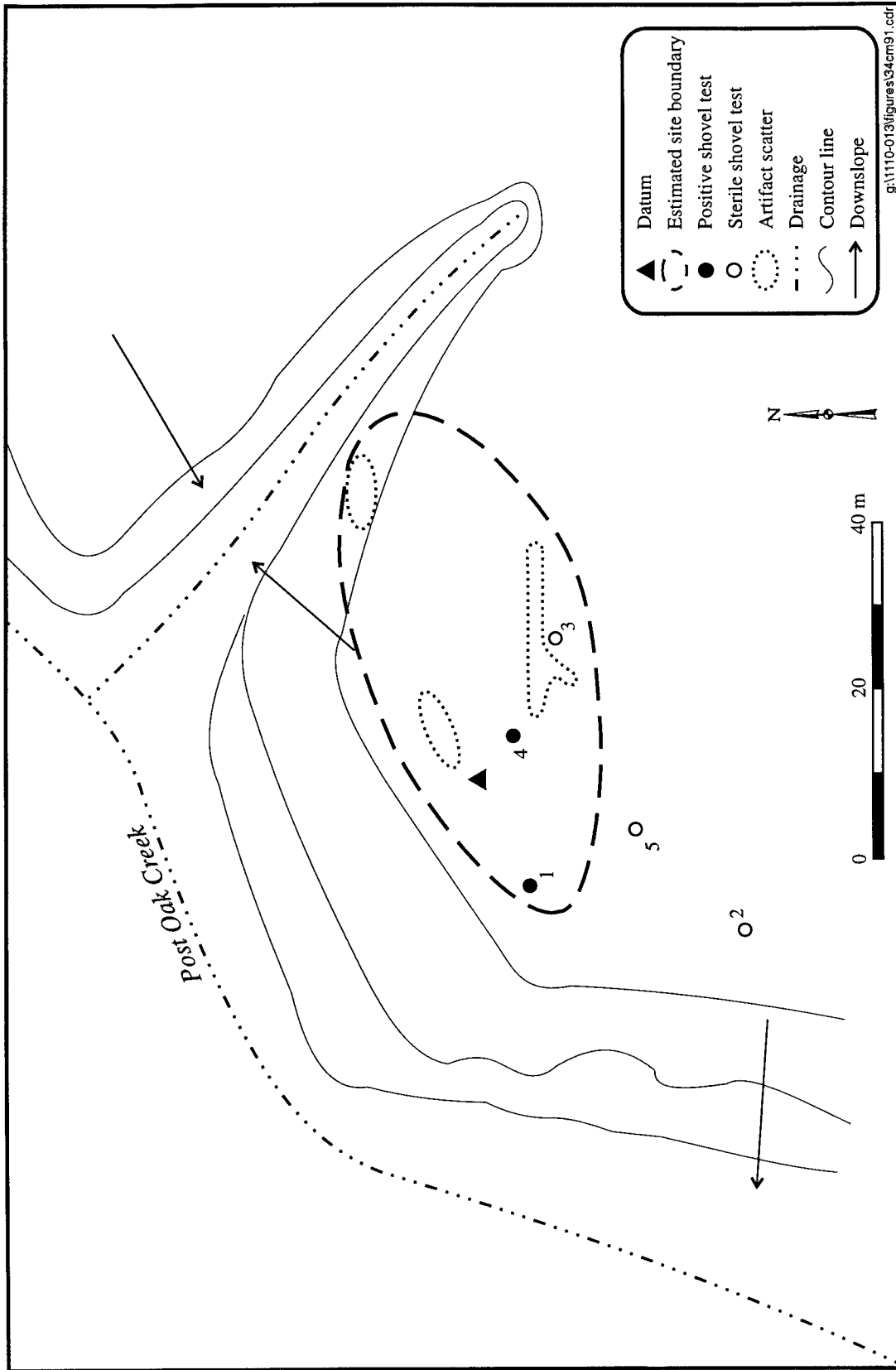


Figure 20. Plan map of site 34Cm-91.

to find. For this reason, neither the flake nor the scraper was collected. The site as it exists today measures perhaps 10 m in diameter, covering approximately 80 m² (Figure 21). This site is moderately disturbed; a foxhole has been dug immediately to the southwest. A total of four shovel tests was excavated in the area. All were negative.

Summary

This site most likely represents the remains of a small upland hunting station of uncertain cultural affiliation. Given the minimal artifact assemblage and general lack of contextual integrity at site 34Cm-321, it cannot be considered eligible for inclusion in the NRHP. No further work is recommended.

Locality 93-280

This locality, which is located on a hilltop in a small patch of woods, yielded a single historic whiteware sherd. A visual examination of the surface in the immediate area yielded no other artifacts; in addition, no structures or other evidence of cultural activity was observed at this locality. The nearest known historic site, 34Cm-511, discovered during the 1993 survey lies 300 m to the north.

Locality 93-281

This locality consists of a single chert flake that was collected from a two-track dirt road on the slope of a low hill. A visual inspection of the immediate area yielded no additional cultural materials nor did the shovel test excavated at this locality. The reported location of the nearest prehistoric site, 34Cm-89, lies more than 1,700 m to the east; however, this previously recorded site was not relocated during survey.

Locality 93-282

This locality, which falls on the boundary road between two sections, produced a single milk glass fragment. Although the pattern of breakage along one edge indicates that it may have been deliberately worked, it seems more likely that it was run over and crushed by a tank or other heavy vehicle. The nearest known historic site, 34Cm-319 (a possible dugout house), is located 1,100 m to the north.

Locality 93-283

Examination of this locality revealed the presence of a large, upright wooden fence post with two strands of barbed wire approximately 3 m long still attached to it. Two distinct types of barbed wire were present. Both the post and the wire appear to predate 1960. The cultural material was found in an area that today exists as open pastureland dotted with small mesquite trees. This locality falls near a cluster of similar historic localities, indicating that a homestead or similar site might exist somewhere in the vicinity; however, no such site was observed in the immediate area. It is possible that the only structure located in this region was a mobile home; such homes were introduced into the area in the 1940s and 1950s, and would have been relatively easy to remove upon government acquisition of the land in 1956 and 1957. Otherwise, the nearest historic site, 34Cm-511, lies 1,000 m to the south.

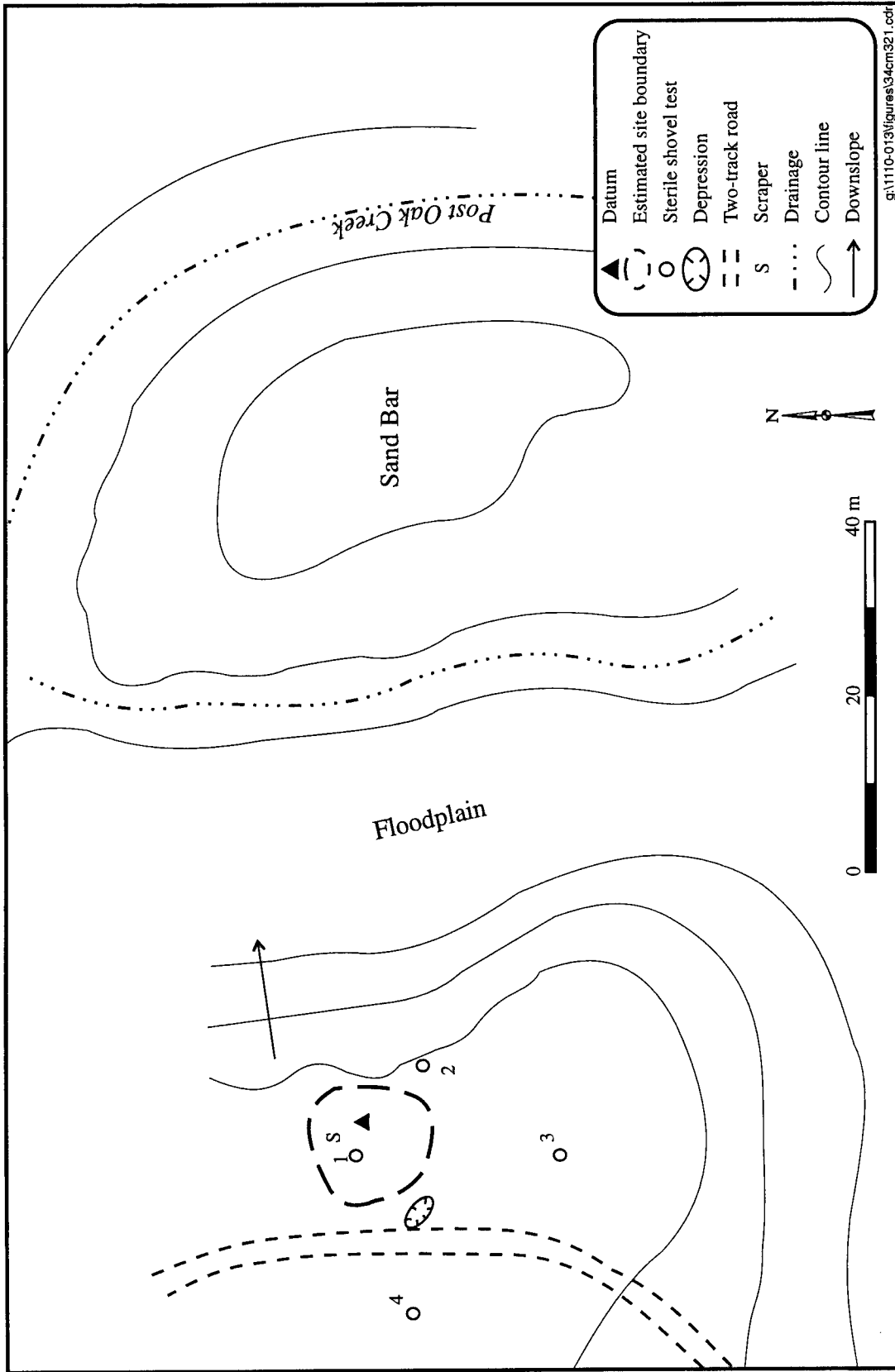


Figure 21. Plan map of site 34Cm-321.

Locality 93-284

This locality yielded a single fragment of historic whiteware. In addition to the excavation of a shovel test nearby, examination of the immediate vicinity yielded no additional cultural material. This site lies less than 100 m south of site 34Cm-511, a large, dispersed historic site that contains the remains of a dugout structure. Locality 93-284 and site 34Cm-511 are separated only by an intermittent drainage; thus it seems likely that this locality may be part of the site. Another nearby locality, 93-289 (see below), also appears to be related to 34Cm-511.

Locality 93-285

Locality 93-285 produced a single historic whiteware fragment. No other cultural materials were discovered in the immediate area, during either the surface examination or the subsequent excavation of one shovel test. The nearest historic site, 34Cm-511, lies approximately 700 m to the south.

Locality 93-286

Examination of this locality yielded one historic whiteware fragment. A visual survey of the immediate area produced no other cultural materials. The nearest historic site, 34Cm-511, is located more than 800 m to the south.

Locality 93-287

This locality consists of historic dump located along the slope and base of an erosion gully leading to a branch of Post Oak Creek; most of the artifacts are concentrated in a 30-x-30-m area. Among the materials observed were many rusted metal cans, large whiteware plate fragments, a piece of a metal briefcase or small suitcase, and large numbers of clear, green, and brown bottle glass fragments. Some of the bottle bases bear makers' marks dating from the 1950s. This locality is situated approximately 1,000 m west of the nearest known historic site, 34Cm-321.

Locality 93-288

This find consists of a long berm elevated approximately .5 m above the natural ground surface. Localities 93-285 and 93-286 were found in close proximity to this berm. The berm seems to more or less follow the natural contours of the land and is almost certainly historic in nature. This extremely disturbed feature may represent the remains of an agricultural terrace of some sort, perhaps one which separated fields on an elevated road or a rail tram, like those common in the pine timberlands of East Texas and western Louisiana. The nearest historic site is 34Cm-511, which is located some 650 m to the south.

Locality 93-289

Examination of this locality, which is located approximately 130 m south-southeast of historic site 34Cm-511, revealed the presence of an extensive amount of glass, including one amethyst glass fragment and a small brown medicine bottle with a Hazel-Atlas maker's mark dating from the 1950s. This locality appears to be

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a historic dump as evidenced by the lack of features. It lies on the crest and slope of a low rise across a small intermittent drainage from site 34Cm-511, and measures approximately 10 m north-south by 40 m east-west. The two shovel tests dug within the dump yielded no subsurface artifacts or features.

Locality 93-290

The only artifact recovered from this locality was an old, rusty tin can similar to modern SPAM containers. This artifact, which was observed in a wooded area on the edge of the floodplain of Post Oak Creek, appeared to be undatable. It may be from either a historic occupation or from trash left by hunters or the military. A single shovel test excavated next to the find yielded no additional cultural materials nor did a visual examination of the surface. The nearest known historic site in the area is again site 34Cm-511, which is located approximately 300 m to the northwest; site 34Cm-512, an apparent military bunker, is located 350 m to the southeast.

Locality 93-291

This locality is one of a number of similar localities that cluster within 200 m of site 34Cm-512. It consists of a historic dump containing whiteware, ironstone fragments, redware ceramic fragments, amethyst glass, clear glass, milk glass, and brown glass; in addition, a prehistoric component, consisting of one quartzite flake, was noted. This locality was found at the junction of an east-west section road and a road running south along a tributary to Post Oak Creek, within the roadbed itself. Site 34Cm-512 is located approximately 180 m to the southeast. The nearest prehistoric site, 34Cm-90, is located approximately 700 m to the east.

Locality 93-292

Survey of this locality revealed another historic trash dump, which is located approximately 300 m north of the south boundary of the military reservation in the western portion of the Quanah Range area. Among the cultural materials observed at this locality were whiteware, ceramic tiles, metal cans, and clear glass jars and fragments. The nearest historic site is site 34Cm-509 located approximately 800 m to the northwest.

Locality 93-293

Examination of this locality yielded one historic whiteware fragment. A visual survey of the immediate area produced no other cultural materials; nor did the excavation of a single shovel test. The nearest historic site, 34Cm-512, is located 440 m to the north.

Locality 93-294

This locality consists of a historic dump containing amethyst (purple) glass, tin cans, and whiteware fragments. The dump is located on an eroding stream bank approximately 200 m north of the south boundary road west of the Quanah Range. A shovel test excavated in the immediate vicinity of the find yielded no subsurface artifacts or features. Site 34Cm-509, the nearest historic site, is located approximately 1,100 m to the northwest.

Locality 93-295

A quartz flake and scraper were observed at this locality, which is located on the floodplain of Post Oak Creek. Neither an extensive surface examination of the immediate vicinity nor a single shovel test excavated at the locality yielded any additional cultural materials. This find may be associated with site 34Cm-89, a prehistoric lithic scatter whose recorded location is less than 80 m due north. No artifacts were recorded from the purported site location; however, either the site's location was originally recorded incorrectly or the site has since been destroyed.

Locality 93-296

This find consists of two pieces of historic ceramic crockery that were recovered 200 m south of an intermittent branch of Post Oak Creek. No other cultural materials were found at this locality. The nearest known historic site is 34Cm-510, a moderately disturbed farmstead.

Locality 93-297

This locality, which is located just 50 m due west of historic site 34Cm-512, consists of three clear glass fragments and a single ceramic whiteware plate broken into fragments. These artifacts were found just west of a bulldozed area along a tank track impression and most likely are related to site 34Cm-512.

Locality 93-298

Survey of this locality revealed a single whiteware fragment that was recovered from an eroded area within a stand of trees approximately 50 m southwest of site 34Cm-512. No other cultural materials were observed on the ground surface or in the shovel test excavated at this location. Like locality 93-297, this find undoubtedly originated from highly disturbed site 34Cm-512.

Locality 93-299

This historic dump is located approximately 150 m south of historic site 34Cm-512 in a small stand of oak trees. Among the artifacts observed were rusted tin cans and a variety of glass.

Locality 93-300

This locality, which is located approximately 100 m east-southeast of historic site 34Cm-512, is also a historic trash dump. The locality was observed within an open oak forest. Among the cultural materials present were whiteware and glass, including cobalt glass. A shovel test excavated at the locality yielded no subsurface artifacts or features.

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Locality 93-301

This locality yielded a single quartzite flake from a stand of oak and mesquite approximately 70 m northeast of site 34Cm-512. An intensive surface examination of the area, coupled with the excavation of a single shovel test, failed to yield any additional cultural materials. The nearest known prehistoric site, 34Cm-90, is located approximately 450 m due east.

Locality 93-302

Examination of this locality revealed a historic dump containing whiteware, blue ironstone, tin cans, miscellaneous metal fragments, clear glass, and light green glass, all of which were located 100 m east of an intermittent branch of Post Oak Creek, about 5 m south of an east-west section road. Like many of the localities in the area, this dump seems to be associated with the historic site designated 34Cm-512, which is located 150 m to the southeast.

Locality 93-303

This locality also represents a historic dump. Among the cultural materials present are whiteware, amethyst glass, and miscellaneous, unidentifiable metal fragments. The locality is situated on the eastern slope of a ridge in a ditch and along the adjoining east-west road that separates two sections; it utterly lacks context. This site may also be associated with either site 34Cm-512, which is located approximately 230 m to the west-southwest, or site 34Cm-510, which is located 400 m due east.

Locality 93-304

Locality 93-304 appears to represent a more recent dumping episode, which may have been perpetrated illicitly by hunters or military personnel. This dump is located adjacent to an east-west section road, and includes such materials as battery cores (dry-cell variety), a porcelain insulator, clear and brown glass fragments, whiteware fragments, and various metal fragments. The find is located some 200 m west of historic site 34Cm-510, but there is some doubt about this dump having been derived from that site.

Locality 93-305

This find consists of a single small chert flake that was recovered from the eroded surface of a terrace above Post Oak Creek. No other cultural materials were collected from the surface in this area; in addition, the two shovel tests excavated near this find were sterile. The nearest known prehistoric site in the area is 34Cm-491, which lies approximately 475 m to the northeast.

Locality 93-306

Survey of this area revealed yet another historic dump. Located in an oak grove atop a high ridge above an intermittent branch of Post Oak Creek, this dump yielded clear glass, whiteware, and miscellaneous metal fragments. A single shovel test produced no evidence of additional cultural materials or subsurface features. The nearest historic site, 34Cm-511, is located 700 m to the west.

Locality 93-307

This locality consists of a single sherd of clear glass that exhibits an unusual breakage pattern on one edge which may represent an aboriginal attempt to retouch the sherd for use as a side scraper. This artifact was observed on the surface of a wooded slope above the main channel of Post Oak Creek. No additional cultural materials were observed or recovered, either during an intensive examination of the immediate vicinity or during the excavation of a single shovel test. The nearest prehistoric site is 34Cm-91, which is located 550 m to the east on the banks of Post Oak Creek. Conversely, the nearest historic site, 34Cm-512, is located 830 m to the southwest.

Locality 93-308

This historic trash dump is located in an erosion gully on the banks of an intermittent drainage of Post Oak Creek. Among the materials observed were rubber tires; rusty tin cans; miscellaneous, unidentifiable metal fragments; clear glass; brown glass; and whiteware. There are indications that this dump is relatively modern. The nearest historic site, 34Cm-512, is located 600 m to the southwest.

Locality 93-309

This find consists of a single chert bifacial thinning flake recovered from the surface of an east-west section road. No additional artifacts were observed during a visual examination of the surrounding area, and, because the context of the find had been destroyed by road construction, no shovel tests were excavated in the vicinity of the find. Site 34Cm-91, the nearest known prehistoric site, is located 720 m to the southwest.

Locality 93-310

Locality 93-310 produced a single artifact, a small retouched flake that appears to have been made from petrified wood. This artifact was observed on a rise above the main channel of Post Oak Creek, immediately south of the extensive historic site designated 34Cm-514. No other cultural materials were observed at this locality, either during surface survey or the excavation of one shovel test. The nearest prehistoric site, 34Cm-321, is located 200 m downslope to the southeast.

Locality 93-311

A lone chert flake was observed on the surface at this location, which is situated on the shoulder of a north-south section road just west of the Quanah Range Complex. The main channel of Post Oak Creek is located just 50 m to the west. No other cultural materials were observed at this location; one shovel test excavated on the stream terrace above the road proved negative. Site 34Cm-321 is the nearest known prehistoric site and is located 380 m away on the other side of the creek.

Survey Area 4

This 1,263-acre survey area, which is located at the southern base of the Wichita Mountains, is very similar in all respects to Survey Area 3 (Figure 22). Survey Area 4 is located on the western boundary of the

military reservation and consists almost entirely of flat to gently rolling plains dissected by wooded drainages emanating from Post Oak Creek. The underlying near-surface geology is dominated by granite and rhyolite porphyry conglomerate overlain by sands and gravels (Dames and Moore 1980).

The soils for Survey Area 4 consist of an eclectic mixture of Foard silt loams; Foard-Slickspots complex, Foard and Tillman soils, Lawton loams, and Granite Cobbly land. Port loams, Port clay loams, and limited areas of Breaks Alluvial land complex are present in the bottomlands along the banks of Post Oak Creek and its tributaries (SCS 1970). The vegetation is dominated by short prairie grasses, although the areas near the larger tributaries and main channels of Post Oak Creek are choked with a thick deciduous forest consisting of blackjack oak, post oak, and related species.

During the course of the 1977 Fort Sill survey, a total of seven 60-acre quadrats and portions of two half-kilometer stream segments, totaling approximately 500 acres, was surveyed within Survey Area 4 by personnel from the Museum of the Great Plains. Twelve sites, discovered by either the Museum or by Shaeffer (1959) during his 1959 survey, have been previously recorded for this survey area. Eleven of these sites, 34Cm-92, 34Cm-93, 34Cm-96, 34Cm-97, 34Cm-123, 34Cm-240, 34Cm-241, 34Cm-291, 34Cm-316, 34Cm-317, and 34Cm-318, were recorded as prehistoric lithic scatters; the twelfth, 34Cm-319, consists of a small historic dugout associated with historic glass fragments. In addition, a total of three ruins was predicted for the area based on examination of a mid-century aviation map as well as Dames and Moore's 1980 Terrain Analysis. Only four of the sites, 34Cm-123, 34Cm-291, 34Cm-316, and 34Cm-317, and two of the ruins were relocated during the 1993 survey. The ruins, those of the Parker/Marcum homestead and an unidentified homestead complex, were designated sites 34Cm-514 and 34Cm-520, respectively. In addition, six additional sites and 14 localities (93-312 through 93-325) were recorded. Three of the new sites, 34Cm-517, 34Cm-518, and 34Cm-521, date from the historic period; the remaining three, 34Cm-515, 34Cm-516, and 34Cm-519, are prehistoric lithic scatters.

34Cm-514: Parker Place

This extensive site is located on a large ridge between Post Oak Creek and one of its tributaries. An east-west section road is located immediately to the south of the site. Soils are mapped as Granite Cobbly land; the site exhibits mixed grasses and Cross-Timbers vegetation. The elevation of the site is approximately 425 m (1,396 ft) amsl. Soil depth varies across the site, but is greater than 50 cm in most areas.

A wide variety of features was observed at this site, including the remains of nine structures and two cisterns or wells (Figure 23). Three structures remain standing with one, a storm cellar, retaining its roof. All remaining structures consist of foundations and destroyed foundation remains that are now represented by piles of rubble. In addition, several concentrations of whiteware, glass, and metal were observed at the site. The entire site covers approximately 38,000 m².

The first feature consists of a series of standing concrete walls, wall fragments, and associated rubble piles located in the far southwestern corner of the site. The feature measures approximately 10 m EW by 8 m NS. A large depression (7 m EW by 5 m NS), possibly the remains of a cellar or basement, is located 5 m west of the ruins; several sections of fencing are located approximately 15 m to the west. A fragment of metal sheeting and a metal table are situated approximately 25 m to the north and are most likely associated with this structure. Fragments of brick observed scattered in the area probably are derived from the building that once stood at this spot.

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Most of the structures (seven of nine) were clustered near the center of the site. The largest of these building remains retains only a few traces of walls and foundation pads; given the size and complexity of the ruins, this most likely represents the farmhouse. This feature measures approximately 18 m EW by 8 m NS and bears several concrete foundation extensions that may represent porch or lean-to areas. A small concrete feature (4 m NS by 1 m EW) with a pipe protruding from the western side is located 5 m east of this structure; this may represent a watering trough of some sort. A pile of concrete rubble is located approximately 5 m north of the assumed watering trough. Another rubble pile is located about 5 m east of the main structure, directly south of a large depression, measuring 7 m EW by 5 m NS, which probably represents the remains of a cellar or basement. The latter rubble pile and depression seem to represent the unrecognizable remains of a third structure, which has been completely destroyed.

The only complete structure remaining at this site is located 15 m north of the suspected farmhouse. This structure is a concrete cellar/storm shelter, and it presently retains all four walls and a roof. A series of concrete steps leads down into the structure on its south side. The entire structure measures approximately 4 m NS by 3 m EW. Four meters east of the shelter is a rectangular foundation pad measuring 8 m EW by 6 m EW; remnants of a north-south wall divide the structure approximately in half. Currently, a two-track dirt road runs directly through the center of the remains of this fifth structure.

Remains of a sixth structure are located approximately 3 m east of the fifth structure's foundation remains. This concrete foundation pad measures 7.5 m NS by 5 m EW. Ten meters due east of this structure is a seventh structure, which represents the second of the three standing structures observed at the site. The structure, which retains all four of its walls but no roof, measures approximately 6 m EW by 4 m NS. A small depression, measuring 3 m NS by 2 m EW, lies 10 m southeast of this structure. A chunk of concrete is located in direct association to the depression, indicating that it might once have been part of an adjoining structure.

The eighth structure consists of an L-shaped pattern of wall remnants located less than 8 m southeast of the second described structure, the suspected farmhouse. These structural remains are incomplete and may represent an extension of the farmhouse. When complete, this structure would have measured 14 m EW by 10 m NS. Currently, a two-track dirt road runs through the remains of this structure.

The ninth structure is located in the extreme east-central portion of the site. It consists of a large rectangular structure (15 m NW-SE by 7.5 m NE-SW) with an L-shaped attachment protruding toward the east. All four walls of this structure remain standing; however, no roof or floor remnants were observed. The lack of a floor and internal walls indicates that the structure may have served as a barn or storage building of some sort; alternately, it may merely have had a wooden floor and roof that have simply decayed into nonexistence. A large, rectangular, bulldozed rubble pile, located 35 m west of the ninth structure, may represent the remains of yet another destroyed structure.

One of the two cisterns or wells observed at the site is located near the central cluster of structures, approximately 30 m southeast of the suspected farmhouse. This feature is approximately 2.5 m square, with a circular hole measuring less than 1 m in diameter located on the edge of the east wall. The other well feature is located 30 m north of the ninth structure; it also measures 2.5 m square, with a circular hole 1 m in diameter in the center. It seems appropriate to assume that the first well served the needs of the central complex, while the second provided water for the ninth structure only. This supports the possibility that the ninth structure housed animals.

In addition to all these structures, a number of other nonstructural features was observed at the site. These include both a modern dump of metal (probably military) located 75 m north of the central cluster of

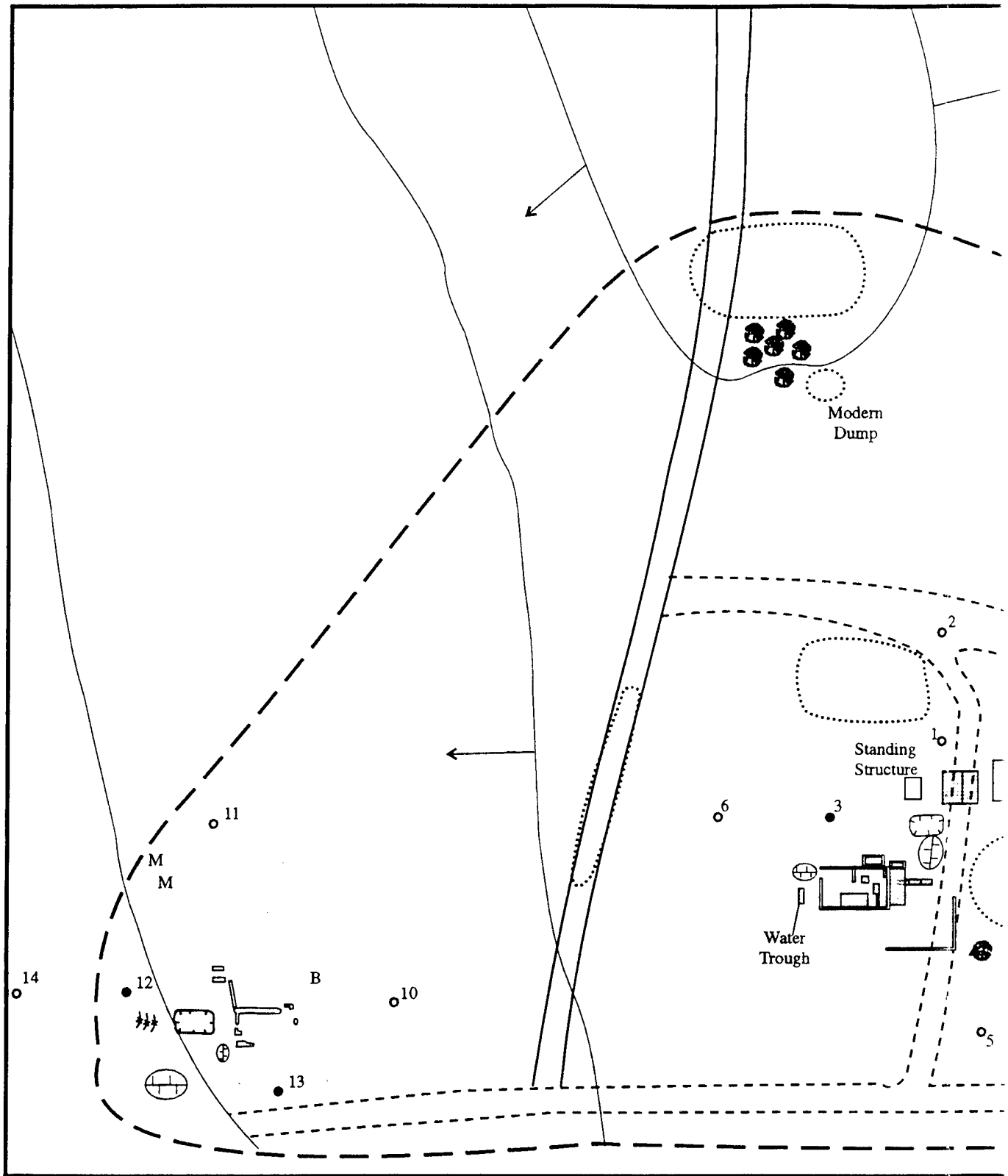
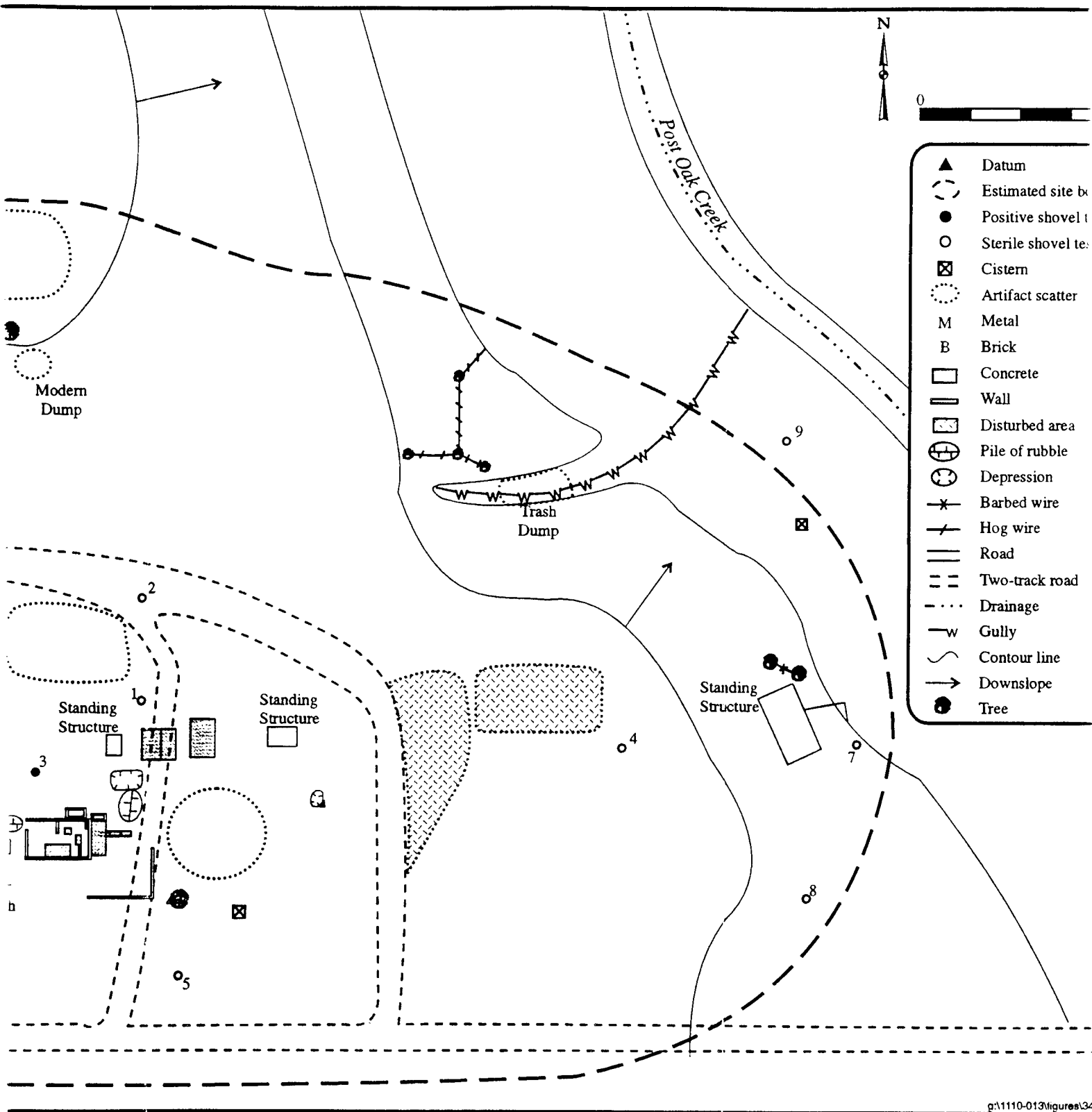
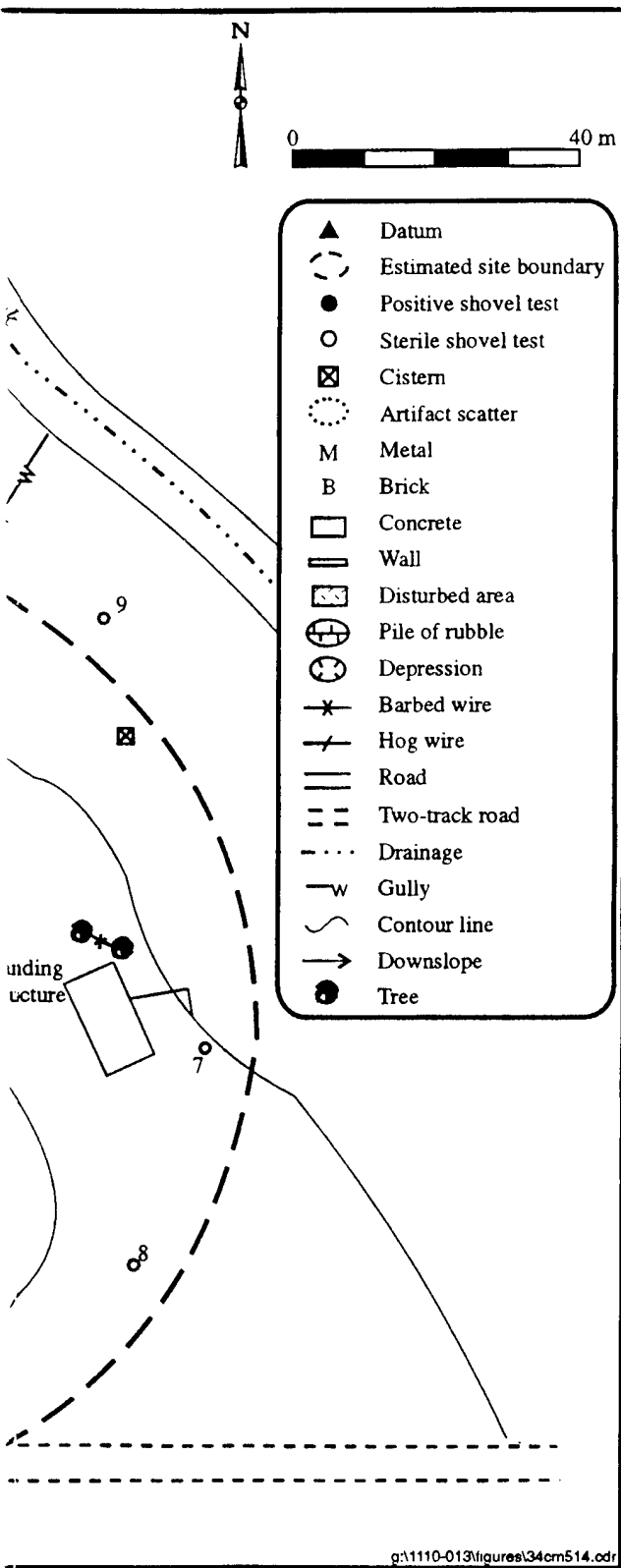


Figure 23. Plan map of site 34Cm-514.





3

structures and a historic trash heap most likely dating from the same time as the rest of the site, located in the bed of an intermittent stream 60 m northeast of the central cluster. In addition, several lengths of hogwire were observed strung between trees just north of the historic trash heap in an odd Y-shaped pattern. This wire may well represent the remains of animal pens associated with the farmstead.

Historic Artifacts

A wide variety of glass, metal, construction materials, and whiteware was observed on the surface at site 34Cm-514. None of the surface material was collected. However, of the 14 shovel tests excavated in and around the site, Shovel Tests 3, 12, and 13 were positive, yielding mammal bone, glass, whiteware, a wire nail, a wire staple, and a zinc canning jar lid with an intact milk glass lid liner.

Shovel Test 3, Level 1, 0-20 cm bs

Excavation of this shovel test yielded two artifacts and five fragments of unidentified bone. The artifacts included a zinc canning jar lid (1865-1915), with an intact Boyd's Genuine opaque liner (1900-1950), as well as a wire nail (post-1900).

Shovel Test 12, Level 1, 0-20 cm bs

This shovel test yielded a total of 23 bottle glass fragments, including Duraglas and decorated styles, as well as three whiteware fragments. Twenty-two of the glass fragments were clear; the twenty-third was brown.

Shovel Test 13, Level 1, 0-20 cm bs

This shovel test yielded a total of two clear glass fragments and a wire staple measuring approximately 2 cm by 3 cm.

Archival Research

This site is located in the SW quarter of the SE quarter of the SE quarter of Section 2, Township 2N, Range 15W. Although this was located in the area set aside for Comanche allotments, there is no indication that it was ever allotted to a Comanche settler. In fact, the first deed regarding this property was filed on June 14, 1910. On that date, one Bull Chandler of Indianoma purchased the southeast quarter of Section 2, Township 2N, Range 15W, for \$1,400.00 from the Commissioner of the Land Office (Comanche County *Deed Books* 116:32). The next deed, dated May 28, 1924, is an Improvement Affidavit in which John W. Middleton of Lawton "swears an oath that he paid for all the principal interest and other charges of the southeast quarter" and received the certificate of purchase after paying \$1,230.25 for the land (Comanche County *Deed Books* 194:427 and 428). On the same day, Middleton and his wife Lulu took out a \$1,350.00 mortgage on the land with the Pioneer Mortgage Company of Topeka, Kansas (Comanche County *Deed Books* 183:314). This mortgage was released on June 27, 1929 (Comanche County *Deed Books* 209:391). The Middletons received the land patent on June 28, 1924 (Comanche County *Deed Books* 195:463). On May 31, 1924, the Middletons took out a second mortgage for \$75.00 with the Pioneer Mortgage Company; it was later released on June 9, 1926 (Comanche County *Deed Books* 183:430, 207:394).

Cultural Resources Survey of 5,625 Acres within Fort Sill

On May 28, 1927, D. A. Stanka and his wife A. P. Stanka of Hallis, Oklahoma, granted Middleton one-quarter interest in the oil and gas leases on the southeast quarter of Section 2 for five years (Comanche County *Deed Books* 189:535). The Middletons, now living in Harmon County, deeded the southeast quarter to D. A. Stanka of Harmon, Texas, for \$4000.00 on November 1, 1927; Stanka assumed the mortgage of \$1,350.00 taken out by J. W. Middleton (Comanche County *Deed Books* 192:581).

The Stankas owned the property for almost a year before granting a warranty deed to W. O. Parker, his wife Leora Parker, Elmer Parker, and Edna Parker for \$2,000.00 (Comanche County *Deed Books* 217:448). The Parkers were reported to be relatives of Comanche chief Quanah Parker, so it is reasonable to assume that they were of at least partial Comanche heritage. The Parkers rented the southeast quarter of the southeast quarter of Section 2 to the State of Oklahoma for the state game refuge on November 15, 1927. The 10-year lease was for the amount of \$1.00 (Comanche County *Deed Books* 224:223). The Parker family took out a mortgage on the property with the State Land Office for \$2,400.00 on December 14, 1929 (Comanche County *Deed Books* 226:28). This mortgage was released on November 7, 1934 (Comanche County *Deed Books* 177:211). On June 29, 1934, the Parkers took out a second mortgage with the Federal Land Bank of Wichita, Kansas, for \$4,400.00; this mortgage was released on December 27, 1946 (Comanche County *Deed Books* 238:192, 282:525). A third mortgage was taken out with the Federal Land Bank of Wichita, Kansas, for \$2,100.00 on June 29, 1934; this mortgage was released December 27, 1934 (Comanche County *Deed Books* 238:107). On January 30, 1939, the Parkers renegotiated the mortgage for lower semi-annual payments from 20 payments of \$105.00 to 37 payments of \$52.50 (Comanche County *Deed Books* 252:570). The mortgage was released on December 27, 1946 (Comanche County *Deed Books* 282:525).

A financial decree was filed with the court on March 28, 1953, to distribute the assets of William O. Parker, deceased. The executor of Parker's will was his son Frank Orin Parker. Other heirs included Leora Parker, widow; Robert W. Parker, son; Annie Marcum, daughter; and Rose Wisener, daughter. All land and personal property was bequeathed to Leora Parker; this included the southeast quarter of Section 2, which was reported to be the family homestead (Comanche County *Deed Books* 393:87). Annie Marcum and her husband, J.P., are also known to have resided on the property between 1953 and 1956. In 1956, the Parkers sold the property for \$24,930.00 to the U.S. government for the expansion of Fort Sill (Comanche County *Deed Books* 438:689).

Summary

This site was known to have been occupied by 1953 by Leora and William O. Parker, possibly Comanche settlers; the site was later occupied by the Parkers' daughter, Annie, and her husband, J.P. Marcum. This extensive site retains a large number of intact features, including nine structures (three still standing) and two cisterns or wells. Given the extent and good condition of this site, additional testing is recommended in order to determine its eligibility for listing on the NRHP.

34Cm-515

This site is located less than 200 m east of Post Oak Creek on a gentle slope alongside an access road and around an erosional gully. The vegetation in this area is recorded as consisting of mixed grasses, while the soil is mapped as Lawton loam (3 to 5 percent slopes). The elevation of the site is approximately 421 m (1,380 ft) amsl, and the soil depth is greater than 50 cm below the surface. The site covers approximately 525 m² (Figure 24).

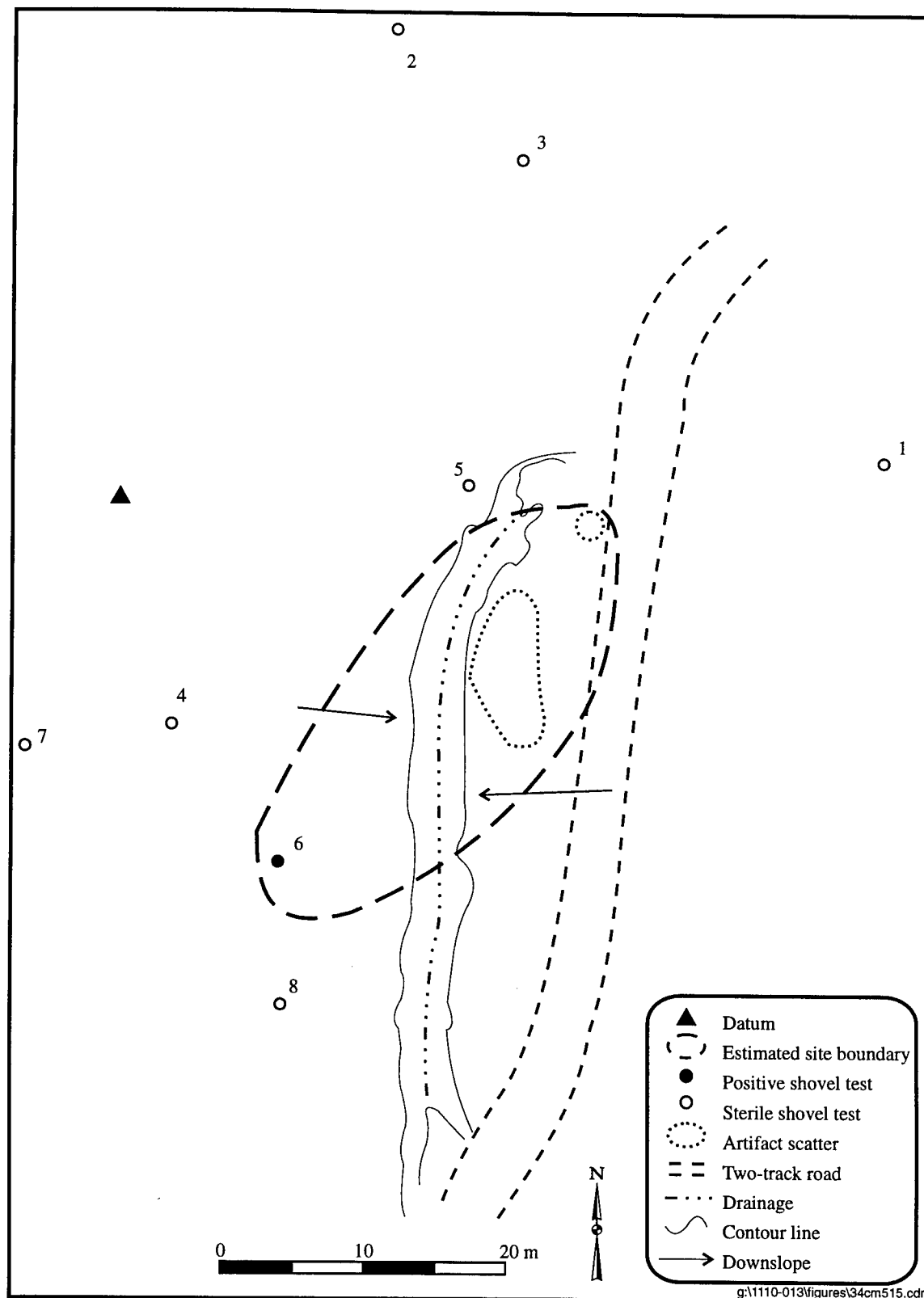


Figure 24. Plan map of site 34Cm-515.

Cultural Resources Survey of 5,625 Acres within Fort Sill

This site represents a small, highly disturbed lithic scatter. The most distinctive attribute of the site is the presence of numerous flakes and cobbles of a glassy material that at first glance appeared to be low quality obsidian; however, further examination indicates that the material is, instead, a variety of high-quality crystalline quartz. The amorphous nodules of this material that were observed and collected at the site appear to be fragments of crystalline quartz that have been smoothed by rolling in a streambed. No diagnostic artifacts were collected.

Prehistoric Artifacts

A total of four quartz nodules, 30 unmodified quartz flakes, one retouched quartz flake, and two unmodified chert flakes was observed on the surface at site 34Cm-515. Eight of the unmodified quartz flakes and the retouched quartz flake were collected, as was one of the amorphous quartz nodules. One of the flakes measures between 12.5 and 19 mm in size; three measure 9.5-12.5 mm in size; three measure 6.3-9.5 mm in size; and one is less than 6.3 mm.

The retouched quartz flake is entirely transparent and might be mistaken for a piece of glass. One lateral edge has been retouched. The flake measures 19 mm (l) by 12 mm (w) by 3 mm (t), and has a weight of .9 g.

In addition, a total of eight shovel tests was excavated at this site; Shovel Test 6 was positive, yielding a single small tertiary chert flake from a depth of 0-20 cm below surface. The flake measures between 6.3 and 9.5 mm in size.

Summary

This site is a highly disturbed, light prehistoric artifact scatter. It may have served as a lithic reduction station or an upland hunting camp; however, its cultural affiliation remains unknown due to a lack of diagnostic materials. Few if any surface deposits are intact; an access road has been built in the immediate vicinity and natural erosion has carved a gully through the middle of the site. The assemblage is relatively large but not distinctive. Due to the limited nature of the site and its general lack of contextual integrity, it is not recommended for inclusion in the NRHP. No further work is recommended for this site.

34Cm-316

This site represents the remains of site 34Cm-316, a small lithic scatter recorded by the Museum of the Great Plains in 1977 (Ferring 1978). It is on the crest and slope of a small knoll on a ridge above the floodplain of Post Oak Creek at an elevation of 430 m (1,410 ft) amsl. Soils at the site are mapped as Lawton loam (1 to 3 percent slopes); soil depths vary from 15 cm below surface to greater than 50 cm below surface. Cross-Timbers vegetation is recorded on the site. The site covers an area of approximately 1,650 m² (Figure 25).

The site was heavily collected by the Museum of the Great Plains in 1977, leaving very little to be found when the site was relocated by the 1993 Fort Sill survey. A very sparse surface scatter of lithic artifacts, consisting of one quartzite flake and three quartz flakes, was observed but not collected. A total of four shovel tests was excavated at 34Cm-316; all were negative.

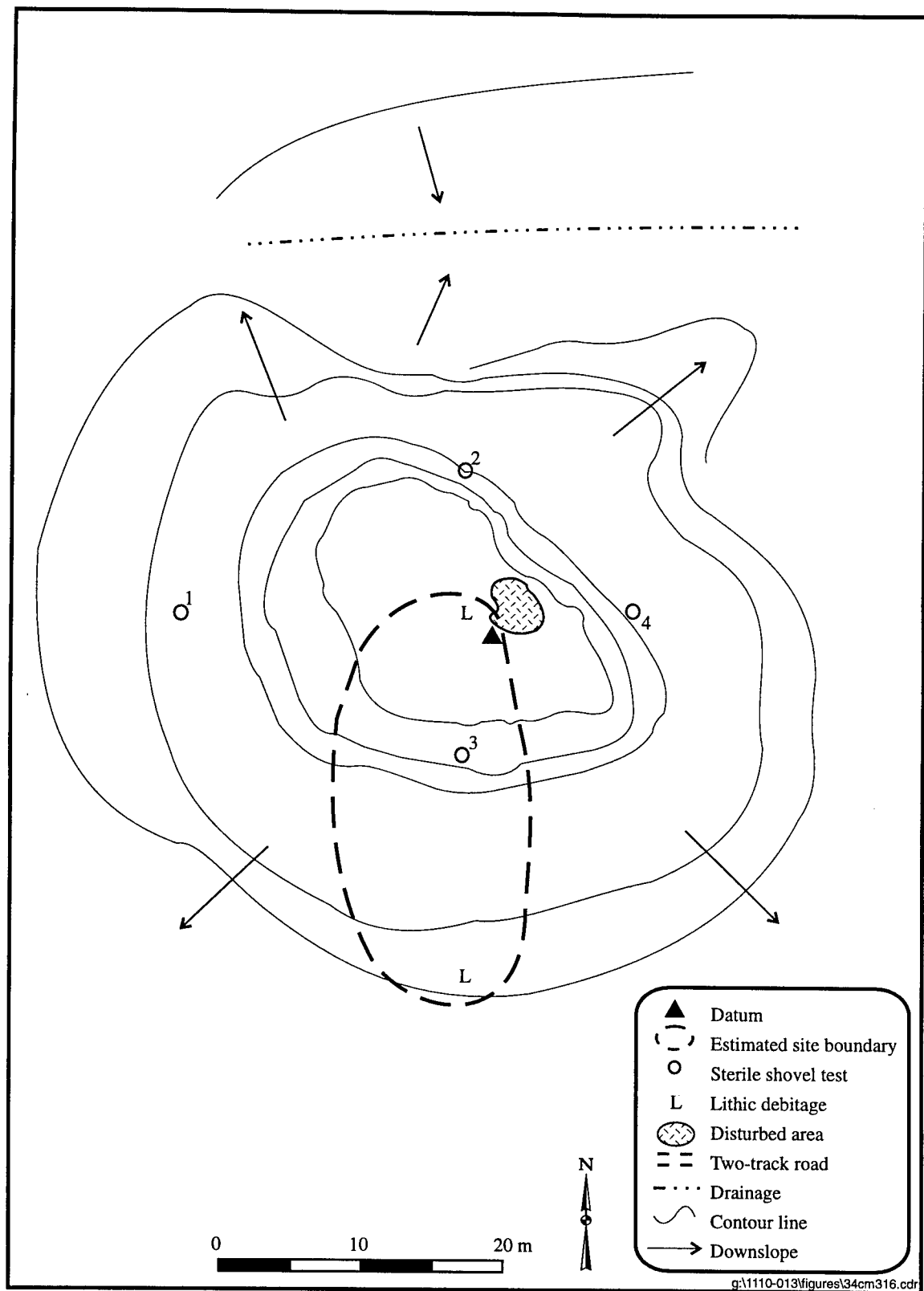


Figure 25. Plan map of site 34Cm-316.

Cultural Resources Survey of 5,625 Acres within Fort Sill

Summary

This site is currently in poor condition. It has been heavily impacted by erosion, military traffic, and over-collection by previous researchers. In prehistoric times, it may have served as an upland hunting station or ephemeral base camp; yet its cultural origin remains unknown because of the lack of diagnostic artifacts and features. Given the small assemblage size and the condition of the site, site 34Cm-316 is not considered to be eligible for inclusion in the NRHP. As Ferring (1978) also noted 16 years ago, no further work is recommended for this site.

34Cm-516

This prehistoric lithic scatter is located on a highly disturbed knoll south of a small intermittent drainage of Post Oak Creek; elevation is approximately 427 m (1,400 ft) amsl. A two-track dirt road passes along the west side of the site. The soils are mapped as Granite Cobbly land; vegetation is mixed grasses. The soil depth is greater than 50 cm below the surface. Site area is approximately 5,600 m² (Figure 26).

Contextual integrity at this site is minimal; the site has been impact by road construction, military activity, and erosion. A sparse scatter of prehistoric lithic artifacts was observed on the surface. Among the artifacts noted were one fragmentary chert biface; one possible chert biface; six unmodified chert flakes; and four unmodified quartz flakes. A total of seven shovel tests was excavated across the site; none yielded cultural materials.

Prehistoric Artifacts

Only one artifact was collected at this site; this consists of a small distal biface fragment made from a patinated pale brown chert. This piece measures 14 mm (l) by 21 mm (w) by 2 mm (t), and weighs .9 g.

Summary

This site represents a low density, highly disturbed prehistoric lithic scatter. It may have served as a small upland hunting station or ephemeral base camp and is of unknown cultural affiliation. Given its poor condition and small assemblage size, this site cannot be considered to be eligible for inclusion in the NRHP. No further work is recommended for site 34Cm-516.

34Cm-317

This large site represents the remains of 34Cm-317, a lithic scatter first identified in 1977 by the Museum of the Great Plains (Ferring 1978). It may also incorporate Shaeffer's (1959, 1966) site 34Cm-97, since this site is essentially contiguous to the site recorded by Ferring; however, given Shaeffer's minimal descriptions, this remains uncertain. The site is located on a bluff overlooking the main channel of Post Oak Creek at an elevation of 436 m (1,430 ft) amsl. Soils are mapped as Granite Cobbly lands; soil depth approaches 50 cm below the surface. Cross-Timbers vegetation covers the site. Site area is approximately 7,200 m² (Figure 27).

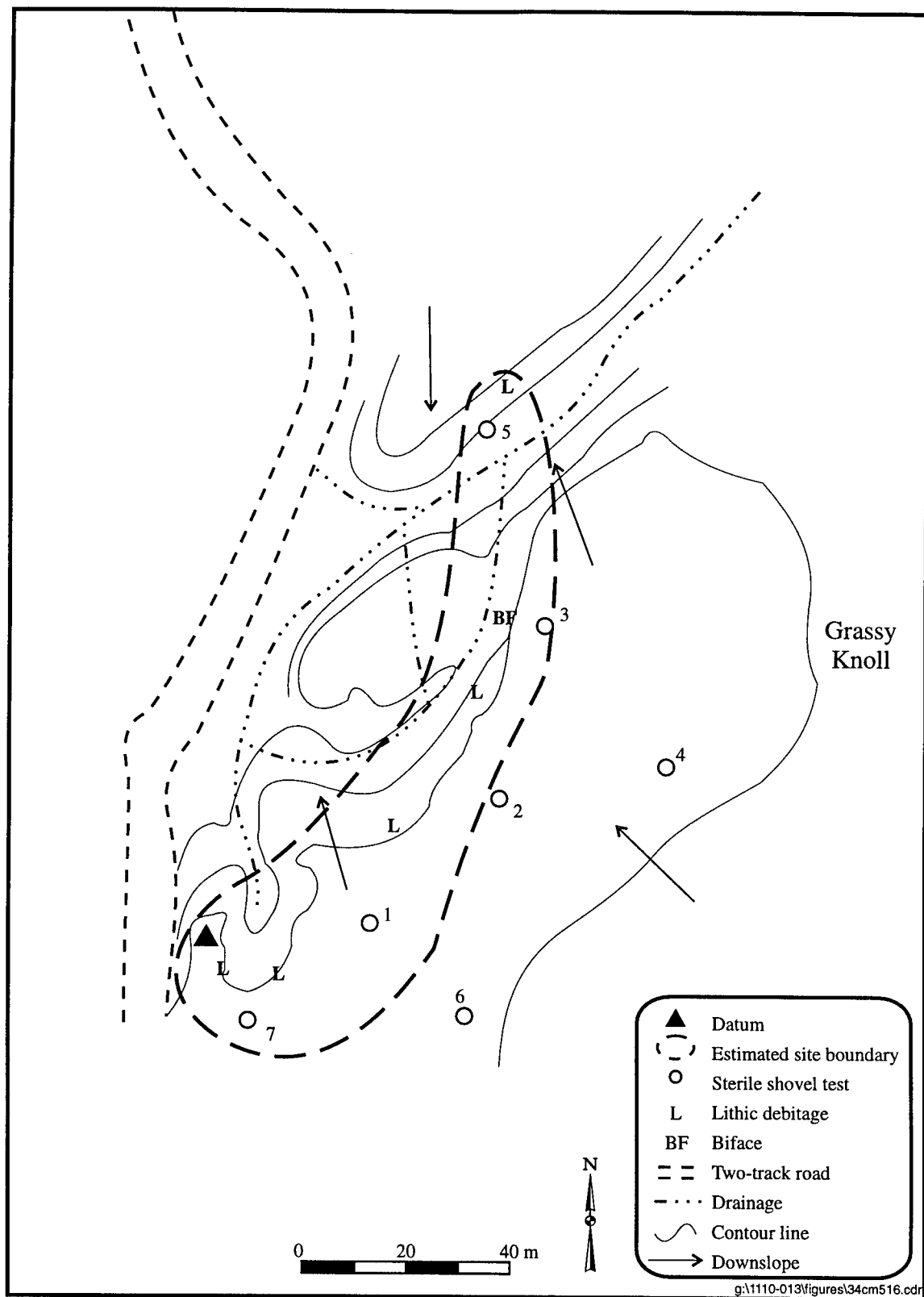


Figure 26. Plan map of site 34Cm-516.

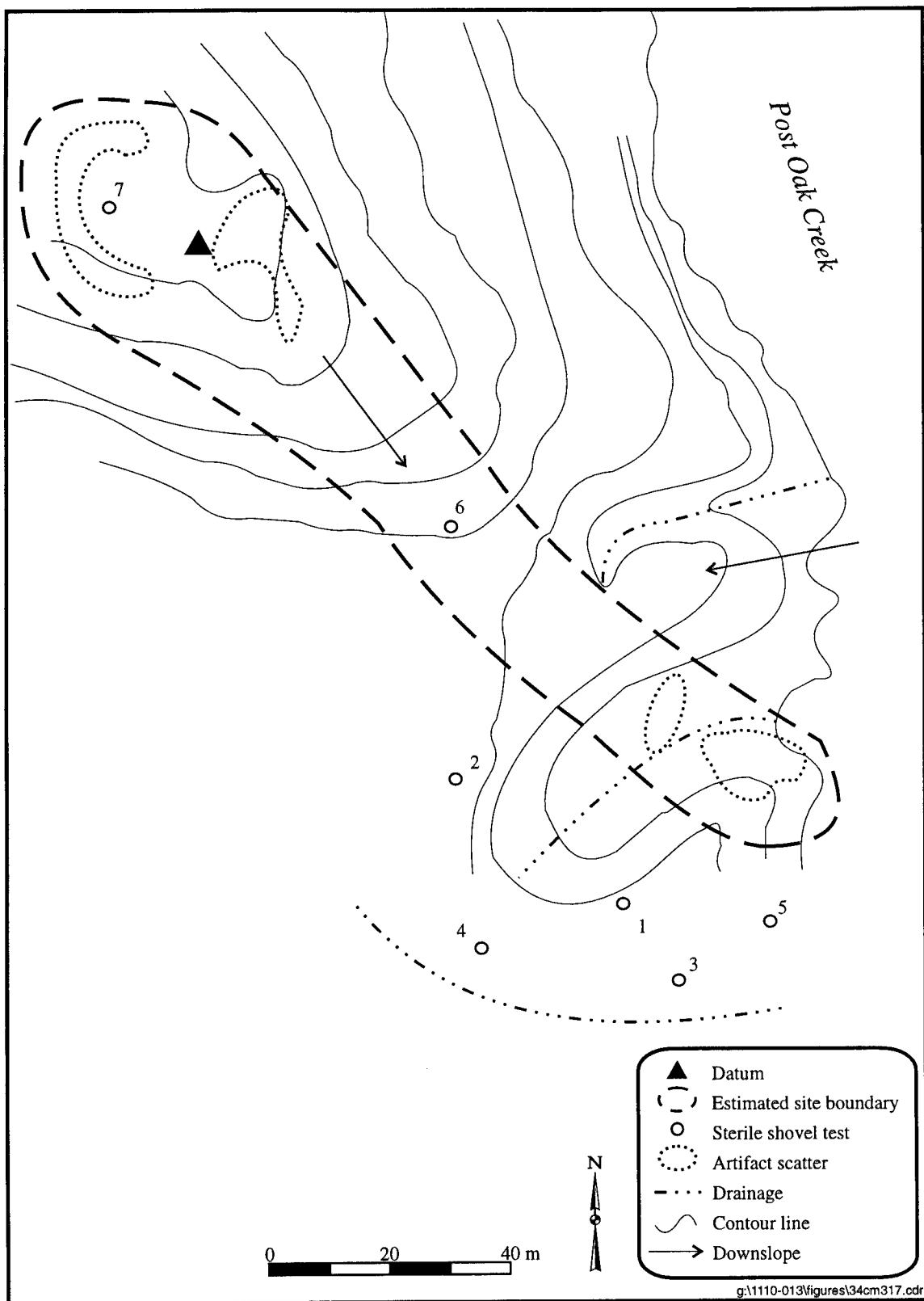


Figure 27. Plan map of site 34Cm-317.

This site is located primarily on exposed gravel lenses; surface visibility is thus very good. However, only 17 flakes were observed. Seven of these flakes were of chert; nine were of quartz; and one was of petrified wood. None of these artifacts was collected.

Summary

Site 34Cm-317 as it exists today is a low density, moderately disturbed artifact scatter. It may have served as a small, ephemeral base camp or as an upland hunting station, although its cultural origin remains unknown. During the 1977 Museum of the Great Plains survey, the site was recorded as being a "moderately dense artifact scatter" that produced two Archaic Clear Fork gouges (Ferring 1978). The site was greatly impacted by the Museum's extensive surface collections (155 artifacts were collected), and has since suffered extensive natural erosion. Given the current condition of this site, coupled with its small, undistinguished artifact assemblage, it cannot now be considered eligible for inclusion in the NRHP. No further work is recommended for site 34Cm-317.

34Cm-517

This site is located along the crest of a hilltop; a small two-track dirt road runs through the western edge of the site. The elevation is approximately 439 m (1,440 ft) amsl. The soils are mapped as Foard-Slickspots complex, 1 to 3 percent slopes; soil depth is moderate, approaching 50 cm below the surface. The vegetation regime observed at the site is dominated by short grasses. The total site area measures approximately 3,600 m² (Figure 28).

This site consists of a small, buried historic artifact scatter lacking architectural remains and other features. Normally, such a find would be considered simply a historic dump and would be considered a locality; however, the presence of buried cultural materials, recovered from a total of three shovel tests, indicates that it is more than merely a dumping area. Nearly every other historic dump discovered during the course of this survey has been found in a washout gully near one of the intermittent tributaries of Post Oak Creek; conversely, this site is on a flat area with heavy grass cover. A variety of materials has been observed at the site, including amethyst glass, clear glass, whiteware, and miscellaneous metal fragments.

Historic Artifacts

Historic material was recovered from three of the 10 shovel tests excavated in and around the site (Shovel Tests 1, 2, and 6). These included one fragment of porcelain, one fragment of whiteware, and one clear glass fragment. In addition, one amethyst glass fragment and two whiteware fragments were recovered from the surface of the road west of the site datum.

Archival Research

Site 34Cm-517 is located in the SW quarter of the SW quarter of the SE quarter of Section 35, Township 3N, Range 15W. The southeast quarter of Section 35 was allotted to the Comanche settler Joseph Macho in 1901 (Anonymous n.d.:25). This property remained in the hands of his family until June 1957, at which time it was purchased by the U.S. government for the expansion of Fort Sill (Comanche County *Deed Book* 452:322). This deed indicates that the property was inherited by Robert Otis Poafpy Bitty, the sole heir to

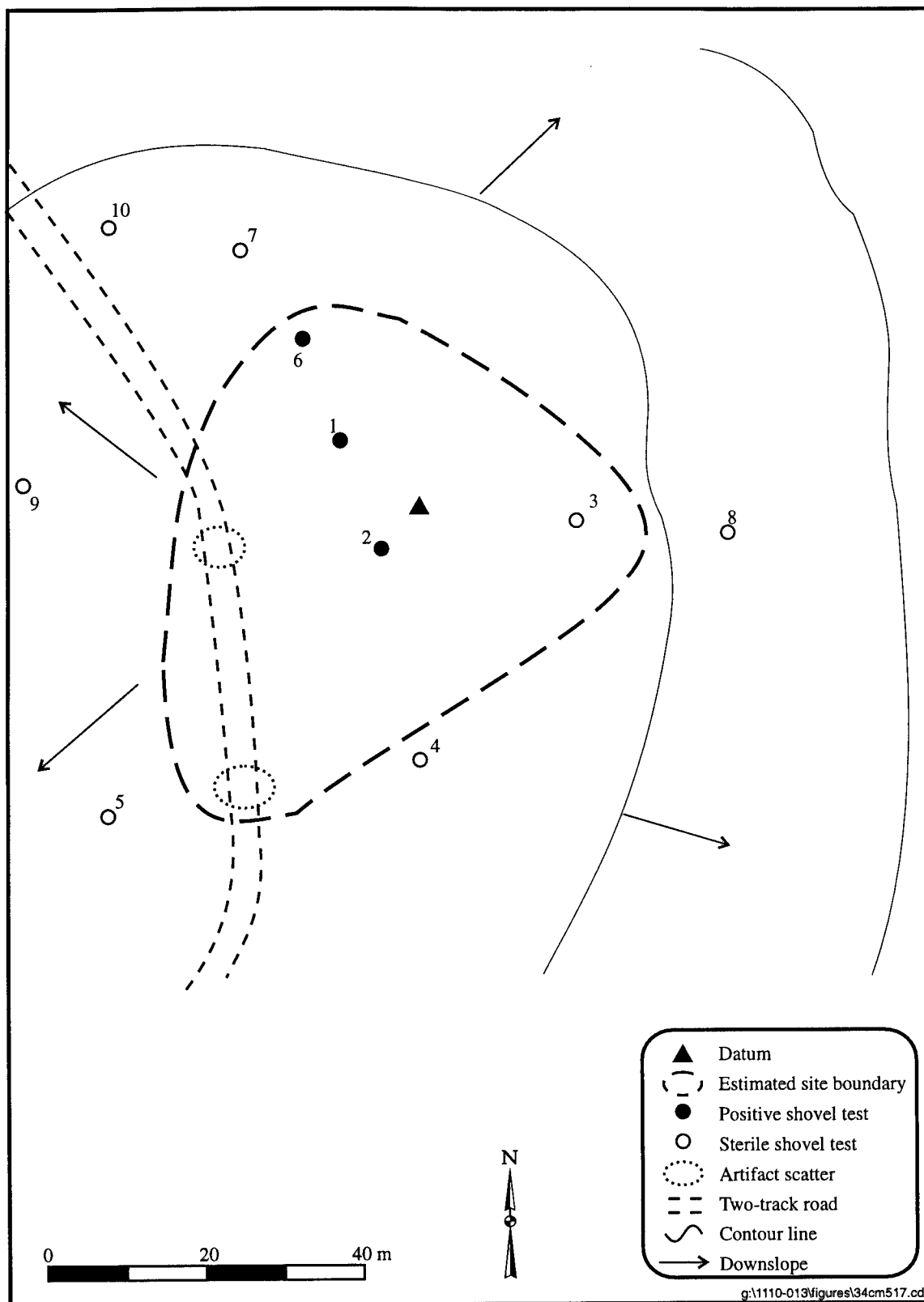


Figure 28. Plan map of site 34Cm-517.

the Macho family. This site may represent a dump associated with the Macho/Poafpy Bitty homestead, which was not identified during the course of the survey. Indeed, it may be all that remains of that homestead.

Summary

Although this site is characterized as a scatter of historic materials, it does not appear to be a typical historic trash dump; the site is located in heavy grass cover rather than a washout gully and yielded subsurface cultural material. No architectural remains or other features were observed during the recording process. This site may be the remains of the Macho/Poafpy Bitty homestead or may be associated with such; in any case, it dates from the post-1901 Comanche settlement of the area, and is worth further notice. Furthermore, contextual integrity appears to be quite good. Therefore, it is recommended that this site be subjected to additional archival research in order to clarify its eligibility for inclusion in the NRHP.

34Cm-518

Historic site 34Cm-518 is located on the crest of a hill; a two-track dirt road runs through the middle of the site, which is situated at an elevation of 436 m (1,430 ft) amsl. The soils are mapped as Foard Slickspots complex, 1 to 3 percent slopes. Vegetation is dominated by short grasses; the soil depth is moderate, exceeding 50 cm.

This site represents of the remains of a single small structure, which consists now of scattered concrete wall remnants (Figure 29). The intact structure would have measured about 7.5 m²; the ruin as it exists today is scattered some 195 m². Portions of three walls remain standing, but the southern side of the structure is completely open. The broken wall fragments in this area may represent the remains of the south wall. A total of five shovel tests was placed in the vicinity of the foundation, but no subsurface materials were recovered. In addition, no surface materials aside from the structural remains were observed.

Archival Research

Site 34Cm-518 is located in the NW quarter of the NE quarter of the NW quarter of Section 2, Township 2N, Range 15W. The first recorded deed for this area is a State Game Refugee Lease between S.C. Kealiker and the State of Oklahoma dated November 1929 (Comanche County *Deed Book* 224:219). Kealiker most likely acquired the property from a Comanche who received it as an allotment in 1901. This lease was released in October 1956 (Comanche County *Deed Book* 938:602). The next deed is also a State Game Refugee Lease, between W. O. Parker and the State of Oklahoma, also dated November 1929 (Comanche County *Deed Book* 224:223). At this time, both the Parkers and Kealikers claimed ownership to the property, but neither were ever deeded the property. The land acquisition maps indicate that the last owner was the State of Oklahoma, which is probably due to the fact that the property was leased and the leasers were the last to have some claim to the property (Real Property Office). The land was acquired for expansion of Fort Sill in 1956.

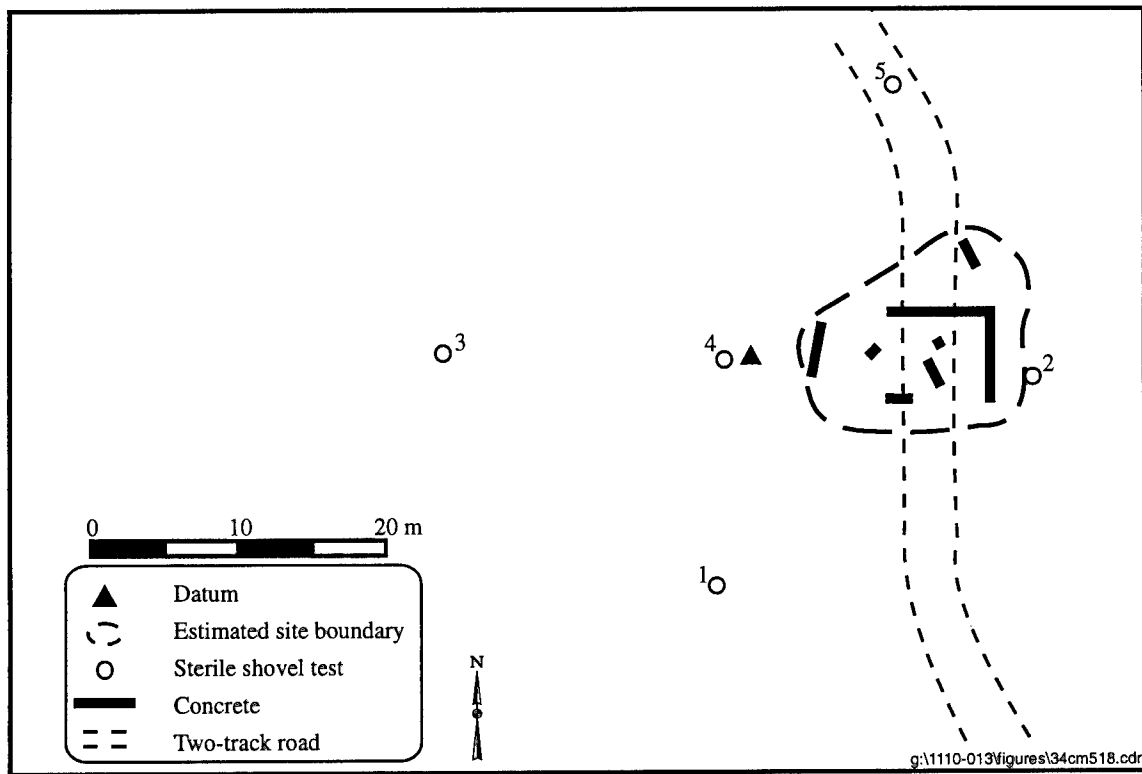


Figure 29. Plan map of site 34Cm-518.

Summary

This site represents the remains of a small structure—perhaps a house or storage building—which was most likely constructed prior to 1929, as the State of Oklahoma was a long-term lessor of the land after that year. The origins of the structure remain unclear; it may have been built by the Kealikers or the Parkers, or by a prior owner or tenant. The site is in poor condition, though shovel testing revealed intact subsurface deposits to at least 50 cm below the surface. Further archeological testing at 34Cm-518 is not warranted, but archival work is recommended in order to more fully evaluate its status for inclusion in the NRHP.

34Cm-519

Site 34Cm-519 is nestled within a curve of a main channel of Post Oak Creek at an elevation of approximately 433 m (1,420 ft) amsl. The soils at the site are mapped as Foard and Tillman soils, 1 to 3 percent slopes. The vegetation observed at the site is dominated by short grasses and soil depth is moderate, extending to at least 50 cm below the surface. The site covers approximately 1,050 m² (Figure 30).

This site exhibits a moderately dense scatter of prehistoric lithic artifacts. A total of 52 artifacts was observed on the surface, including one quartzite biface fragment, 39 quartzite flakes, seven chert flakes, and five quartz flakes. The site is located on the edge of a terrace ridge that is eroding into Post Oak Creek.

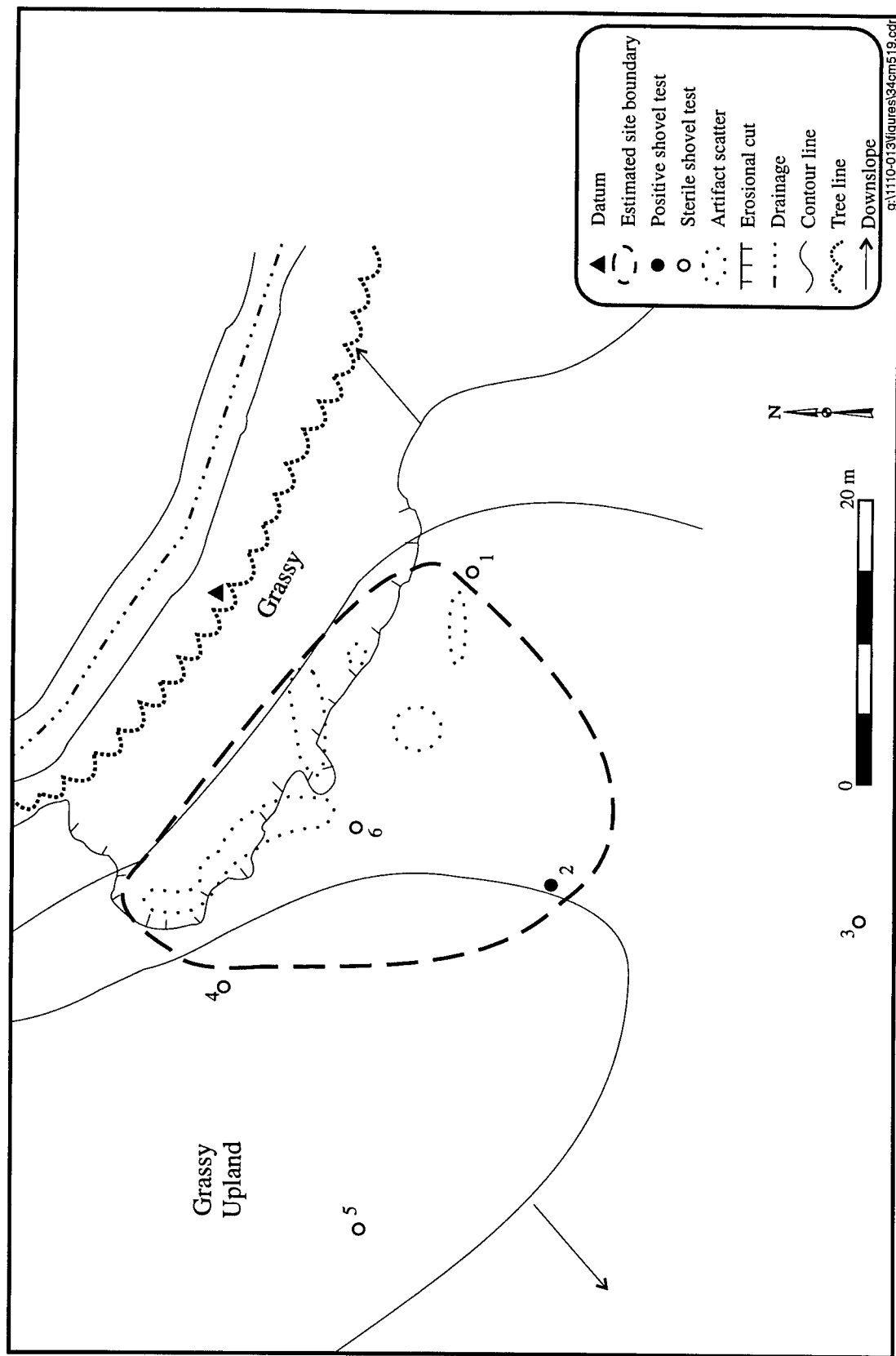


Figure 30. Plan map of site 34Cm-519.

Cultural Resources Survey of 5,625 Acres within Fort Sill

The surface sediments are eroding down the slope and are washing out of a small cutbank on the terrace edge. The cutbank is composed mostly of exposed gravels mixed with silt and sand and yielded many of the artifacts observed at the site. Two distinct concentrations, of nine and 11 flakes each, were noted on the terrace; one other concentration, consisting of six flakes, was observed below the cutbank. A total of six shovel tests was placed in the uneroded portion of the terrace west of the cutbank. One shovel test, Unit 6, was positive, yielding two chert flakes.

Prehistoric Artifacts

A total of three artifacts was recovered from this site. One of the artifacts is the biface fragment mentioned above. This basal fragment measures 2.0 mm by 2.9 mm by 1 mm, and weighs 7.3 grams; the piece was made from quartzite. Also recovered were two flakes, both from Shovel Test 2. The first flake is from 0-20 cm below the surface and measures 6.3-9.5 mm in size. It was made of quartzite. The other flake came from Level 2, 20-40 cm below the surface; this chert flake measures between 6.3 and 9.5 mm.

Summary

This site represents the remains of a small prehistoric lithic scatter, possibly a base camp or upland hunting station. Unfortunately, the lack of diagnostic artifacts precludes assignment to a particular cultural affiliation. The western portion of the site retains good contextual integrity with demonstrably intact subsurface deposits and buried cultural remains. It is recommended that the intact portion of the site be subjected to a program of limited testing in order to clarify its eligibility for listing in the NRHP. Until this can be accomplished, an erosion control program should be initiated in order to save the intact portion of the site. The site should additionally be protected from impacts caused by military training and vehicular traffic.

34Cm-123

Site 34Cm-123 is located in the extreme northwest corner of Fort Sill Military Reservation on a terrace east of a small intermittent tributary of Post Oak Creek. It is crossed by two north-south dirt roads and is located immediately south of the Fort Sill perimeter road. The site is situated at an elevation of approximately 433 m (1,420 ft) amsl and is dominated by Cross-Timbers vegetation. The soils are mapped as Port loam and extend to a depth of at least 50 cm below the surface. The site covers an area of approximately 3,000 m² (Figure 31).

This site represents the remains of site 34Cm-123, a site originally identified by Shaeffer in 1959 and relocated by Tyler Bastian and James A. Marler in 1964. The site was originally recorded as an extensive scatter of lithic artifacts "astraddle Wildlife Refuge-Fort Sill boundary fence." Quartz debris; triangular, side-notched, quartz projectile points; and two hearths comprised the site. Today, the site consists of a very meager, highly disturbed scatter of prehistoric lithic artifacts. The firelane and road to the north and west of the site are highly deflated. The boundary roads have been improved a number of times since the site was last recorded; this seems to have destroyed the hearths described by Shaeffer and Bastian, because the areas where they are said to have been is now heavily disturbed and no fire-cracked rock was observed on the surface. A total of three flakes was observed on the surface. None was collected. The five shovel tests excavated at the site produced no cultural materials.

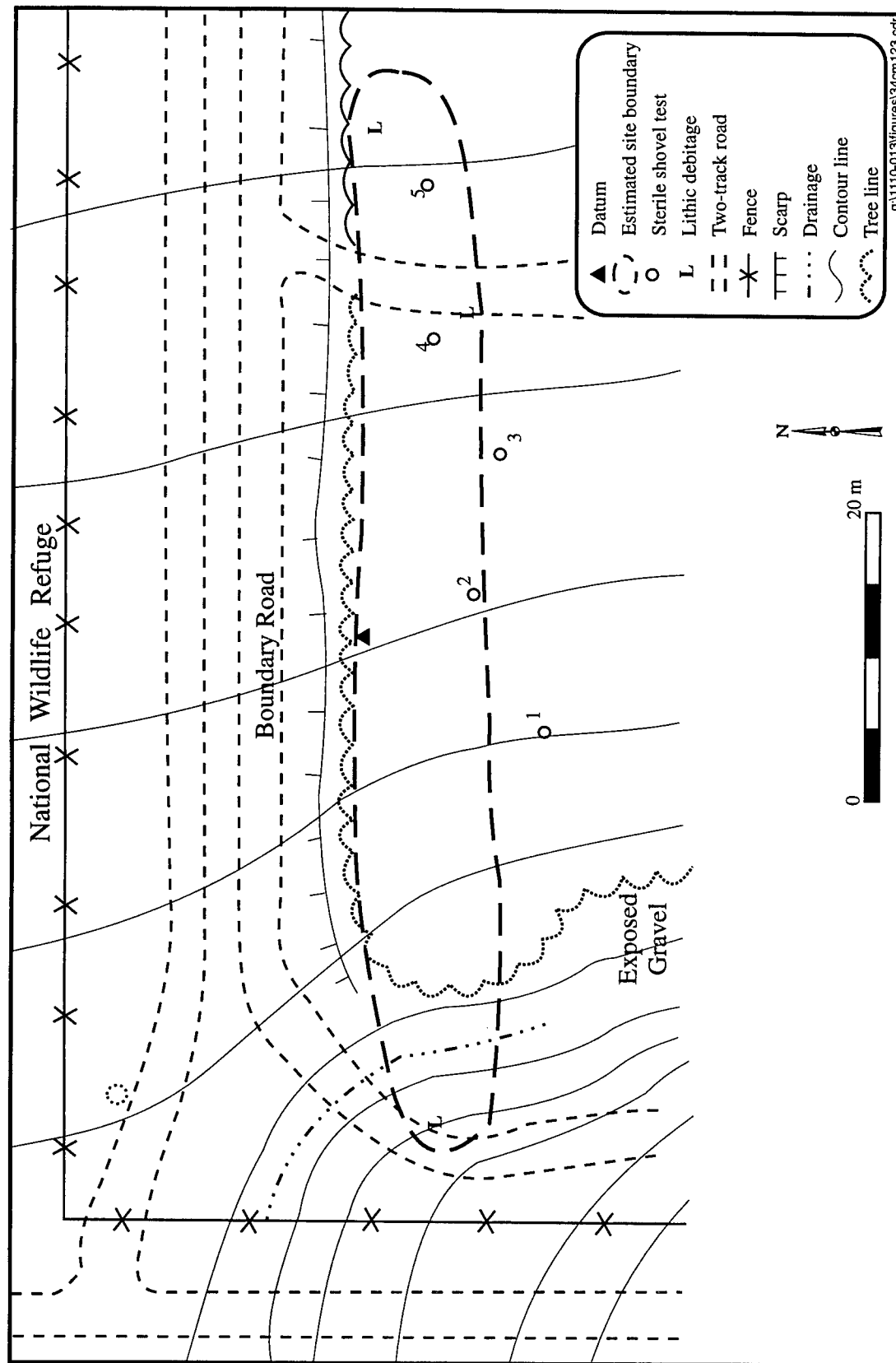


Figure 31. Plan map of site 34Cm-123.

Cultural Resources Survey of 5,625 Acres within Fort Sill

Summary

The segment of the site that lies within the Fort Sill boundary exhibits no remaining contextual integrity. A similar fate is suspected for the portion of the site reported to be on the Wildlife Refuge side of the fence, although this is by no means certain. The observed site assemblage is small; the site appears to have suffered from repeated relic collection by researchers and avocational archeologists. Therefore, site 34Cm-123 is not considered eligible for inclusion in the NRHP. No further work is recommended for this site.

34Cm-291

This site is located on a flat terrace between Post Oak Creek to the east and an intermittent drainage to the west at an elevation of 439 m (1,440 ft) amsl. A two-track dirt road passes through the southern perimeter of the site. The soil is mapped as Port clay loam; it is moderately deep, extending to approximately 45 cm below the surface, where it directly overlies decaying sandstone bedrock. The site, which encompasses approximately 360 m² (Figure 32), is covered with a mixture of short grasses.

This site represents the remains of site 34Cm-291, which was originally recorded by the Museum of the Great Plains in 1977 (Ferring 1978). The site was then described as "an elongated [1800 square meter] surface scatter on a low gravelly ridge containing abundant quartz cobbles" (Ferring 1978). Areas of high artifact density were intensively collected. A total of 107 artifacts, including the mid-section of a lanceolate projectile point/knife, two flint end scrapers, and several very small flint cores, was collected from the surface. Today, the site lies on a partially deflated surface, with exposed gravels in the lower areas and good deposition in the upper part of the terrace. The site covers a much smaller area (360 m²) than that defined by Ferring in 1978, and yielded only four artifacts. A fragmentary cobblestone structure was noted by Ferring (1978) east of the site, but was not observed during the 1993 Fort Sill survey.

Prehistoric Artifacts

A single low quality quartzite flake was observed on the surface at this site. During the course of site delineation, a total of four shovel tests was excavated. Shovel Test 1 yielded three artifacts (a core and two flakes) from a context 0-20 cm below surface. The core is a low quality chert and may have undergone heat-treatment. One of the flakes is quartzite and measures between 12.5 and 19 mm in size. The other flake is of low quality chert and is greater than 25 mm in size.

Summary

Ferring (1978) suggested that this site may have been the location of quarrying activities. This site may also have served as a small chipping station, ephemeral base camp, or upland hunting station; given its location, it could have been any or all of these. It is not possible at this time to determine its original use or cultural affiliation. Although the site appears to be in fairly good condition, its limited size and sparse artifact assemblage reduce its research value; thus it is not considered eligible for inclusion in the NRHP. No further work is recommended at site 34Cm-291.

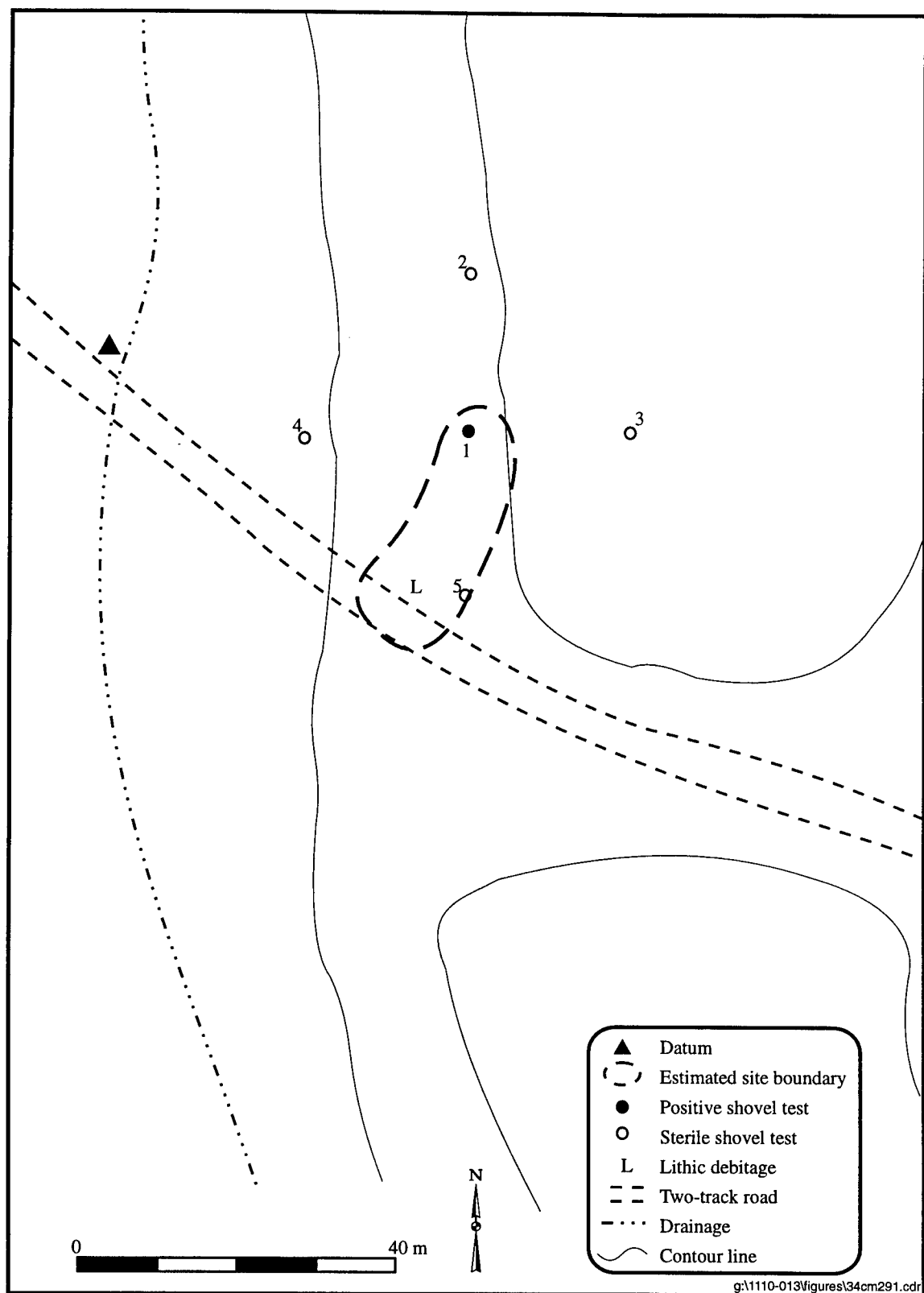


Figure 32. Plan map of site 34Cm-291.

34Cm-520

This extensive historic site is located immediately west of the eastern boundary of the Fort Sill Military Reservation on a bluff above the main channel of Post Oak Creek. The site lies at an elevation of approximately 476 m (1,435 ft) amsl. The soils in the area are mapped as Port clay loam and support Cross-Timbers vegetation. The soil depth is greater than 50 cm below the surface. The site covers approximately 12,000 m² (Figure 33).

The site presently consists of one standing structure with remnants of its roof; one foundation with the remains of the outlines of its walls; one structure with standing walls; two sets of wall remnants that may represent either building remains or the remains of a wall enclosing a large courtyard; two small concrete pads that likely represent the foundations of small outbuildings; one well or cistern; one standing silo; and associated piles of rubble.

The remains of the first structure consist of a roofless, three-sided standing cobble and concrete wall located some 130 m northwest of the datum; the south wall of this structure is missing, if indeed it ever existed. The remains measure approximately 15 m NE-SE by 6 m NW-SW. This structure may represent the remains of a stable or barn.

The second feature represents the only remaining standing structure at this site that retains a roof. The main portion of the structure measures approximately 6 m NW-SE by 5 m NE-SW; in addition, a cobble wall approximately 5 m long extends from the west side of the structure. This wall may have been a retaining wall, or it may have been part of an addition to the structure that has not fared as well as the main structure since site abandonment. This building may have served as a garage. Another, detached segment of cobble and concrete wall is located directly east of the structure. A large pile of rubble (approximately 18 m EW by 10 m NS), consisting of remnants of walls and foundation pads, is located some 12 m to the northeast of the standing structure. This rubble pile is most likely associated with the remains of a structure approximately 8 m to the south. This feature consists of the outlines of a structure measuring 17 m EW by 10 m NS. This structure appears to have had four separate entrances, two each on the north and south walls; interior walls divide the structure into three rooms. The function of this building is uncertain at this time, but it is evident that this was the site's central structure and probably represents the most important structure, perhaps the farmhouse. Two small rubble piles, also composed of wall and foundation remnants, are located immediately south of this structure.

Two square foundation pads are located approximately 35 m south of this main structure. These pads, which measure 4 m on a side, have sheet metal scattered around them and appear to be the remains of small outbuildings. A concentration of porcelain toilet fragments was observed immediately to the northeast of the easternmost of these two structures; this raises the possibility that these two features represent the remains of outdoor privy or restroom structures.

Free-standing wall remnants were also noted approximately 8 m north and 12 m southeast of the site's main structure. These may represent the remnants of other structures; however, it has been theorized that these are the remains of walls that enclosed a courtyard containing the site's central structures. The fact that the two wall fragments line up perfectly supports this theory. The wall fragment north of the main structure is L-shaped, measuring 10 m SW-NE by 7 m SE-NW; the fragment southwest of the main structure is linear in configuration, measuring 6 m in length. The southernmost wall appears to have a very small section (less than .25 m) of a western wall extending from the southern edge. A rubble pile, consisting exclusively of wall remains, is located immediately east of this wall fragment. No foundations or foundation remains were observed in association with either of these wall fragments.

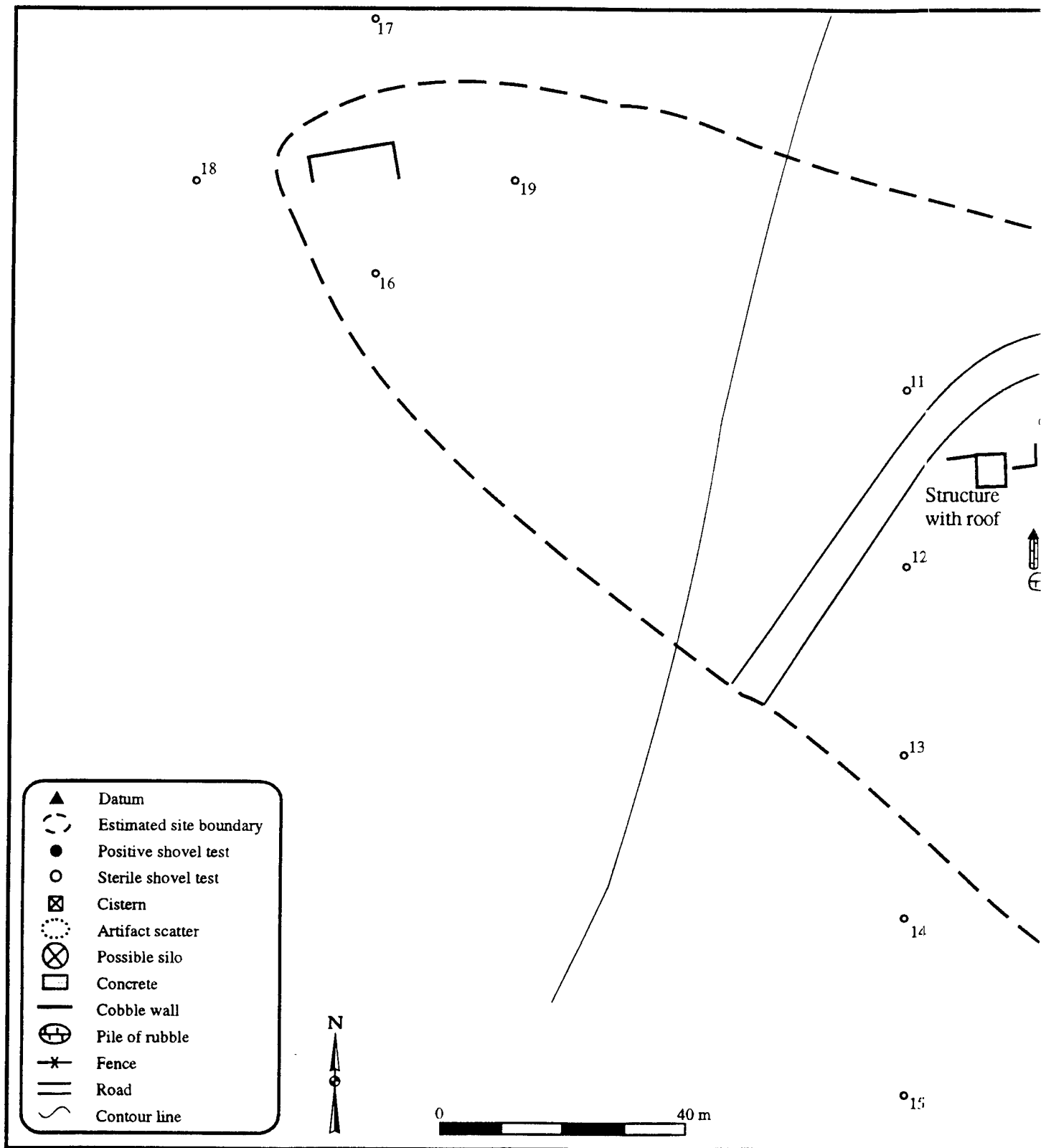
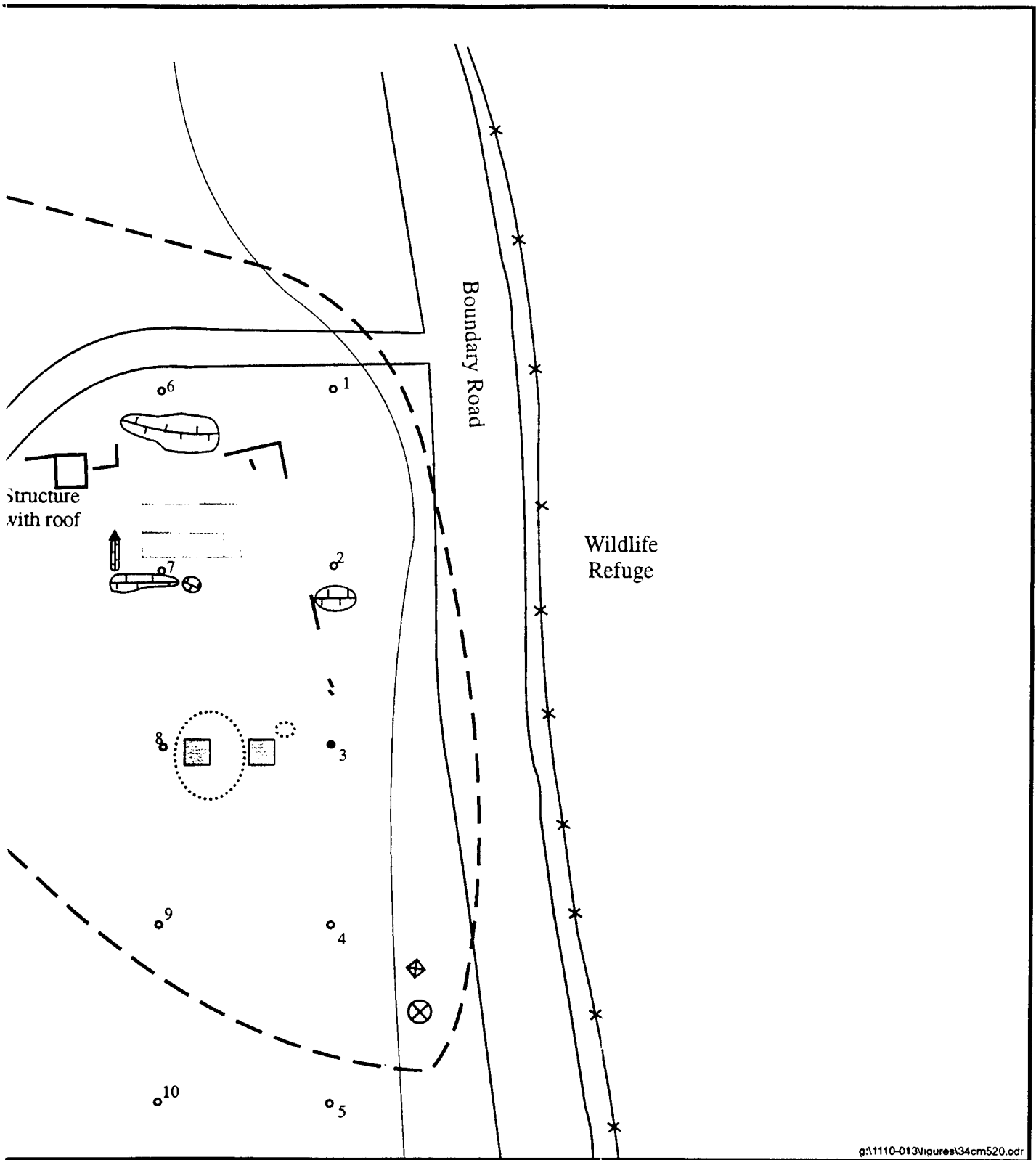


Figure 33. Plan map of site 34Cm-520.



②

Two other features were observed at this site. One is the remains of a well or cistern measuring 2 m square, with a .5 m diameter hole in the center. This feature is located 75 m southeast of the main structure. The other feature is located 5 m south of the well, in the southeast corner of the site; this feature appears to be a standing silo, measuring 4 m in diameter.

Historic Artifacts

A variety of artifacts, including whiteware, glass, porcelain, and miscellaneous metal fragments, were observed on the surface of site 34Cm-520. A total of 19 shovel tests was excavated in and around the site; only one proved positive, yielding a single wire nail (post-1900). This artifact was collected from Shovel Test 3, which was placed in the vicinity of the porcelain toilet fragments.

Archival Research

This site is located in the SE quarter of the NE quarter of the NE quarter of Section 35, Township 3N, Range 12W. The northeast quarter of Section 35 was allotted to Burton Werye, allotment #2277 (Anonymous n.d.:20). Werye appears to have been a Native American. It is not certain whether he was Comanche or Kiowa, although his patent was issued out of the Kiowa Agency. Furthermore, it is not known whether Werye ever lived on the property; the next two deeds for this section were two mining claims made on the property; later, the property was sold to J.B. Robnett.

The first mining claim was recorded on September 13, 1901. On this date, Mr. L. V. Willingham posted a notice for the Willingham Oil, Mining, and Prospecting Co. of Norman, Oklahoma, for all placer mining on this property in the Park City Mining District (Comanche County *Deed Books* 2:420). A second mining claim was recorded on July 11, 1903 for this section. George W. Ison and George Dickson posted a notice for the Elm Springs Placer Mines claiming "all lodes, leads, ledges, and deposits" (Comanche County *Deed Books* 18:24). Additionally, this notice records the existence of a mining shaft located on the property.

The property was sold to J. B. Robnett of Comanche County on February 24, 1924. Burton Werye was deceased by that time. Robnett paid \$1,625.00 for the land, with \$1,083.33 going to Werye, Burton Werye's mother, and the remaining \$541.67 going to Na-dah-ya-kah, his father (Comanche County *Deed Books* 194:3; General Land Office 1924). At the time of the purchase, the land was leased to J. Whitt Hadley, for \$50.00 per year; the lease was due to expire in December 1924. Two weeks after receiving the patent, Robnett and his wife took out a \$537.50 mortgage on the property with the American National Bank of Lawton (Comanche County *Deed Books* 190:469). The Robnetts were released from this mortgage on October 9, 1925 (Comanche County *Deed Books* 171:470). By the time the Robnetts took out a second mortgage on the northeast quarter of Section 35, they had moved to Olustee in Jackson County, Oklahoma. The second mortgage was taken out on February 6, 1926, for \$1,000.00 with F. P. Thorne, President of the Merchants State Bank of Waterville, Kansas (Comanche County *Deed Books* 200:194). The second mortgage was to be paid in 10 years, but during this time the mortgage was assigned twice. The first assignment occurred on February 27, 1926, from Thorne to Talbot F. Clingman, and the second was on January 14, 1933, from Clingman to Dick Williams (Comanche County *Deed Books* 196:635, 233:217). The mortgage was released on February 1, 1936 (Comanche County *Deed Books* 228:363). A day after the second mortgage was taken out, the Robnetts took out a third mortgage for another \$1,000.00 with F. P. Thorne that was later released on February 18, 1928 (Comanche County *Deed Books* 200:193, 209:9).

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On March 27, 1926, the Robnetts deeded the northeast quarter of Section 35 to Johnnie Hadley, a woman from Kiowa County, Oklahoma, for \$2,100.00 (Comanche County *Deed Books* 192:412). By the time the Robnetts deeded the property to Johnnie Hadley, they, too, had moved to Kiowa County. On March 9, 1935, Johnnie Hadley and her husband, J. Whitt Hadley, took out a \$300.00 mortgage with the Antrim Lumber Company of St. Louis, Missouri (Comanche County *Deed Books* 226:479). The mortgage was released on November 2, 1936 (Comanche County *Deed Books* 171:632). Later the same month, the Hadleys took out two mortgages with the Deming Investment Company of Oswego, Kansas, for \$1,250.00 and \$131.25 (Comanche County *Deed Books* 245:511 and 512). To secure these loans, the Hadleys had to assign rentals on the property to the Deming Investment Company for collateral to secure the loans (Comanche County *Deed Books* 243:155). Both of these loans were released on January 28, 1944 (Comanche County *Deed Books* 284:613). The Hadleys took out a final mortgage for \$750.00 with the Deming Investment Company that was later released on January 20, 1951 (Comanche County *Deed Books* 284:579, 362:605).

On October 28, 1944, J. Whitt Hadley quit claim deeded the land to his wife Johnnie for \$10.00 (Comanche County *Deed Books* 289:374). Two days after the land was deeded to Johnnie, Judge Tobie Morris granted the Hadleys a divorce. In the divorce settlement Johnnie was granted complete control of their three children, Morris, Tommy J., and Betty Rose, and was given the northeast quarter of Section 35, the farming implements, and a 1942 Plymouth. All the farm animals were sold and the money was divided equally (Comanche County *Deed Books* 451:184). By October 17, 1945, Johnnie had married Gordon Ferguson of Comanche County; they took out a mortgage for \$30,000.00 with the Security Bank and Trust Company of Lawton (Comanche County *Deed Books* 441:439). The mortgage was released on August 28, 1958 (Comanche County *Deed Books* 471:57). On June 26, 1957, the U.S. government had started condemnation proceedings on the property in civil document #7567 (Comanche County *Deed Books* 452:322).

Summary

This site appears to represent the remains of a large homestead complex, most likely dating from the Robnett or Hadley/Ferguson occupations, although informant Louis Voge of the Fort Sill Environmental Office indicated that it was once the site of a veterinary hospital. This seems quite possible, considering the large array of buildings, including a stable; and in any case, the divorce decree of October 30, 1944 indicates the presence of rental properties. Contextual integrity appears to be good, and the site has produced a number of significant features, structural and otherwise. Further testing and archival research is recommended in order to fully evaluate the site's potential for inclusion in the NRHP.

34Cm-521

This site is located approximately 150 m south of a corner of the Fort Sill Military Reservation on the east bank of a channel of Post Oak Creek at an elevation of 434 m (1,425 ft) amsl. The terrace on which this site is located has suffered from extensive erosion along its edges. A north-south road curves toward the east immediately east of the site. The soils are mapped as Port clay loam, with a depth exceeding 50 cm below surface. Vegetation is dominated by short grasses. The total site area is approximately 60 m² (Figure 34).

Interestingly, this site is located very near the reported location of Shaeffer's site 34Cm-93 (Shaeffer 1959, 1966); however, no evidence of a prehistoric occupation was found. This site represents the remains of a 3 m by 5 m concrete pad and an adjoining chute with slopes on each end. The chute itself is about 12 m long and 2 m wide; the whole feature is oriented slightly NW-SE. It seems most likely that this was a cattle dipping vat; such features are fairly common in the states surrounding Texas, for they were used to control

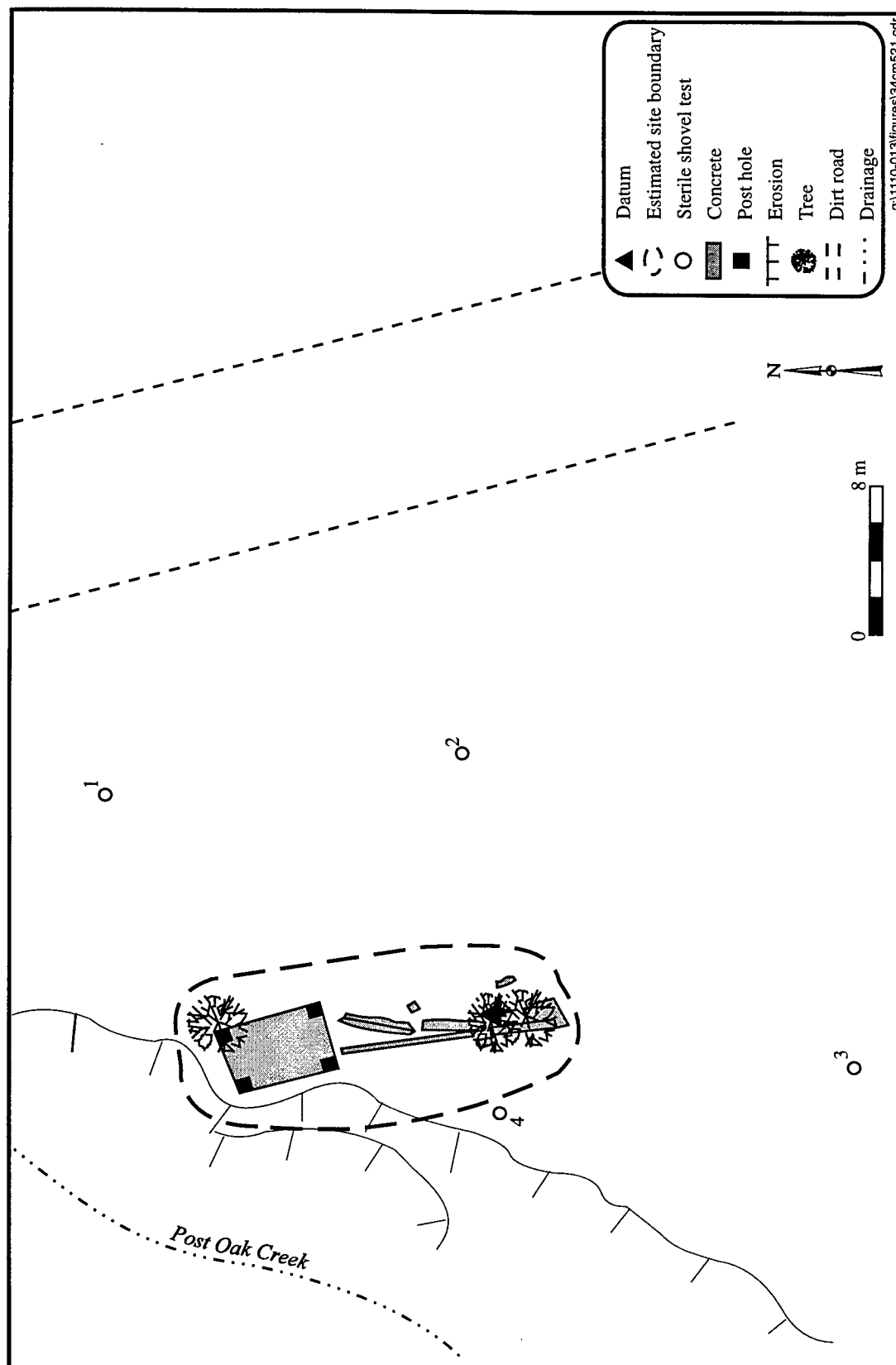


Figure 34. Plan map of site 34Cm-521.

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the cattle disease called "Texas Fever" in the late nineteenth and early twentieth centuries. No other cultural material or foundation remains were located. The walls of the chute seem to have been higher at one time, appearing to have broken off in the interim. The concrete pad appears to represent the remains of some sort of pen. There are post holes in each corner of the pad that measure approximately 20 cm in diameter. A total of four shovel tests was excavated in and around the site; all proved negative.

Archival Research

This site is located in the NE quarter of the NE quarter of the SE quarter of Section 35, Township 3N, Range 15W. The entire southeast quarter of Section 35 was allotted to Comanche Joseph Macho in 1901 (Anonymous n.d.:25; see Archival Research Section for 34Cm-517). The property remained in the hands of his family until government acquisition in 1957. It may have been built by the Macho family, by unidentified lessees, or by cattlemen who leased (or merely used) the land prior to allotment. The latter seems most likely, since the Comanche settlers were primarily farmers, not ranchers, and wealthy cattlemen used the area extensively before allotment. In fact, the cattlemen were vehemently opposed to allotment, as they did not wish to lose their lucrative grazing rights to the area (see Volume II of this Technical Series).

Summary

This site appears to represent the remains of a cattle dipping vat. The site remains in good condition and falls on land allotted to a Comanche settler, Joseph Macho, in 1901; however, its origin remains uncertain at this time. It seems likely that the vat was constructed by white cattlemen prior to Macho's ownership. In any case, it is a good example of such a structure. Further archival research is needed in order to clarify both its origin and eligibility for inclusion in the NRHP.

Locality 93-312

This locality consists of two mounds of barbed wire, a variety of rusted cans, and several unidentifiable iron objects. This cluster of metal artifacts was observed within a small stand of oak trees next to a plowed field and an east-west section road. The nearest historic site is 34Cm-514, which is located 420 m to the east.

Locality 93-313

Survey of this locality revealed the bodies of three derelict cars, one of which is the remains of a 1957 Chevrolet truck. These automobiles were most likely placed in the area by the Army for military training purposes; however, it must be noted that they are located within 50 m of a structure marked on the 1956 7.5' USGS Quanah Mountain, OK quadrangle map. This purported structure was deliberately searched for by the field crew but was not located during the course of the survey. Otherwise, the nearest known historic site is 34Cm-514, which is located 550 m to the east.

Locality 93-314

This locality consists of a historic trash dump containing whiteware, miscellaneous metal objects, clear glass, and amethyst (purple) glass. This dump is located 130 m north of historic site 34Cm-511, a very large

Comanche homestead, and is most likely associated with that site. No subsurface features were noted during the excavation of a single shovel test at this locality.

Locality 93-315

Three quartz flakes were recorded on the surface at this locality, which is located on a wooded slope 100 m east of an intermittent branch of Post Oak Creek. No other cultural material was observed in this area, and shovel tests failed to uncover any buried cultural material. The nearest prehistoric site, 34Cm-516, is located 850 m to the northwest.

Locality 93-316

This locality produced two quartzite flakes, which were observed in the bottom of a small drainage ditch. Because of the location of the find, no shovel tests were excavated at this locality. No other cultural materials were observed on the surface in the immediate vicinity of this locality. The nearest prehistoric site, 34Cm-515, is located 100 m due west and may be the source of these flakes.

Locality 93-317

A total of three quartzite flakes was observed on the surface of locality 93-317, which is 200 m east of prehistoric site 34Cm-515. These artifacts were, again, discovered in the bottom of a drainage ditch. No other cultural materials were observed in the immediate vicinity of this locality.

Locality 93-318

Survey of this locality revealed a historic dump containing rusted metal cans, a variety of historic ceramics (white- and green-glazed whiteware and some brownware), a ceramic jug with a metal top, and glass fragments (clear, brown, and amethyst). This material was observed in a small oak forest scattered along the steeply sloping wall of an intermittent drainage of Post Oak Creek. Given the location of the find, no shovel tests were attempted at this locality. The nearest known historic site, 34Cm-514, is located 740 m to the southeast.

Locality 93-319

At this locality, two small, translucent quartz flakes were observed on the surface of a two-track dirt road. No other cultural materials or features were observed either during a surface examination of the area or during the excavation of one shovel test. The nearest prehistoric site, 34Cm-319, is located approximately 100 m to the east; these artifacts may have been derived from that site.

Locality 93-320

This locality produced three quartz flakes located on a bluff overlooking the Post Oak Creek floodplain to the east. No features or additional cultural materials were observed at the locality, either during surface

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examination of the area or during the excavation of two shovel tests. These artifacts most likely are associated with site 34Cm-96, a prehistoric site located 200 m to the west, which also produced quartz debitage.

Locality 93-321

Examination of this locality produced a single definite quartz flake and one definite quartzite flake, in association with possible quartz debitage. All this material was observed along the east side of the floor of a small gully along the western boundary of the Quanah Range. A single shovel test was excavated on the east side of the gully; no other cultural materials were observed during the excavation of this shovel test or during a subsequent surface examination. The nearest known prehistoric site, 34Cm-96, is located almost 600 m to the southeast.

Locality 93-322

Survey of this locality revealed evidence of a historic dumping episode. Among the items observed were 15+ empty five gallon methanol cans and 5+ empty paint cans. These materials may be military in origin. The nearest known historic site, 34Cm-518, is located 700 m to the southeast.

Locality 93-323

Among the objects observed at this locality were the automobile bodies of a 1952 Pontiac and nine other vehicles. These automobiles, which were located between the channels of Post Oak Creek and an intermittent tributary, were most likely placed here for use during military training exercises. No other cultural materials were observed in the immediate area.

Locality 93-324

This locality consists of nine derelict car bodies, all of which date from the 1940s and 1950s. They were found in an open grassy area less than 75 m northeast of an existing two-track dirt road and were most likely placed in the area for military training purposes. No other cultural materials were observed in the immediate vicinity.

Locality 93-325

Five more derelict cars, all dating from the late 1950s, were observed at this locality. Interestingly, all these automobiles were of the Ford El Camino style (i.e., combination pickup truck and car). They were discovered on a hill approximately 100 m west of the main channel of Post Oak Creek. No other cultural materials were observed in the immediate vicinity of locality 93-325.

Survey Area 5

Survey Area 5 consists of a 1,298-acre tract located on the southeastern boundary of the Fort Sill Military Reservation (Figure 35). A total of approximately 748 acres of this project area was surveyed; about 550 acres were not surveyed as they were located in portions of the tract in or bordering the South Arbuckle Impact Area and thus have a high potential for containing unexploded ordnance. This area consists primarily of flat to gently rolling plains; however, Arbuckle Hill and a series of related rises are located in the western part of the survey area. The near-surface geology consists of shale and sandstone (Dames and Moore 1980).

The soils in the western portion of Survey Area 5 are dominated almost exclusively by Lucien-Zaneis-Vernon complex, 5 to 12 percent slopes. The eastern portion of the survey area, however, lies on a several different soils, including Foard silt loam, 0 to 1 percent slopes; Foard and Tillman soils, 1 to 3 percent slopes; Lucien-Zaneis-Vernon complex, 5 to 12 percent slopes; and Zaneis Loam, 1 to 3 percent and 3 to 5 percent slopes (SCS 1970). Vegetation is dominated almost exclusively by tall prairie grasses (Dames and Moore 1980).

During the course of the 1977 Fort Sill survey conducted by the Museum of the Great Plains, a total of approximately five 60-acre quadrats, totaling 300 acres, was surveyed in Survey Area 5. No sites or ruins were previously recorded by this or any other previous survey. In addition, no new sites were identified during the 1993 Fort Sill survey. However, one locality, 93-327, was recorded.

Locality 93-327

This locality represents the only find recorded for Survey Area 5 and consists of a concrete slab found on the east bank of a tributary of Wratten Creek. Although the slab appears to be a foundation remnant, it also appears to be in secondary context. The excavation of four shovel tests at this locality revealed no subsurface artifacts or features; similarly, a surface examination revealed no other cultural materials. The origin of this locality remains unknown, though it is most likely associated with military training purposes.

Survey Area 6

This 305-acre survey area is located in the north-central portion of the Fort Sill Military Reservation immediately east of Elmer Thomas Lake (Figure 36). It is located in the steeply sloping foothills of the Wichita Mountains and includes most of Davidson Hill. The underlying, near-surface geology in this area consists of granites of various textures (Dames and Moore 1980).

Soils mapped for this survey area consist of Granite Cobbly land, Rock land, and Stony rock land, although small areas of Broken Alluvial land and Lawton loam, 1 to 3 percent slopes, occur along the floodplain of Medicine Creek on the western portion of the survey area (SCS 1970). Vegetation consists primarily of a sparse cover of deciduous broadleaf scrub (Dames and Moore 1980).

During their 1977 survey, personnel from the Museum of the Great Plains surveyed approximately two and one-quarter 60-acre quadrats in what is now Survey Area 6, totaling approximately 135 acres. They located one small prehistoric site, 34Cm-299. Three other sites, 34Cm-103, 34Cm-104, and 34Cm-105, were recorded by Shaeffer (1959); each of these exhibited a prehistoric component, and 34Cm-104 may have possessed a historic component as well. No ruins were previously recorded for this survey area. Unfortunately, none of these sites were relocated; however one site, 34Cm-508, the remains of a single structure or wall, was discovered in an area corresponding with the purported location of prehistoric site 34Cm-103. In addition, two historic localities (93-277 and 93-279) and one prehistoric locality (93-278) were also recorded.

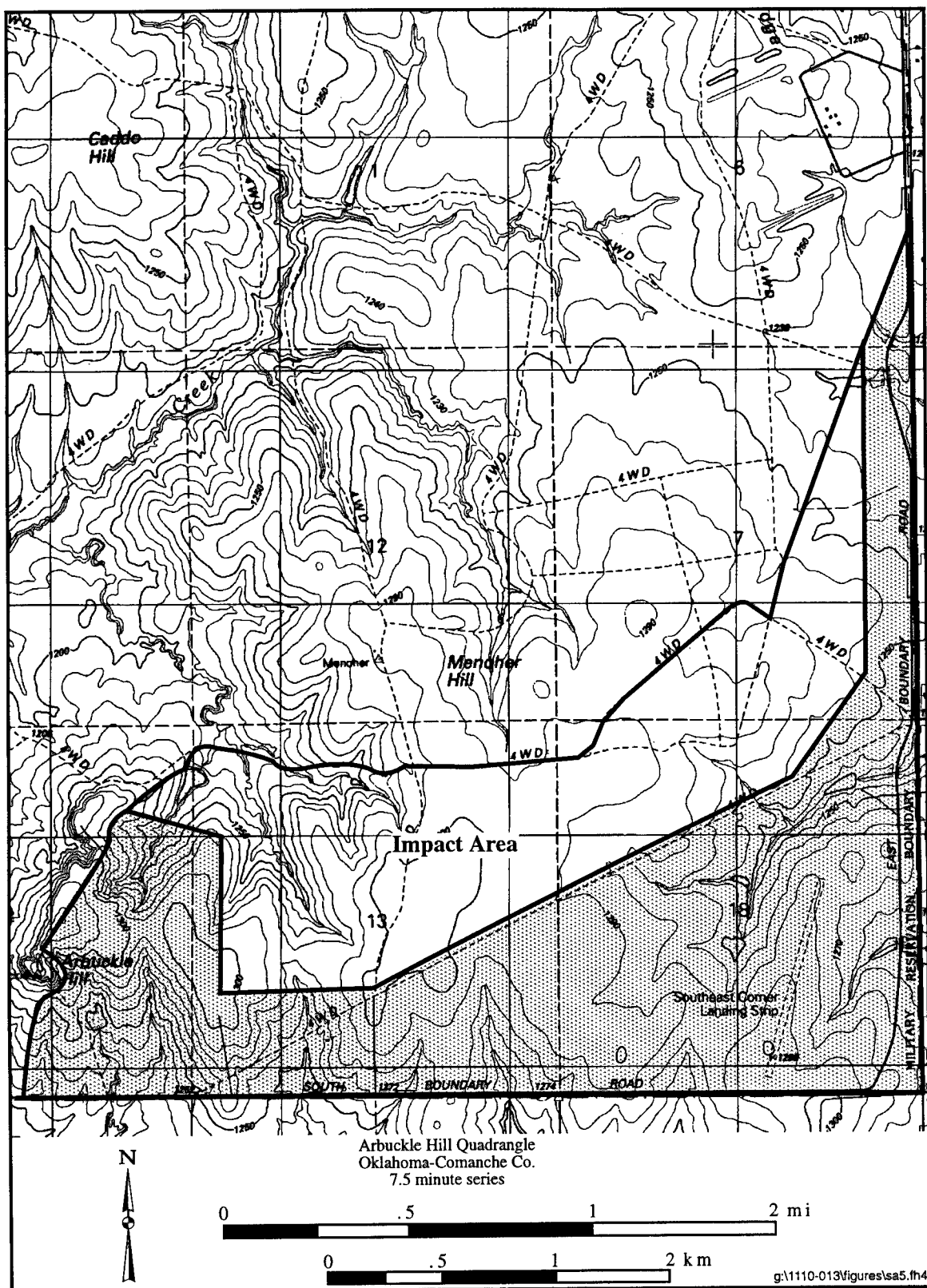


Figure 35. Location of Survey Area 5 within the Fort Sill Military Reservation.

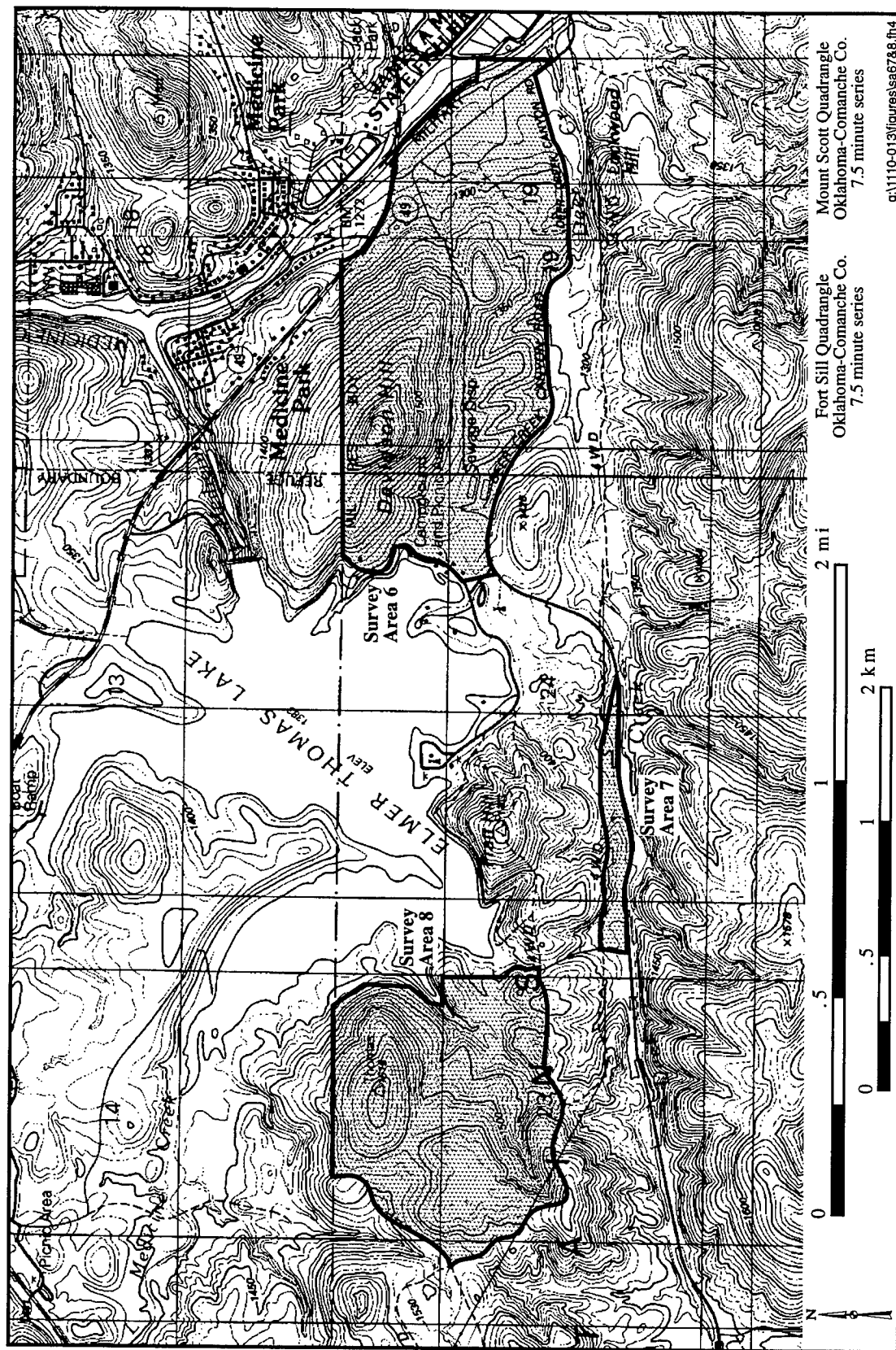


Figure 36. Location of Survey Areas 6, 7, and 8 within the Fort Sill Military Reservation.

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34Cm-508

This site is located on the base of Davidson Hill, immediately north of Deer Creek Canyon Road, at an elevation of 384-390 m (1,260-1,280 ft) amsl. The soil is mapped as Granite Cobbly land; soil depth was almost nil, as the underlying bedrock was exposed in most places. The sparse vegetation, where vegetation was present, consisted of mixed grasses. The site covers an area of approximately 1,200 m² (Figure 37).

This site consists of the broken and scattered remains of a small structure or terrace wall composed of a loosely aligned collection of cobble and mortar wall fragments. The material contains metal rebar (reinforcement bar) fragments and may be modern rather than historic. This material may not be in primary context; it may well have been dumped here for military training purposes. No structure is indicated on any of the quadrangle maps for this area. Given the lack of soil in the area, no shovel tests were excavated at this site. It is possible that the construction of Deer Creek Canyon Road caused the destruction of the site.

Interestingly, this site coincides with the purported location of site 34Cm-103, a prehistoric lithic scatter identified by Shaeffer in 1959. The structural remains were discovered when site 34Cm-103 was deliberately searched for by survey personnel. Unfortunately, no evidence of 34Cm-103, which Shaeffer describes as a thin camp exposed along the road in a borrow pit, was recovered. Locality 93-278, which is represented by a finely made Georgetown chert side scraper or knife, occurs less than 150 m to the east and may have been from this site; however, the tool is equally as likely to have come from prehistoric site 34Cm-105, which is located approximately 150 m east of the site. This site (34Cm-105) was also not relocated during the 1993 Fort Sill survey.

Summary

This site is in very poor condition and likely the structural remnants observed here are not in primary context. There is no way to know its original function. Therefore, the site is not considered to be eligible for inclusion in the NRHP. No further work is recommended at site 34Cm-508.

Locality 93-277

Examination of this locality revealed a moderate-sized historic trash dump located on the edges of a borrow pit. The material appears to have been dumped into a number of adjoining gullies. Among the materials observed at the locality were whiteware (probably late), metal, clear glass, and amethyst (purple) glass. No associated features were located. The nearest known site with a historic component, 34Cm-104, is recorded as occurring approximately 370 m to the south-southwest.

Locality 93-278

Survey of this locality produced a lithic flake tool of a gray chert (possibly Georgetown chert from central Texas). This tool, which exhibits two worked lateral edges, appears to be some sort of scraper or backed knife (Figure 38). One of the lateral edges is steeply beveled and exhibits fine workmanship characterized by small, parallel flaking. The opposite edge has been trimmed somewhat, perhaps for the purpose of hafting. Both lateral edges bear signs of extensive use-wear. The two edges come together to form a sharp point; this may have been used for graving purposes. The artifact was collected from an eroded area on a small bench located at the base of a hill. Neither an intensive visual search of the surrounding area nor two

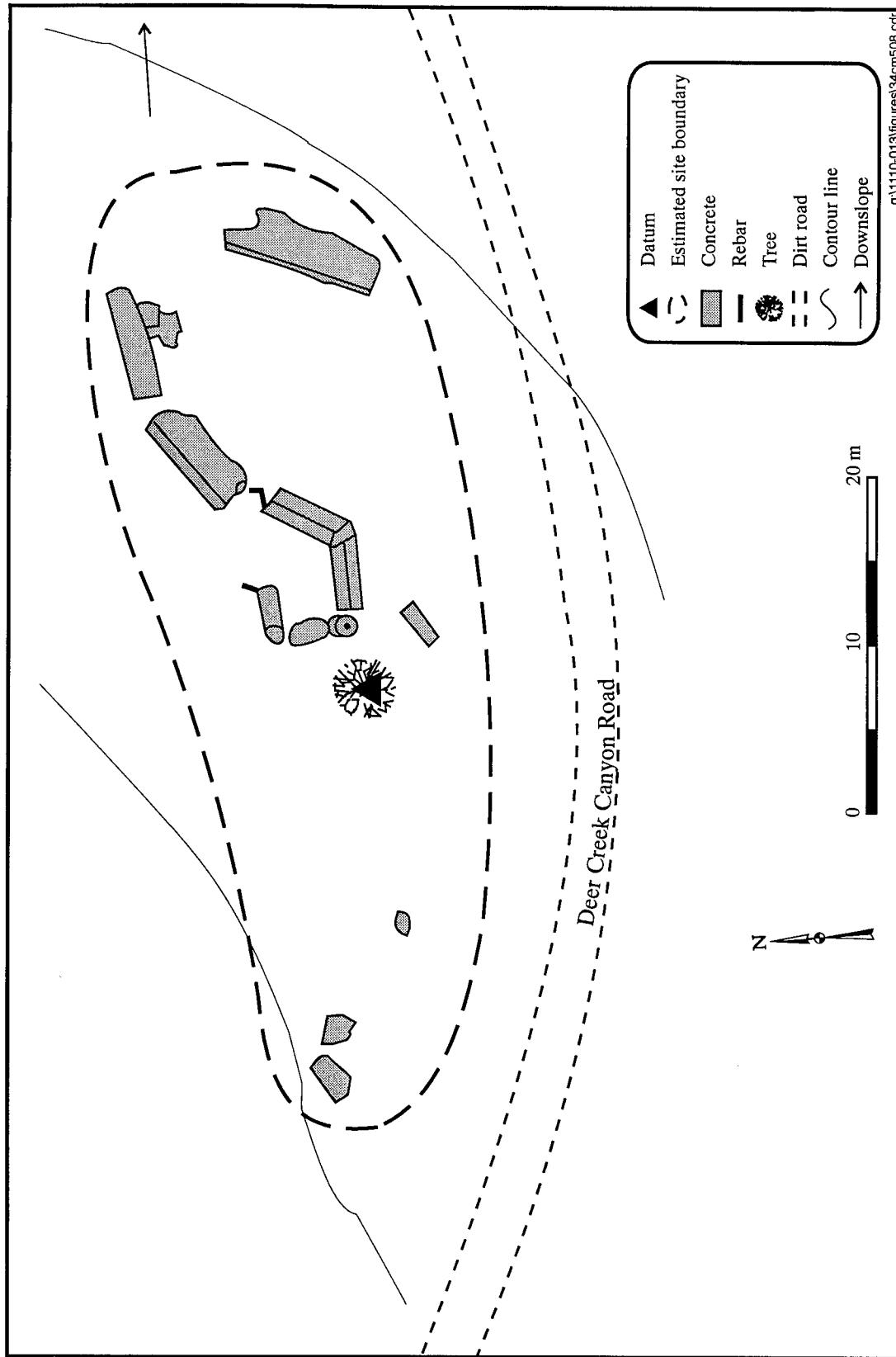


Figure 37. Plan map of site 34Cm-508.

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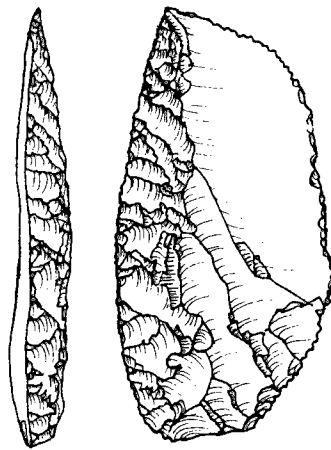


Figure 38. Lithic artifact recovered from Locality 93-278 during the 1993 survey: Chert scraper. (Scale 1:1)

shovel tests excavated near the location of the find revealed additional cultural materials. The nearest known prehistoric site, 34Cm-103, is recorded as occurring approximately 250 m to the southeast; however, this site was not relocated.

Locality 93-279

This locality consists of an isolated historic find of one whiteware fragment and one amethyst glass fragment. The artifacts were collected from a small eroded area on a flat terrace at the eastern base of a hill. Neither a visual search of the surface in the area nor the excavation of one shovel test yielded additional cultural materials. The nearest previously recorded site with a historic component is 34Cm-104, which is located 400 m to the southwest; however, a closer historic site, 34Cm-508, was recorded during the 1993 Fort Sill survey. This site is located approximately 200 m to the southwest.

Survey Area 7

Survey Area 7 is a small 18-acre tract located south of Elmer Thomas Lake, immediately north of Deer Creek Canyon Road (see Figure 36). The survey area is flat to gently sloping with an underlying near-surface geology of rhyolite and diabase bedrocks (Dames and Moore 1980). The soils for this area, which is located at the base of Pratt Hill, consist of a mixture of Breaks-Alluvial land complex and Rock land (SCS 1970). Vegetation is dominated by short grasses and deciduous broadleaf scrub, which is moderately thick in some areas (Dames and Moore 1980).

No archeological sites or ruins are previously known for this survey area, and although it apparently has never before been surveyed, no new sites or localities were observed here during the course of the 1993 Fort Sill survey.

Survey Area 8

This survey area consists of a 201-acre tract located in an extremely hilly area immediately west of Elmer Thomas Lake (see Figure 36). The underlying bedrock in this area is dominated by granites of various textures (Dames and Moore 1980); the soils are dominated by Rock land, with Lawton loam (3 to 5 percent slopes) present along the margins of the lake (SCS 1970). Vegetation for Survey Area 8 is dominated by short grasses interspersed with patches of deciduous broadleaf scrub (Dames and Moore 1980).

During the 1977 Museum of the Great Plains survey, portions of two 60-acre quadrats, totaling approximately 80 acres, were examined for cultural resources in what is now Survey Area 8; 34Cm-304, a prehistoric lithic scatter covering 7,500 m², was identified in this survey area. This site was not relocated nor were any new sites relocated during the 1993 Fort Sill survey; in addition, no localities of any sort were identified.

Survey Area 9

Survey Area 9 consists of a 501-acre tract sandwiched between the northern border of the Fort Sill Military Reservation and the northern perimeter of the Quanah Impact Range (Figure 39). Terrain is flat to gently rolling; the main channel of Post Oak Creek runs along the western edge of the survey area, while Rock Creek runs through the center of the survey area. The underlying geology consists of granite and rhyolitic porphyry conglomerate overlain by sand and gravel (Dames and Moore 1980).

Soils for this survey area are dominated by Granite Cobbly land, although limited stretches of Port loam and Lawton loam, 3 to 5 percent slopes, are located along the floodplains of Rock Creek and its tributaries. In addition, the Post Oak Creek floodplain contains areas of Foard and Tillman soils, 1 to 3 percent slopes (SCS 1970). The vegetation is dominated by short grasses, although the floodplain of Rock Creek is covered with a moderately dense stand of broadleaf deciduous trees, mostly blackjack and post oak (Dames and Moore 1980).

During the course of the 1977 Fort Sill survey, personnel from the Museum of the Great Plains surveyed portions of three 60-acre quadrats in Survey Area 9, totaling approximately 140 acres. Two prehistoric sites, 34Cm-94 and 34Cm-95, were identified in the northwest corner of the project area. In addition, two historic ruins were expected from perusal of mid-century aviation maps as well as Dames and Moore's 1980 Terrain Analysis. One site, 34Cm-94, and one ruin, 34Cm-522, were relocated. No new sites or localities were identified.

34Cm-94

This site is located on a highly eroded knoll immediately south of the northern border of the Fort Sill Military Reservation at an elevation of 442 m (1,450 ft) amsl. An east-west perimeter road runs through the northern portion of the site. The soils for this area are mapped as Granite Cobbly land, although a stretch of Foard and Tillman soils, 1 to 3 percent, was observed immediately to the south along the floodplain of a tributary of Post Oak Creek. Soil depth is moderate, extending to at least 50 cm below the surface in most areas. Cross-Timbers vegetation is dominant.

Site 34Cm-94 was originally recorded as a low density prehistoric lithic scatter by Shaeffer in 1959. Located on a small ridge at the corner of the boundary fence, the site's surface consists of exposed gravels and cobbles. Because of the presence of the exposed gravels and bedrock, only three shovel tests were excavated, all on the south side of the site. All three were sterile. Current site area is approximately 49 m² (Figure 40).

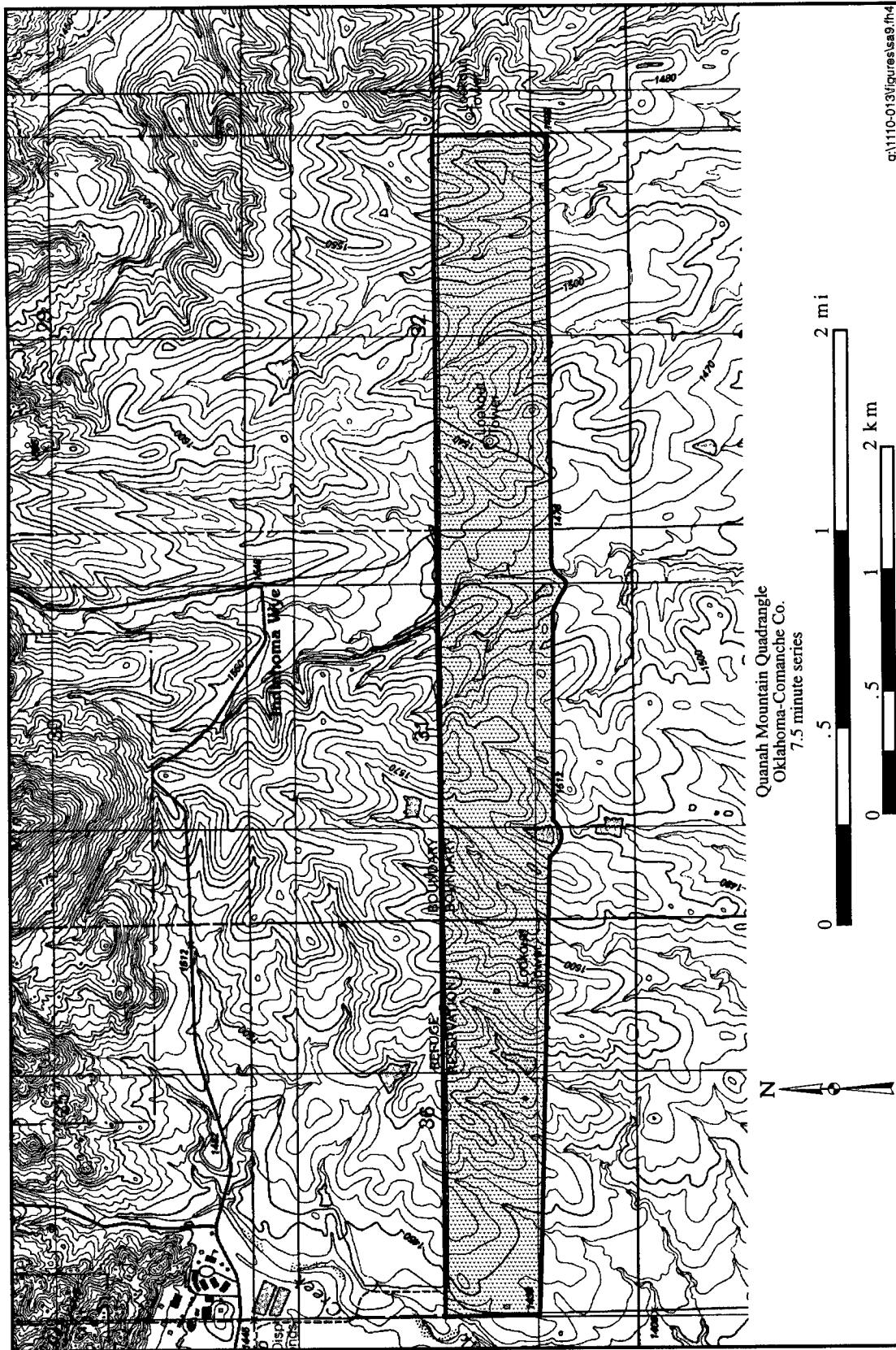


Figure 39. Location of Survey Area 9 within the Fort Sill Military Reservation.

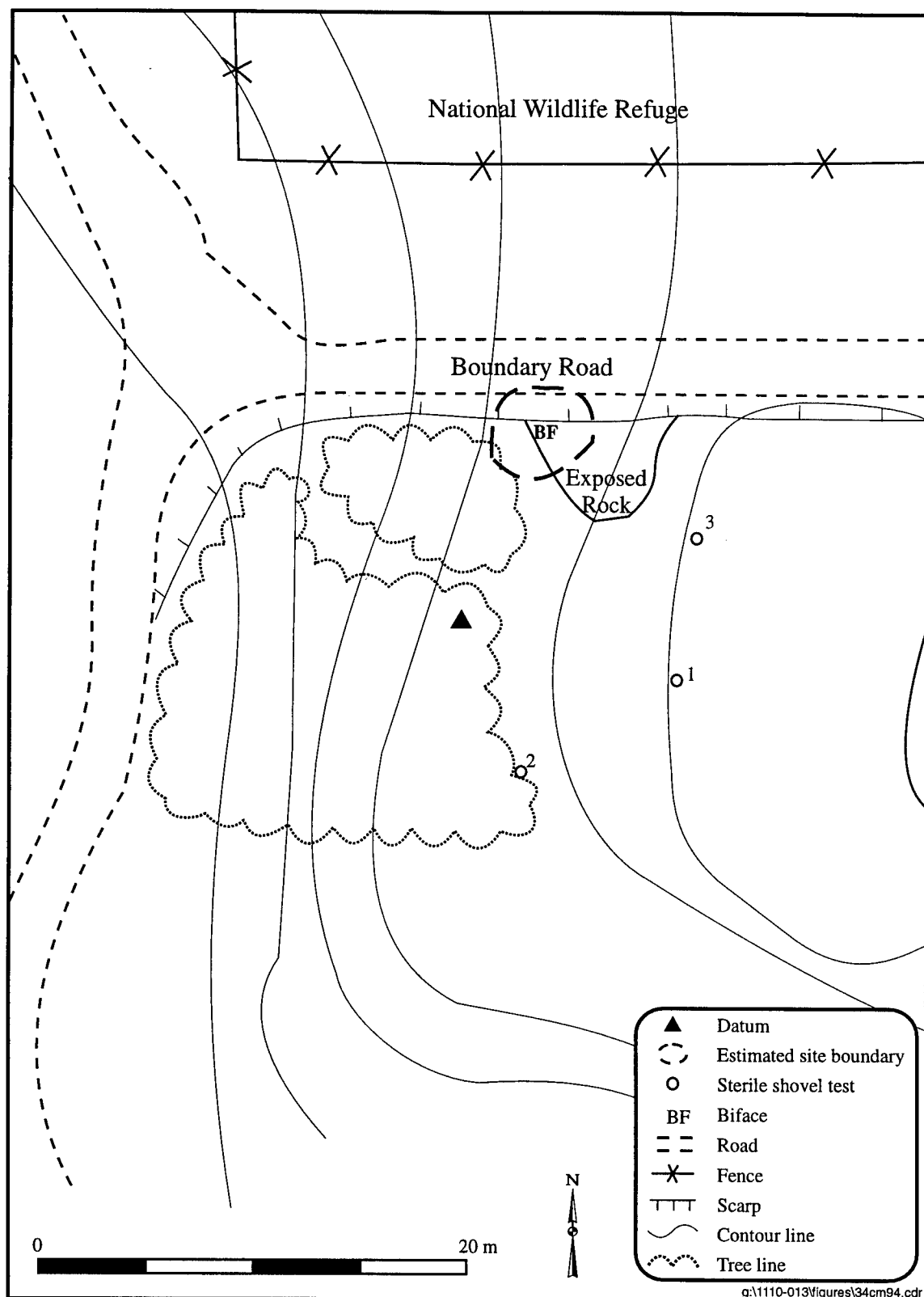


Figure 40. Plan map of site 34Cm-94.

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Prehistoric Artifacts

Three quartz flakes were observed on the surface at this site; in addition, a complete biface was observed on the surface on the northeast corner of the ridge near the road. This biface, which was made of a white quartzite, was the only artifact collected from 34Cm-94. It measures 30 mm by 16 mm by 10 mm, and weighs 5.5 g.

Summary

This site, a highly disturbed low density lithic scatter, most likely functioned as an upland hunting station or ephemeral base camp during prehistoric times. Given its lack of diagnostic materials, it is not possible to place the site within a cultural framework. Due to the poor condition and limited size of 34Cm-94 as it exists today, in addition to the limited artifact assemblage observed, the site is not considered eligible for inclusion in the NRHP. No further work is recommended for 34Cm-94.

34Cm-522

This historic site is located in the extreme eastern portion of the survey area, immediately south of an existing pond (Wetumka), at an elevation of approximately 454 m (1,490 ft) amsl. The soil in this area is mapped as Granite Cobbly land; shovel testing indicates that it extends to a depth of at least 50 cm below the surface. Cross-Timbers vegetation is recorded. The site covers approximately 3,400 m² (Figure 41).

The site appears to be in good, if not excellent, condition. Two standing structures are present at this site; one retains a roof. This building, which appears to be a house, measures 6 m NS by 10 m EW. It is constructed of cobble and mortar, and still retains a wooden roof. It has been divided into two rooms of approximately equal size; the back room has a concrete floor, while the other room—possibly a porch area—has only a dirt floor.

The other structure, also of cobble and mortar construction, is three-sided, lacking a south wall. This building appears to have served as some sort of barn or stable. It measures 9 m NS by 29 m EW. Several broken columns, which may once have held up the roof, lie around the structure; a sheet of corrugated metal lies just to the north of the building. A drip line along the south side of the building indicates that the now-missing roof, presumably made of corrugated sheet metal, was steeply pitched in that direction. A short section of fence, measuring approximately 17 m in length, still stands approximately 7 m south of the structure. This may have been part of a corral that surrounded and included the structure.

A total of eight shovel tests was excavated at this site, four around each of the structures. All eight were sterile. In addition, no additional cultural materials were observed at this site.

Archival Research

Site 34Cm-522 lies in the SE quarter of the NE quarter of the SE quarter of Section 32, Township 3N, Range 14W. This land was part of a Euro-American homestead that included the entire southeast quarter of Section 32; the property changed hands approximately once every ten years from 1904 to 1933 (Comanche County *Deed Books* 17:548, 37:558, 60:135, 123:594, 192:100). After 1933 the only owner was Nettie Parsons (later Bryce), who sold the property to the U.S. government in 1956 (Comanche County *Deed Books* 219:557, 442:383).

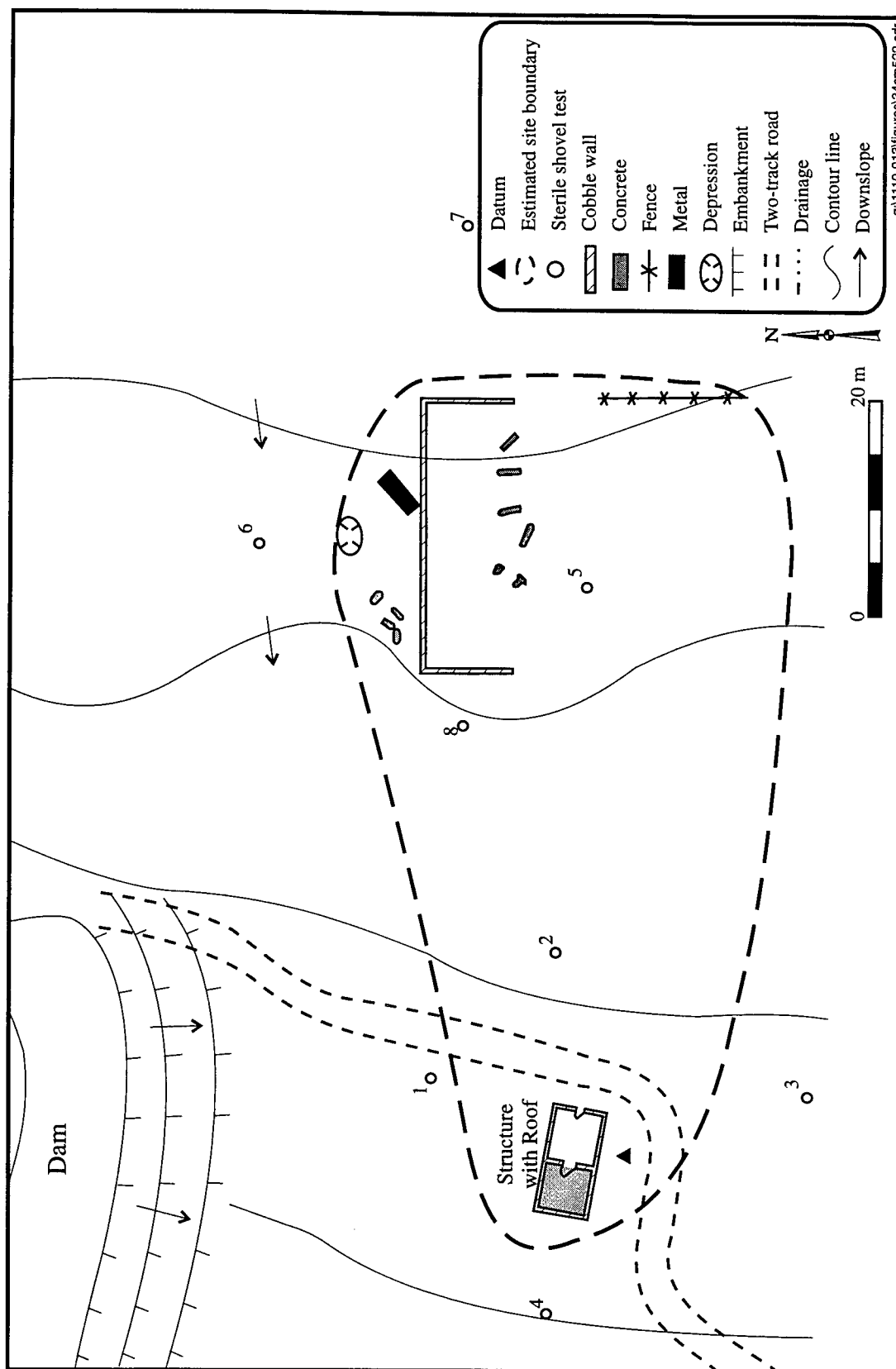


Figure 41. Plan map of site 34Cm-522.

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William B. Peeples, a single man from Comanche County, homesteaded the land October 5, 1901; at that time, he paid a homesteader's fee of \$14.00. He received a receiver's receipt for the property on December 21, 1904; Peeples paid \$200.00 for the property, a rate of \$1.25 per acre (Comanche County *Deed Books* 17:548). During his proprietorship, Peeples constructed a 24-x-24-ft house, a stable, haylofts, a crib shed, and a well. He fenced and cross-fenced the entire area, dug a pond, and began cultivating hayfields and a garden. Soon after purchasing the land, Peeples took out a \$300.00 mortgage with B. J. Northcott on December 27, 1904 (Comanche County *Deed Books* 4:277). The mortgage was released on May 15, 1908 (Comanche County *Deed Books* 38:456). Peeples did not receive a patent for the property until 1908, after he had sold it (Comanche County *Deed Books* 37:558).

W. L. and Luella B. Nichols of Oklahoma City, Oklahoma, obtained the warranty deed from Peeples for the property on June 21, 1906; they paid \$1,600.00 (Comanche County *Deed Books* 60:135). On May 9, 1908, the Nichols' took out an Improved Farm Mortgage for \$800.00 with L. D. Marr, the Commissioner of the Land Office, State of Oklahoma (Comanche County *Deed Books* 93:42). A second mortgage deed, dated August 17, 1914, restates that Nichols took out a mortgage from the Land Office for \$800.00 (Comanche County *Deed Books* 93:135). This mortgage was released on May 21, 1919, after the property was deeded to Renwick J. Moffett (Comanche County *Deed Books* 140:583).

Renwick and Bessie Moffett, from Tarrant County, Texas, obtained the warranty deed for \$1,500.00 on April 7, 1916 (Comanche County *Deed Books* 123:594). The Moffetts took out an \$800.00 mortgage with the Land Office on January 22, 1919 (Comanche County *Deed Books* 93:248). The mortgage was released on September 5, 1923 (Comanche County *Deed Books* 177:63). On April 22, 1919, the Moffetts granted H. B. Eller et al. a five-year Oil and Gas Lease for \$1,700.00. Eller was to pay the Moffetts \$150.00 in advance each year for gas from each gas well and \$25.00 for gas produced from any oil well (Comanche County *Deed Books* 163:370). C. L. Wilson, co-lessee with Eller, assigned the lease to M. E. Smith of Comanche County (Comanche County *Deed Books* 165:279).

The land changed hands for the fourth time when the Moffetts deeded the southeast quarter of Section 32 to one Hodge Bailey of Grady County, Oklahoma, for \$1,500.00 on September 10, 1919 (Comanche County *Deed Books* 192:100). On May 15, 1929, L. B. Kennedy, an agent for the Baileys, granted the State of Oklahoma a 10-year Game State Refuge lease for \$1.00 (Comanche County *Deed Books* 213:630). The Baileys lived in Grady County, Oklahoma, and there is no evidence that the Baileys moved from Grady County; they probably rented the property to local tenants.

In 1933, the Baileys sold the property to Nettie Parsons, a single woman from Kiowa County, for \$1.00 and assumed the 1933 taxes on the property (Comanche County *Deed Books* 219:557). On the same day Parsons was deeded the property, November 17, 1933, she took out a \$700.00 mortgage with the Baileys (Comanche County *Deed Books* 237:212). The mortgage was due one year later, but Parsons paid it in full one month later (Comanche County *Deed Books* 233:268). Nettie Parsons held the land for approximately 23 years, until 1956, when it became part of a larger tract of land taken by the U.S. government for the "Artillery and Guided Missiles Center, Fort Sill" (Comanche County *Deed Books* 442:383). At sometime during the Parsons tenure of ownership she married, because on the deed selling the property to the U.S. government she is listed as Nettie Parsons Bryce, a widow.

It seems likely that the buildings were constructed either during the Peeples or Parsons ownership of the property. However, both the Nichols and Baileys were apparently absentee owners that may have let an unrecorded lease, and the lessees may have constructed the buildings.

Summary

This site is in very good to excellent condition. Indications are that it is an extension of the Nettie Parsons claim, which covered four quarter sections in this area; this site falls within one of those quarter sections. Unfortunately, despite the presence of two large features and associated debris, the artifact assemblage is simply nonexistent at this time. However, given its excellent condition, the site is considered to be potentially significant. Therefore, it is recommended that additional archival work be undertaken in order to better understand the site and additional testing be conducted to search for features and artifacts that may help more fully evaluate its eligibility for inclusion in the NRHP.

CHAPTER 7

SUMMARY OF RESULTS AND RECOMMENDATIONS

by
Floyd B. Largent, Jr., and Duane E. Peter

INTRODUCTION

This chapter summarizes the results of the 1993 Fort Sill survey and provides recommendations concerning National Register eligibility and management of the recorded properties. The results section addresses research concerns such as site distribution, site function, and an evaluation of site detection methodology for the prehistoric assemblages.

RESULTS

The survey conducted by Geo-Marine, Inc., from October to December 1993 located a total of 23 archeological sites, one paleontological site, and 62 nonsite localities. Among the 24 sites, 11 historic components and 12 prehistoric components were identified; 42 historic components and 21 prehistoric components were recorded among the 62 localities. Eight of the 24 sites had been previously recorded by Shaeffer (1959, 1966) and/or by the Museum of the Great Plains (Ferring 1978). A total of 83 artifacts was collected, with 57 reflecting historic occupations and 26 from prehistoric components. None of the sites has been recommended as eligible for the National Register of Historic Places (NRHP); the eligibility of 12 sites is unknown at this time; and 12 sites are recommended as ineligible (Table 2).

PREHISTORIC SITE SUMMARY

An overview of the prehistoric sites recorded during the 1993 survey is presented in this section of the report. Sites with potential for inclusion in the NRHP and similar registers are discussed briefly, in relevance to their cultural contexts, if known. In addition, a number of predictive models of prehistoric site location for Fort Sill are discussed. The most widely used model, which was introduced by Hackenberger (1978) and Ferring (1978), is examined in detail and tested against the existing site data.

Twelve of the sites located during the 1993 survey contain prehistoric elements (see Table 2). Seven of these sites have been previously recorded (34Cm-91, 34Cm-94, 34Cm-123, 34Cm-291, 34Cm-316, 34Cm-317, and 34Cm-321). Only two of the 12 prehistoric sites were identifiable as to temporal/cultural affiliation; these included one Archaic (34Cm-317) and one Archaic/Woodland component (34Cm-513). In most cases,

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Table 2
Recommendations and Eligibility of Sites Recorded During the Current Survey
for Nomination to the National Register of Historic Places

Site #	Site Area	Site Function	Temporal Affiliation	NRHP Eligibility	Site Management
34Cm-91	3,000 m ²		Prehistoric-Unknown	Unknown	Testing
34Cm-94	49 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-123	3,000 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-291	360 m ²	Possible quarry	Prehistoric-Unknown	Ineligible	No Further Work
34Cm-316	1,650 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-317	7,200 m ²		Archaic	Ineligible	No Further Work
34Cm-321	80 m ²	Upland hunting station	Prehistoric-Unknown	Ineligible	No Further Work
34Cm-350	4,800 m ²	Tar pit	Unknown	Unknown	Preservation, Archival Work, Oral Histories
34Cm-507	4,000 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-508	1,200 m ²		Early-Mid 20th Century	Ineligible	No Further Work
34Cm-509	7,650 m ²	Farmstead	Early-Mid 20th Century (Comanche)	Unknown	Additional Archival Work
34Cm-510	85 m ²		Early-Mid 20th Century (Comanche)	Unknown	Additional Archival Work
34Cm-511	7,200 m ²	Farmstead	Early-Mid 20th Century	Unknown	Additional Archival Work
34Cm-512	988 m ²	Dugout structure	Early-Mid 20th Century	Ineligible	No Further Work
34Cm-513	3,500 m ²		Archaic/Woodland	Ineligible	No Further Work
34Cm-514	38,000 m ²	Farmstead	Early-Mid 20th Century	Unknown	Additional Archival Work
34Cm-515	525 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-516	4,400 m ²		Prehistoric-Unknown	Ineligible	No Further Work
34Cm-517	3,000 m ²	Possible farmstead	Early-Mid 20th Century (Comanche)	Unknown	Additional Archival Work
34Cm-518	195 m ²		Early-Mid 20th Century	Unknown	Additional Archival Work
34Cm-519	1,050 m ²		Prehistoric Unknown	Unknown	Preservation, Testing
34Cm-520	12,000 m ²	Farmstead	Late 19th-Early 20th Century	Unknown	Additional Archival Work, Testing, Preservation
34Cm-521	60 m ²	Cattle Dipping Vat	Late 19th-Early 20th Century	Unknown	Additional Archival Work
34Cm-522	3,400 m ²	Farmstead	Early-Mid 20th Century	Unknown	Archival Work, Testing

these sites exhibit extensive erosion or are otherwise unworthy of further work or of nomination to the NRHP. However, the prehistoric component recorded at site 34Cm-91 has been recommended for further testing and site 34Cm-519 has been recommended for further testing and preservation. Both sites are of unknown cultural affiliation. The site locational data for the five newly recorded prehistoric sites discovered during the 1993 Fort Sill survey have been analyzed and added to the existing prehistoric site database, which was presented in its entirety in Volume 1 of this technical series (Peter and Weston 1993). The prehistoric database now includes information on 111 sites, 40 of which contain a total of 64 separate components (26 single component sites and 14 multicomponent sites). The 64 identifiable components include three Paleo-Indian components, 26 Archaic components, seven Archaic/Woodland components, and 28 Plains Village components. The Adams Hill Tar Pit, which is of uncertain cultural affiliation, was not included in this sample.

Prehistoric Settlement Models for Fort Sill

Site locations and settlement patterns remain one of the elusive research goals for archeologists in this region, even though several of the larger projects have attempted to address the issues. It is a common belief that populations dependent on horticulture tend to establish their primary habitations near rich bottomlands (Wyckoff and Brooks 1983:65). However, the settlement patterns reflected by other cultural groups are not as well understood.

Bastian (1965), in his examination of the Middle Cache Creek area, discovered that the prehistoric occupations tended to be located close to the channel, usually on or near terraces or other elevated areas. However, that does not mean that Bastian's sites had been primarily occupied by horticulturalists. We know, for example, that Archaic populations (e.g., the Gore Pit Site) also utilized these areas extensively. Moreover, Bastian's finding does not necessarily mean that these locations were the primary settlement locations. He further stated that more work was needed before it could be determined whether the focus on bottomlands reflected an actual settlement pattern or an archeological bias toward the documentation of sites in these areas due to erosional activity or increased surveillance of these areas by professional and avocational archeologists.

Northcutt's (1980) examination of site locations on the Big Beaver drainage allowed him to define four topographic settings: hilltops, high ridge tops, low terraces, and floodplains. His survey results indicated that one-half of the sites were located on low terraces and that the remaining sites were equally distributed in the floodplains and on the surrounding hilltops. No sites were discovered on high ridge tops.

Preliminary results from the recently completed Cotton County survey (Anderson and Bearden 1992) indicate that although fewer sites may be found on high ridge tops, prehistoric and historic populations utilized most, if not all, the topographic settings. It should be noted, however, that site types in the upland areas are often different from sites in other topographic settings in that many reflect more specialized activity sites or short-term occupations. These site types are primarily low density artifact scatters.

The most commonly used predictive model of prehistoric site location at Fort Sill was proposed by Hackenberger (1978), based on the results of an extensive survey conducted by personnel of the Museum of the Great Plains in 1977. This statistics-laden predictive model was based primarily on soil type and was developed from a data base that is similar to that used for the current analysis. In this model, sites are predicted to occur on three common soil types: Port series soils, Granite Cobbly soils, and Vernon soils. Environmental variables such as presettlement vegetation and topographic location were not taken into account. A second variable was included, the rank of drainage size on which the site is located, but since

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there is often a direct correlation between soil type and stream size, the use of this second variable adds little to the model.

At first glance, there appear to be a number of difficulties with the Museum of the Great Plains' model. The first is that the model was developed from surface observations with little if any data generated from subsurface testing. This has resulted in a predictive model that does little more than predict where sites will be found during low intensity survey without subsurface testing, i.e., in areas with good surface visibility. A second problem is that the model was tested by sampling from survey units that were predicted to have the highest frequency of sites, without a corresponding sample of units predicted to have a low frequency of sites. Without a sample from all the different types of survey units expected within the survey area, it is difficult to assess the validity of the model. The need to assess the model's validity was taken into account at all levels when designing the survey projects described in this report and in the previous volumes of this technical series (Peter and Weston 1993; Weston et al. 1993).

Evaluation of the Museum of the Great Plains' Predictive Model

For the purposes of this report, the 111 prehistoric sites selected for analysis were placed in one of three topographic settings: riverine, upland drainage, and slope base. The riverine location contains all sites located on or adjacent to creeks and their floodplains. Upland drainage sites are located along small, intermittent, low order streams or on low ridges between such streams. Slope base sites are those upland sites located at the base of major topographic uplands such as Quanah Mountain or Rabbit Hill.

The data in Table 3 indicate that riverine environments support the largest numbers of identifiable prehistoric components (n=33), with slope base environments running a poor second (n=19). Plains Village and Archaic sites have similar distributions in all three environments; they are most heavily concentrated in riverine and slope base environments, with a minimal representation in upland settings. Plains Village sites are almost equally represented in riverine and slope base settings; however, the Archaic sample is biased toward riverine environments. Artifacts assignable to the Paleo-Indian and Woodland periods are so sparse that temporal assignments are at best considered tentative, making any discussion of site distribution for these site types premature.

Table 3
Geographical Location of Diagnostic Components from Selected Prehistoric Sites

Site Type	Riverine	Upland	Slope Base	Total
Paleo-Indian	2	1	0	3
Archaic	13	6	7	27
Archaic/Woodland	6	0	1	7
Plains Village	12	5	11	28
<i>Total</i>	<i>33</i>	<i>12</i>	<i>19</i>	<i>64¹</i>

¹ Total number of prehistoric components on 40 sites.

When all 111 sites are plotted against environmental setting and mapped soil types (Table 4), the results are somewhat different; riverine environments are still the most common (n=52), but in this case upland sites (n=37) significantly outnumber slope base sites (n=22). The largest percentage of prehistoric sites occurred on Granite Cobbly land and other rocky soils, including Stony rock land, Rock land, and Granite outcrop (n=48). As is illustrated in Table 4, Port series soils, including Port loam, Port clay loam, and Port-Slickspots complex, are also well represented (n=23), as are Vernon soils (n=22). Seven other soils types, Eroded clayey land, Lawton loam, Foard and Tillman soils, Windthorst sandy loam, Breaks-Alluvial land, Zaneis-Slickspots complex, and Foard-Slickspots complex, account for the remaining 18 prehistoric sites.

Table 4
Soil Type Associated with Selected Prehistoric Sites at Fort Sill

Soil Type	Riverine	Upland	Slope Base	Total
Granite Cobbly Land	19	8	12	39
Stony Rock Land	0	1	3	4
Rock Land	0	2	2	4
Granite Outcrop	0	0	1	1
Subtotal:	19	11	18	48
Port Loam/Port Clay Loam	20	1	0	21
Port-Slickspots Complex	1	1	0	2
Subtotal:	21	2	0	23
Vernon Soils	5	17	0	22
Subtotal:	5	17	0	22
Eroded Clayey Land	0	0	1	1
Lawton Loam	4	2	1	7
Foard and Tillman soils	0	1	0	1
Windthorst Sandy Loam	0	1	0	1
Breaks-Alluvial Land	1	0	2	3
Zaneis-Slickspots Complex	0	2	0	2
Foard-Slickspots Complex	2	1	0	3
Subtotal:	7	7	4	18
Total	52	37	22	111

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These results are quite similar to those predicted by the Museum of the Great Plains' predictive model; indeed, all the predicted soil types are heavily represented in the actual sample. It should be noted that 60 percent (n=3) of the new prehistoric sites recorded during the 1993 survey and 75.7 percent (n=84) of the prehistoric sites in the complete 111-site sample summarized in Table 4 were located on soils predicted to have a high frequency of prehistoric sites. Another 8 percent (n=9) of the sites in the complete sample were located on soils related to or generally associated with soil predicted to have a high frequency of sites (heavily eroded soils similar to Granite Cobbly land). Only 18 (16.2 percent) of the prehistoric sites were located on soils predicted to have a low frequency of prehistoric sites. No attempt was made to scientifically sample the different soil types; all recorded soil types were taken from the appropriate soil maps (SCS 1970). The presented data, which are based on a substantial sample representing a significant percentage of the prehistoric sites known for Fort Sill, are therefore supportive of the original model as presented by Hackenberger (1978).

Intensive Shovel Testing as a Partial Test of the Predictive Model

Prehistoric sites identified thus far at Fort Sill appear to be located primarily on land surfaces with good surface visibility; as outlined previously, this is considered one of the two major drawbacks to the Museum of the Great Plains' predictive model. Two possible explanations for this phenomenon are (1) that shovel testing does not offer any significant advantage when conducting survey in the Fort Sill area, or (2) that the criteria used to determine the locations subject to shovel testing are in error. During the course of the 1992 Fort Sill Survey, a program of intensive shovel testing was implemented for two reasons: (1) as a partial test of the Museum's site distribution model; and (2) as a test for the effectiveness of shovel testing in general at Fort Sill. This tradition of intensive shovel testing was continued in selected areas during the 1993 survey. All of Survey Area 1 and portions of Survey Areas 3 and 4 were subjected to intensive rather than selective shovel testing. Survey Area 1, located on the eastern border of the installation, is not fed by any major streams and exhibits only a few soils, most notably Vernon soils. This area was the most intensively surveyed—approximately one shovel test was excavated per acre—and acted as a control for the intensive shovel testing performed in portions of Areas 3 and 4. These survey areas were selected because of their proximity to Post Oak Creek and the wide variety of soil types they contain. Soils recorded for these areas include Port loam and related soils, Vernon soils, and Granite Cobbly land, all of which are predicted by the site distribution model to have a high frequency of prehistoric sites, as well as Foard-Slickspot complex, Lawton loam, Breaks-Alluvial land complex, Windthorst sand loam, and Konawa loamy fine sand, all soil types that are predicted to have a low frequency of prehistoric sites. In the immediate vicinity of Post Oak Creek, shovel testing was conducted at 20-m intervals; in all cases, the sediments were screened through 6.35 mm (¼ inch) hardware cloth.

Despite the level of effort spent upon Survey Area 1, only one site was recorded within this tract. Prehistoric site 34Cm-507 was discovered atop Potato Hill and was identified through interviews with Louis Voge of the Environmental Division and located by surface observation only. Shovel testing at this site was not useful in defining the boundaries of the site, since the site more or less covered the entire crest of the hill, and did not aid in the location of the site itself. A number of sites were located during the course of the intensive surveying of the Post Oak Creek valley; among these were prehistoric sites 34Cm-91, 34Cm-317, 34Cm-321, 34Cm-513, and historic sites 34Cm-510 and 34Cm-521. All these sites were located or relocated by surface observation only. No cultural material was discovered through shovel testing during survey, although shovel tests excavated during the site delineation process produced artifacts at 34Cm-91 and 34Cm-510.

The pattern observed during intensive shovel testing was repeated in areas subjected to selective shovel testing. During the 1992 and 1993 surveys of the Fort Sill Military Reservation, no new sites were located

based on shovel testing. Only one previously recorded prehistoric site was relocated solely through shovel testing; this site was recorded in 1992. All historic sites were identified by the observation of surface artifacts and features alone, although shovel testing did supplement the site delineation process in several cases. With the exception of the one site mentioned above, all prehistoric sites were located by the observation of surface material.

Shovel testing has simply proven to be an ineffective method for locating archeological deposits in the environments encountered at the Fort Sill Military Reservation. The reason for this ineffectiveness is not grounded in the methodology used to conduct shovel testing or within the practice of shovel testing itself. This is shown by the results of a similar project conducted at Camp Gruber in eastern Oklahoma in the fall of 1992. This project was supervised and conducted by the same Geo-Marine, Inc., personnel who participated in the 1991 and 1992 Fort Sill surveys. Selective shovel testing conducted as a portion of this project resulted in recording a number of prehistoric sites. Within the forested environment encountered at Fort Gruber, shovel testing proved to be an effective method for site location (U.S. Army Corps of Engineers 1993).

The reason that shovel testing is ineffective in locating archeological sites at Fort Sill is primarily due to the inability to quickly and efficiently conduct shovel testing in this environment. The experiences of survey personnel during the 1992 field season are particularly illustrative of this point. Even though the spring and early summer of 1992 were unusually wet in western Oklahoma, the late summer and fall season during which this survey was conducted were quite dry. This resulted in hard, sun-baked surface sediments that were often impenetrable with standard shovels. Pick axes were used on some occasions, but these too proved ineffective. Pick axes were only able to penetrate to approximately 30 cm below the ground surface unless a much larger hole was excavated than is generally standard in the field of archeology. The use of larger, uncontrolled excavations for survey is ineffective, costly, and destructive to the archeological resource. And, while pick axes were instrumental in testing newly located sites, they were not found to be effective in the initial location of these sites.

Although shovel testing proved to be an inadequate method for the location of archeological sites at Fort Sill, we are not advocating its abandonment as a survey method. Shovel testing has proven effective in defining site boundaries and the depth of deposits. However, in upland and riverine settings, surface observation appears to be an effective method for the identification of archeological sites. For areas that potentially contain alluvial or colluvial deposits, shovel testing is not an effective method for locating archeological sites. Standard survey methods in these areas may have to be supplemented by mechanical trenching in some cases. In addition, it is recommended that an archeologist be present to monitor any ground-disturbing projects within areas containing alluvial and colluvial deposits.

This ineffectiveness of shovel testing at Fort Sill effectively abrogates the first objection to the Museum of the Great Plains' site location model, i.e., the observation that the model was developed from surface observations with little if any data generated from subsurface testing. It is true that the model does little more than predict where sites will be found during low intensity survey without subsurface testing, that is, in areas with good surface visibility. However, nearly all sites known for Fort Sill fit this category.

The second major objection to the Museum's predictive model, which is derived from the fact that the model was tested by sampling only from those survey units predicted to have the highest frequency of sites, has also been addressed by the fieldwork documented in this Technical Series (Peter and Weston 1993; Weston et al. 1993). The 41,806 acres of accessible areas of Fort Sill that had not been previously surveyed by 1991 have now been examined. All areas, high probability and low probability alike, were surveyed and subjected to at least minimal shovel testing.

Conclusions

All in all, the data as now understood do tend to support the Museum of the Great Plains' prehistoric site prediction model. However, it is believed that it is not the soil types themselves that are responsible for the observed site distribution, but their topographical locations. The soil types are directly related to the sort of geomorphic feature on which they occur. All the high-probability soils discussed herein are most likely to occur along drainages or on topographical uplands, where sites can most logically be expected to occur in any survey area.

HISTORIC SITE SUMMARY

In this portion of the summary, an overview of the historic sites recorded during this survey and the criteria by which each of these sites was evaluated are presented. Sites with potential for national, state, or local significance are discussed briefly in reference to their historical context. Sites of unknown function or of known function but lacking contextual integrity are not discussed. Finally, proposed models for historic site settlement in the Fort Sill area are examined and compared to the existing site data.

Eleven of the 23 sites located during the current survey at Fort Sill contain a historic component. None of these sites had been previously recorded. Six (54.5 percent) have been identified as rural dwellings or farmsteads; one site (9.1 percent) is recorded as a historic artifact scatter; one site (9.1 percent) is apparently the remains of a cattle dipping vat; and the remaining three sites consist of unidentified structural remains (see Table 2).

The criteria for the evaluation of these historic sites when making recommendations for NRHP nomination or testing made use of several sources of information. Critical to the primary assessment was the historical significance of each site and the site's ability to conform to research criteria. Importantly, the limitations and realities of an ability to protect a valid sample of certain site types from further impacts by the conduct of the military mission is included in the assessment. Data collected from archival sources, assumed site integrity and existing features, recovered material, and current and projected impacts near the site location were also critical in making the recommendations for NRHP nomination or testing. A site with foundation features but with no stratified deposition or significant surface material certainly must be classified as lacking significant data sets critical to historical research in southwestern Oklahoma. However, sites with significant surface features, apparently intact subsurface deposition, and adequate documentation would provide a significant data base.

Historic Farmsteads and Rural Residences

Six historic farmsteads or rural residences were identified during this survey (34Cm-509, 34Cm-510, 34Cm-511, 34Cm-514, 34Cm-520, and 34Cm-522). Although contextual integrity varies between the sites, some exhibit significant intact features worthy of further research concerning the changing social and economic lifeways of southwestern Oklahoma. Each of these sites has been recommended for additional archival research in order to better determine their National Register potential; in addition, sites 34Cm-514, 34Cm-520, and 34Cm-522 have been recommended for Phase II evaluatory testing. Although some of the farmsteads were apparently occupied by Euro-American settlers, at least two (34Cm-509 and 34Cm-511) were occupied from allotment (pre-1901) until government acquisition (1956-1957) by Comanche settlers. One of the properties (site 34Cm-510) consists of a single structure on a quarter section allotted to Comanche Oats-sec, which eventually became part of the Comanche Hosetosavit family farm (34Cm-509). It is not

known at this time whether this site was occupied by members of the Ho-se-to-sa-vit family, or if it was leased to tenants or used for some other purpose.

Historic Artifact Scatter

Site 34Cm-517 was recorded during the 1993 Fort Sill survey as a buried historic artifact scatter lacking architectural remains and other features. This site does not appear to be a simple historic trash dump, as buried cultural materials were recovered from several shovel tests. Further, nearly every historic dump discovered during the course of this survey has been found in a washout gully near one of the intermittent tributaries of Post Oak Creek; conversely, this find was made in a flat area in heavy grass cover. This site may be associated with the unidentified remains of a Comanche homestead, or it may be all that remains of the homestead itself. Site 34Cm-517 has been recommended for additional archival research in order to clarify its origins, as well as its potential for inclusion in the NRHP.

Cattle Dipping Vat

Site 34Cm-521 represents what appears to be the remains of a cattle dipping vat. The remnants of such structures are common in Texas and the surrounding states, for they were used to control the cattle disease called splenetic or "Texas Fever" in the late nineteenth and early twentieth centuries. The first cattle dipping vat in history is thought to have been constructed by Colonel R. J. Kleberg, manager of the King Ranch in Texas, in the late 1800s. No other cultural material or foundation remains were located in the immediate area. Additional archival research is needed in order to clarify the site's eligibility for inclusion in the NRHP. If the site is sufficiently documented, it may well be recommended as eligible; it seems to be a unique representative of this type of structure for Fort Sill.

Unidentified Structural Remains

Three sites have yielded the remains of isolated structures. Two of the sites (34Cm-508 and 34Cm-512) are extensively disturbed and in poor condition; the remaining site (34Cm-518) is in fair condition, having suffered only moderate disturbance. Sites 34Cm-508 and 34Cm-512 have been recommended as ineligible for inclusion in the NRHP; site 34Cm-508 is considered to be in secondary context, and 34Cm-512 is believed to be the remains of a post-1957 army bunker. Site 34Cm-518 has been recommended for additional archival work in order to clarify its eligibility for nomination to the NRHP.

Historic Settlement Models for Fort Sill

Site prediction modeling for Fort Sill is concerned primarily with prehistoric and protohistoric sites (e.g., Bastian 1965; Hackenberger 1978); very little work has been done on historic settlement of the region. This most likely stems from the fact that most of this area was settled after 1901 (Peter and Weston 1993). Given this fact, it has been proposed that site densities will probably be highest along section roads and intersections of such roads (Austin and Peter 1992). It seems likely, however, that historic sites may occur along any of the roads on Fort Sill, particularly on the western portion of the military reservation; older maps indicate that many of these roads were in use prior to the acquisition of the land by the Federal government. A historic site prediction model would be of limited utility, nonetheless, since the locations of most historic sites can

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be easily determined from written records, aviation maps, early aerial photographs, and from existing documents such as Dames and Moore's 1980 Terrain Analysis.

Of course, while it seems fairly simple to predict historic site locations from perusal of existing records, this approach does not always work. For example, some 50,000 people were known to have lived in dugout structures along the banks of Cache Creek at the turn of the century while waiting for the results of the land lottery then underway; however, no trace of those dugouts can be found today (Austin and Peter 1992). Bastian (1965), in attempting to explain why no protohistoric Wichita sites have been detected along East Cache Creek even though detailed records exist for them, raised the point that the East Cache was known for extensive flooding prior to modern development. This may very well have erased the evidence of the recorded historic dugouts.

This information provides the outlines for a minimal historic site settlement model. Given the information presented above, historic habitation sites should occur on or near roads. It seems spurious to attempt to further refine the model at this time, due to the lateness of settlement in this region. Since the area was settled in what was essentially the modern era, typical historic settlement patterns would not adequately explain the settlement patterns observed here. Compartmentalization of the land into 160-acre quarter-sections for farmsteading further compounds the problem.

Evaluation of the Road Proximity Criterion

A total of 54 sites was selected for the testing sample. All sites known to be related to the military were excluded; the military does not use the land as a typical settler might. It was felt that the inclusion of military sites in the sample would bias the results toward more generalized land usage. For similar reasons, all sites located within the Old Post area, which predates general settlement of the region, were not included in the sample; with the exception of a number of Apache POW villages (Austin 1993), all sites in this area should reflect military usage of one variety or another. In addition, only sites with demonstrable architectural remains were included in the sample. These sites are listed in Table 5.

Examination of the 54 sites proves that 87 percent ($n=47$) are in the immediate vicinity (within 100 m) of at least one road; indeed, many of the sites are located on or near crossroads. Those few sites ($n=7$) that do not fit this pattern are nevertheless located within 300 m of a road; and it is entirely possible that these sites were once located near roads that are now no longer recognizable. Thus, it appears that the simple historic site prediction criterion outlined above has proved remarkably accurate. It seems likely that the sites were established first, with the roads being developed later; however, this does not devalue the usefulness of the roads proximity criterion.

Given the number of quarter-sections awarded in the lotteries of 1900-1901, however, historic habitation site densities appear quite low. This may be due to a number of factors: (1) lack of recognition by survey personnel; (2) dense vegetation that mask some of the sites; (3) the removal of structures by homeowners or the military upon government acquisition; and (4) destruction of the sites by the military and/or by natural factors such as erosion or flooding. Most likely, a combination of all these factors accounts for the general lack of historic habitation sites at Fort Sill.

Table 5
List of Selected Sites Used to Test the Proposed Historic Settlement Model

Site #	Site #	Site #
34Cm-59	34Cm-432	34Cm-485
34Cm-68	34Cm-433	34Cm-486
34Cm-86	34Cm-434	34Cm-488
34Cm-279	34Cm-435	34Cm-489
34Cm-287	34Cm-436	34Cm-491
34Cm-319	34Cm-438	34Cm-492
34Cm-358	34Cm-441	34Cm-493
34Cm-405	34Cm-446	34Cm-494
34Cm-406	34Cm-449	34Cm-495
34Cm-408	34Cm-450	34Cm-496
34Cm-409	34Cm-451	34Cm-498
34Cm-412	34Cm-454	34Cm-499
34Cm-414	34Cm-456	34Cm-500
34Cm-418	34Cm-464	34Cm-509
34Cm-419	34Cm-468	34Cm-511
34Cm-426	34Cm-472	34Cm-514
34Cm-428	34Cm-481	34Cm-520
34Cm-430	34Cm-482	34Cm-522

EVALUATION OF SITE DETECTION METHODOLOGY

The survey of approximately 5,625 acres of the Fort Sill Military Reservation presented certain challenges related to both the relocation of previously recorded sites and the detection of new sites. Survey conditions were relatively good, for ground cover was only a problem within the drainage bottoms. It was quickly apparent, however, that the nature of the archeological manifestations at Fort Sill, combined with the impact of over 100 years of military training, have greatly affected the archeological visibility of the previous millennia of occupation.

Attempts to relocate previously recorded sites during the 1993 season contributed to the previous observation that shovel testing is of limited utility in regard to the detection of sites (see the discussion in the Prehistoric Site Summary section). Often, a few artifacts present within an eroded area were the only evidence of the presence of the formerly recorded site. Shovel testing within and surrounding the surface evidence most often yielded no additional evidence. In other words, without some surface exposure, site detection by means of shovel testing is extremely unlikely. The limited utility of shovel testing for the detection of new sites is directly related to the low artifact densities exhibited by sites in this region. It might be suggested that the shovel test interval was too great for site detection; however, when attempting to relocate sites, the survey crews often placed shovel tests immediately adjacent to surface evidence, and shovel test intervals were usually 15 m or less.

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Given these results, site detection would appear to be enhanced only through greater surface exposure. In some areas of the Southeast, the disking or plowing of survey areas has been used to provide sufficient exposure to aid site detection. However, such procedures are unacceptable at Fort Sill due to the unnecessary disturbance of the ground cover and subjection of the exposed areas to erosion. At the present, the only solutions appear to be to schedule survey work when vegetation cover is minimal (i.e., winter months), maximize examination of available exposed areas, and focus shovel testing in those areas judged to have a high probability of containing sites (for example, floodplains of large streams). These guidelines, which were formulated after the analysis of the 1991 Fort Sill survey results (Peter and Weston 1993), were adhered to during the courses of the 1992 and 1993 surveys (Weston et al. 1993; current volume).

The relocation of previously recorded sites was also affected by the low artifact densities characteristic of the area sites. Of the 27 previously recorded sites and the eight documented ruins within the current project area, only eight sites and three ruins were relocated, or 30.7 percent of the expected total. A total of 13 sites first recorded by Shaeffer was reported within the current project area (Shaeffer 1959, 1966), with three (23 percent) of these sites relocated. Another 13 of the 27 sites were originally recorded by the Museum of the Great Plains in 1976 and 1977; in addition, they relocated two of Shaeffer's sites (Ferring 1978). Of these 13 sites located by the Museum of the Great Plains, the current survey relocated five (38.5 percent). A total of three ruins was identified by Dames and Moore (1980) during the course of their terrain analysis of Fort Sill. All these ruins (100 percent) were relocated and were recorded for the first time as archeological sites. The remains of five other historic sites were expected from perusal of a mid-century aviation map; however, none of these ruins was relocated. These survey results somewhat exceed the recovery rate of 21.2 percent yielded by the 1991 survey, in which 21 of 99 previously recorded sites were relocated (102 sites were originally searched for, but three were merged with other sites). The results are much less than the 1992-1993 recovery rate of 70.4 percent, in which 19 of the 27 expected sites and ruins were relocated.

The current survey, like the previous one (Weston et al. 1993), produced approximately equal numbers of prehistoric and historic occupations. As was evident from previous surveys, the site sample is notably deficient in sites dating from the protohistoric or contact period (1550) to 1870. Shaeffer (1959:23-24; 1966:27-28), Bastian (1965:50), and others have recounted the tales of early travelers, such as Catlin (1926 [1841]) in the 1830s and Marcy (Marcy and McClellan 1937 [1852]) in the 1850s, who noted both the contemporary and former occupancy of the area by the Wichita and the Comanche. After the establishment of Fort Sill in 1869, there are a number of references to Comanche and Kiowa encampments along East Cache Creek (Shaeffer 1959:23). As Shaeffer (1959:24) points out, such components may be identifiable only through excavation and careful analysis, for they are intermixed with assemblages that are presently recognized as prehistoric in age. However, it must also be realized that such occupations were likely of short duration, within a period of less than 300 years. Therefore, the archeological visibility of such components is limited from the start. Considering their stratigraphic position on the most recent land surfaces, such components are also those most susceptible to destruction by subsequent cultural activities.

There are a number of factors that have contributed to the inability of the Fort Sill surveys documented in this technical series (Peter and Weston 1993; Weston et al. 1993; current volume) to relocate many of the previously recorded sites, even though these surveys were the most intensive and extensive yet conducted on the Fort Sill Military Reservation. One factor is that previous archeological work on the Fort Sill reservation has affected some of the previously recorded sites. Two sites within the current project area, two in the 1992 project area, and ten in the 1991 project area have been the subject of several rounds of archeological investigations conducted over the last 30 years, and other sites have suffered intense collection pressure from both professional and avocational archeologists. However, excavation and surface collection can only account for a small portion of the sites that were not relocated. A second factor is the poor locational information recorded for some of the earlier documented sites. While this is a convenient

explanation, it does not entirely account for why the number of previously recorded sites located within the three project areas has been reduced from 160 to 44. Although exact locations of previously recorded sites may not be known, the larger survey area covered by the surveys should have included most if not all of these 160 sites. The possibility exists, of course, that some of the sites *were* found, but were not recognized as previously recorded sites; if this occurred, then the sites would have been included in the "new sites" category. However, the original locational information would have had to have been wildly inaccurate for this to occur. Furthermore, the 1992 reanalysis of some cultural materials collected by Shaeffer (1959) has shown that a significant amount of natural material has not been misidentified as cultural and has not led to the over-reporting of sites (Weston et al. 1993). It is believed that none of these factors are significant causes.

The three most significant factors for the inability of the Fort Sill surveys to relocate previously recorded sites are believed to be (1) continuing natural erosion; (2) channelization of stream beds; and (3) military training activities. Many of the sites documented by Shaeffer (1959, 1966) and Ferring (1978) were located on or in the banks of the creeks. While natural erosion allowed these sites to be recorded in the first place, erosion in the decades since has destroyed some of them. This continuing erosion should uncover previously unexposed sites, but channelization of many of the creeks at Fort Sill has slowed or stopped this process. Channelization has destroyed a number of previously recorded sites, and undoubtedly unrecorded sites, and has slowed or stopped the erosion process that previously had revealed these sites. However, these two factors can only help explain the disappearance of sites adjacent to stream channels. The more wide scale disturbances attributable to military training activities are the primary cause of site destruction or site masking. As a military training facility, Fort Sill has a major responsibility for preparing members of the armed services for their role in defending the interests of the American government and its people. Unfortunately, this mission often involves the modification of the land surface, which results in either the disturbance of site contexts or masking of site contexts by fill materials.

This pattern of disturbance of site contexts is repeated throughout the areas examined by the current survey. Disturbances from definite military activities were noted on all but nine (37.5 percent) of the recorded sites, with 39.1 percent of all sites disturbed within the six months preceding observation (Table 6). At least 66.7 percent ($n=16$) of the sites in this current sample exhibit extensive subsurface disturbance not related directly to natural erosion. It is obvious that military training activities have severely impacted the cultural resources located on the Fort Sill Military Reservation. However, the percentage of sites not obviously disturbed by the military is higher than was observed during the 1991 and 1992 surveys, while the percentage of sites obviously disturbed in the last six months is much lower. This may result from the fact that the 1993 survey areas are used somewhat less intensively than many other areas of the fort.

RECOMMENDATIONS FOR TREATMENT OF RECORDED SITES

An initial assessment of the NRHP eligibility of each recorded archeological site was presented with the description of the property in Chapter 6. The following section is intended to present a more detailed discussion of the NRHP criteria and a summary of the assessments of each identified cultural resource property in relation to its potential for fulfilling these criteria. In addition, recommendations for the future treatment of each resource are also presented.

Table 6
Degree of Disturbance to Cultural Resource Sites, 1993 Survey, Fort Sill, Oklahoma

Site	Type of Impact	Nature of Impact
Area 1		
34Cm-507	Disturbed by military within last 6 months	Erosion, training, fill
Area 2		
34Cm-350	Disturbed	Bulldozing, road construction
Area 3		
34Cm-91	Disturbed	Erosion
34Cm-321	Disturbed by military within last 6 months	Road construction, vehicular traffic, foxhole
34Cm-509	Disturbed by military	Erosion, training, bulldozing; nearly totally destroyed
34Cm-510	Disturbed	Building removal, erosion
34Cm-511	Disturbed by military within last 6 months	Building removal, tank tracks, erosion
34Cm-512	Disturbed by military	Building removal; almost totally destroyed
34Cm-513	Disturbed by military within last 6 months	Road construction, vehicle traffic
Area 4		
34Cm-123	Disturbed by military within last 6 months	Training, vehicular traffic, road and fence construction
34Cm-291	Disturbed by military	Road construction, erosion
34Cm-316	Disturbed	Erosion
34Cm-317	Disturbed	Erosion
34Cm-514	Disturbed by military within last 6 months	Training, vehicular traffic
34Cm-515	Disturbed	Road construction, erosion
34Cm-516	Disturbed by military	Training, erosion
34Cm-517	Disturbed by military	Road construction, erosion
34Cm-518	Disturbed by military within last 6 months	Building removal, road construction
34Cm-519	Disturbed	Erosion
34Cm-520	Disturbed by military within last 6 months	Military traffic, building removal, training
34Cm-521	Disturbed	Structure removal, erosion
Area 6		
34Cm-508	Disturbed	Destroyed by building removal
Area 9		
34Cm-94	Disturbed by military within last 6 months	Training, vehicular traffic, road construction
34Cm-522	Disturbed	Erosion

Methodology

Although full assessment of NRHP potential cannot be completed for all properties during this phase of investigations, each property may be evaluated in relation to the criteria set forth in 36 CFR 60.4 (a-d). Of particular importance is the requirement that an archeological property nominated to the NRHP be capable of yielding information important to our understanding of prehistory or history. In order to identify the types of information which may be considered important for this purpose, Hofman et al. (1989:157-174) list a series of research needs and concerns for the Southern Great Plains region in general. Those that are relevant to the sites in the Fort Sill area include:

1. study of any sites relating to the Paleo-Indian period;
2. paleoecological studies relating to the transition from the Pleistocene to Holocene periods;

3. studies of almost any sites dating to the middle Holocene period from approximately 8,000 to 2,000 years ago;
4. documentation of the dynamic nature of the Holocene environment;
5. studies of the social organization of Holocene hunting and gathering peoples, the structure and flexibility of the bands, group sizes and seasonal variation, and mobility patterns;
6. studies of geomorphic factors, landform changes, and deeply buried archeological sites;
7. refinement of local cultural chronologies for the Late Prehistoric period, in order to better assess the relationships between the various complexes of this period;
8. better definition of the material assemblages of the Late Prehistoric period;
9. studies of the economic aspects of the Late Prehistoric period, including seasonal variability, economic territories, and change within this period;
10. studies of the interface of distinctive ceramic and chipped stone technologies during the Late Prehistoric period;
11. studies of all sites of the poorly known Protohistoric period;
12. documentation of the daily life, subsistence economy, and interactions of the frontiersman-explorer;
13. examination of documented historic period sites to enable recognition of Native American, African-American slave, and Anglo-American occupations;
14. documentation of settlement patterns and subsistence systems of Ranching-Farming complex; and
15. reconstruction of early lifeways and socio-economic systems to complement, broaden, and perhaps supplant the historic record.

Thus, the first criterion of significance for any archeological property in the project area is its capability to yield information relevant to one of these research topics. In addition, the following criteria can also be applied to facilitate the evaluation of archeological resources:

1. potential for interpretation of culture history or local sequences;
2. potential for interpretation of intersite or intrasite patterning;
3. potential for interpretation of technology or primitive industries; and/or
4. existence as a unique example of a site type.

Whether or not specific properties exhibit potential for contributing to our knowledge of prehistory or contain data relevant to any particular research theme is dependent upon a precondition of contextual integrity of the archeological deposits. For example, a prehistoric site located close to Post Oak Creek and buried by alluvial deposits has a far greater potential for containing undisturbed deposits than one located on a stable, nonaggrading surface. However, the nature of contextual integrity, as it affects research potential of a property, must also be viewed as being relative. That is to say, a property dating to the Paleo-Indian period need not demonstrate the same level of contextual integrity as one dating to the Late Prehistoric in order to have the same, or greater, research potential and NRHP significance.

The survey of the project area was designed to provide a preliminary assessment of:

1. the content (i.e., the range of artifactual and feature information available) of both the known and newly discovered cultural resources in the project area;
2. the integrity of the deposits at these sites (i.e., is the site undisturbed, bioturbated, deflated, etc.);
3. the context of the cultural deposits in relation to both the natural and cultural environment of the appropriate time period; and
4. the density and nature of the cultural resources present within the potential project area as a whole.

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The fundamental information derived from the survey was used to evaluate the recorded sites and their potential for increasing our knowledge of past lifeways or contributing to the resolution of regionally pertinent research questions.

The recommendations presented here for treatment of the sites examined by the survey involve three levels of effort: (1) preservation, (2) archival research and/or test excavation to complete NRHP eligibility determination, and (3) no further work.

The first level of effort involves preservation, recognized as always the most desirable option in managing cultural resources, if it is at all possible. Unfortunately, preservation is not always a viable option. Consequently, final determination of eligibility or mitigative measures must be considered.

The second level of effort involves regional- and project-specific research bearing on the site within a planned program of archival research and/or test excavations. The ultimate goal of such a program would be to determine potential site eligibility for inclusion in the NRHP—a process requiring an understanding of the site's (1) potential for interpretation of culture history or local sequences, (2) potential for interpretation of intersite or intrasite patterning, (3) potential for interpretation of technology or primitive industries, and/or (4) existence as a unique example of a site type.

Finally, the category of "no further work" applies to any sites that, on the basis of the data collected by the present survey, do not appear to have any potential for future research and are hence ineligible for inclusion in the NRHP. This may be a result of having a data base insufficient to contribute to current research goals in the region, or of being seriously impacted by either natural or human disturbances that have acted to destroy the integrity of the site.

Recommendations

None of the 24 sites (see Table 2) recorded during the current survey is currently considered eligible for inclusion in the NRHP. The eligibility of 12 sites remains unknown at this time; further testing and evaluation of these sites is recommended. Nine of these sites are historic sites, while two are prehistoric; the remaining site is the Adams Hill Tar Pit, which currently is of no demonstrable cultural significance.

Documentation of the presence of sufficient cultural remains with contextual integrity is necessary for the final determination of eligibility for historic sites 34Cm-514, 34Cm-520, and 34Cm-522. Further archival work is recommended for all these sites, as well as for sites 34Cm-509, 34Cm-510, 34Cm-511, 34Cm-517, 34Cm-518, and 34Cm-521.

The remaining properties of unknown eligibility, 34Cm-91 and 34Cm-519, are both prehistoric sites of unknown cultural affiliation. Further test excavations are needed at both sites in order to more fully evaluate their potential for inclusion in the NRHP and to provide clues to their cultural origins. One of the sites, 34Cm-519, is in danger of being destroyed by erosion before Phase II testing can be performed, and thus has been recommended for preservation until that time.

Site 34Cm-350, the Adams Hill Tar Pit, is a special case. As previously mentioned, this site is of no demonstrable cultural affiliation or significance at this time. However, the site was surely known to the aboriginal inhabitants of the area, who might have used it as a source of petroleum adhesives; it may also have been culturally significant in other ways as well. Like Medicine Bluffs, it may have served as a significant part of the prehistoric cultural landscape. No physical evidence of any prehistoric use of the site

has been found, so its status remains uncertain. Therefore, it is recommended that further attempts be made to determine its cultural significance. These attempts should take the form of archival and/or library research, as well as interviews with Comanche and Apache informants who might retain knowledge of early uses of and attitudes toward the site. Such research would help to firmly determine the site's NRHP status. Whatever the outcome, the site should be preserved undisturbed, for its paleontological value at the very least.

The remaining 12 sites are considered ineligible for inclusion in the NRHP. These sites lack the contextual integrity necessary for addressing research questions pertinent to the region. The prehistoric assemblages that are classified as ineligible are either surface manifestations that lack features or a preserved site structure, or that have been highly impacted by disturbances. The historic sites that are ineligible exhibit foundation features, but lack sufficient contextual integrity and/or age to make them potentially eligible.

CONCLUSIONS

The basic archeological survey of the Fort Sill Military Reservation has now been completed; anything that remains would consist of filling in the corners, resurvey of previously surveyed areas, and, possibly, the survey of areas such as artillery impact zones and firing ranges that are currently unsafe to survey. In a previous volume of this technical series (Weston et al. 1993), two objectives were identified that should be kept in mind when designing and conducting future research efforts: (1) to refine or refute the predictive model developed by the Museum of the Great Plains; and (2) to accurately assess the utility of shovel testing in the Fort Sill area. It was stated then that the final test of the model would occur once the basic survey of the entire fort was completed in 1993. This goal has now been achieved. At this time, all safely accessible survey areas on the fort have been accounted for, and all known discovered archeological sites have been included in a data base from which more substantial conclusions may be reached. The model proposed by the Museum of the Great Plains has been proven accurate—despite underlying assumptions that appear at this time to be at worst incorrect, or at best only coincidental—while shovel testing has been proven to be of limited utility at Fort Sill, particularly in survey contexts.

Future research remains to be performed in order to finally prove or disprove the assumptions underlying the Museum of the Great Plains' prehistoric settlement model, and such future refinements should be directed toward the correlation of soil types, land forms, and site location. Additional Phase II and Phase III data recovery (testing and mitigation) will serve as a means of refining the existing predictive model for Fort Sill.

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APPENDIX A

**DEFINITIONS OF PREHISTORIC ARTIFACT CLASSES,
CODING FORM USED FOR PREHISTORIC ARTIFACT
ANALYSIS, AND
SUMMARY TABLE FOR PREHISTORIC ARTIFACTS**

DEFINITIONS OF PREHISTORIC ARTIFACT CLASSES

by
Sharlene Allday and Floyd B. Largent, Jr.

FINISHED BIFACIAL TOOLS

Finished bifacial tools are those finely worked pieces in which the manufacturing process has been apparently brought to completion, as evidenced by secondary retouch, edge straightening, hafting preparation, notching, and similar characteristics. Ten categories are recognized: (1) Dart point; (2) Arrow point; (3) Indeterminate point; (4) Axe; (5) Thinned biface (knife); (6) Chopper; (7) Drill; (8) Adze/Gouge; (9) Marginal Biface Retouch; and (10) Indeterminate Biface. These tools are further divided into a number of subcategories: (1) Complete; (2) Tip; (3) Mid-section; (4) Base/stem; (5) Longitudinal fracture; (6) Tang; and (7) Blade.

Dart Points, Arrow Points, and Indeterminate Points

Dart points, arrow points, and indeterminate points are all varieties of projectile points, bifacial tools formed by fine secondary retouch with basal modification in the form of notching, stemming, or thinning of the proximal end for purposes of hafting. Dart points are those employed to tip hand-held darts or spears; arrow points are used to tip arrows; and indeterminate points are, as the name implies, of uncertain usage. All projectile points are assigned to recognized types whenever possible.

Axe

Axes are bifacially worked, generally rectangular to subrectangular tools which exhibit modification along all edges. The modification has produced relatively straight to convex ends. Indications of hafting are present.

Thinned Biface

Thinned bifaces are sufficiently whole, bifacially worked blanks which exhibit biconvex symmetry, the presence of at least one edge formed by fine secondary retouch, and an absence of cortex except for the proximal end. These artifacts are commonly recognized as knives in the literature.

Chopper

Choppers are cobbles which have been modified, usually bifacially, into a teardrop shape by the removal of several flakes from one end. The opposite cortical, rounded end is unmodified, providing a handgrip during utilization.

Drill

A long, tapered, bifacially flaked bit resulting in a diamond-shaped cross-section is the distinguishing characteristic for this tool. During the Archaic period, the distal ends of projectile points were often reworked to produce this form. Drills from later periods often were fashioned from flakes.

Adze/Gouge

These chisel-like woodworking tools, which may be either bifacial or unifacial, are triangular in shape and are worked along the wider end to produce a steep, beveled straight bit. The opposite end, at the point of the triangle, was the hafted end; the tool itself was generally hafted perpendicular to the handle. In cross section, these tools appear to be plano-convex to pyramidal.

Marginal Bifacial Retouch

These specimens, usually modified flakes, are those that exhibit limited modification on both faces along a portion of an edge or edges.

Indeterminate Biface

An indeterminate biface is a finished bifacial tool whose original function remains uncertain.

UNFINISHED BIFACES

Unfinished bifaces are those in which the manufacturing process has not been brought to completion. These artifacts tend to be somewhat crude, lacking the fine workmanship of finished tools. Five categories are recognized: (1) Aborted, Early; (2) Aborted, Late; (3) arrow point preform; (4) dart point preform; and (5) unidentified fragment. Incomplete bifaces are further subdivided into the categories of complete and fragment.

Aborted, Early

Aborted bifaces are bifacially worked artifacts that appear to have been rejected prior to the completion of the bifacial reduction process. The Early Aborted biface specimens usually lack symmetry and exhibit sinuous edges formed by the removal of large, thick flakes. Cortex is usually present on at least one surface and areas of step or hinge fracturing may be evident.

Aborted, Late

These specimens usually exhibit biconvex symmetry and straight edges. Generally, all cortex will have been removed, but the fine, pressure retouch characteristic of a thinned biface is not present.

Arrow Point and Dart Point Preforms

These specimens are bifacially worked blanks with indications of fine edge retouch from pressure flaking along both lateral edges. The proximal ends of the blanks lack the necessary modification that would facilitate hafting. Some specimens retain portions of the original striking platform. The specimens are subjectively placed into the dart or arrow point subclasses based on overall dimensions.

Unidentified Fragment

These specimens are bifacially worked pieces that cannot be placed in a more specific class because of their fragmentary nature.

UNIFACES

Unifaces are those tools that exhibit flake scars on one face only. Eleven basic types have been identified: (1) Marginal Modified/retouched uniface; (2) Borer; (3) Burin; (4) Denticulate; (5) End scraper; (6) Side scraper; (7) Scraper with Graver Spur; (8) Graver; (9) Notch; (10) Burin spall; and (11) Adze/gouge. These categories are further distinguished by whether the specimen is complete or fragmentary.

Marginal Modified/Retouched Unifaces

These are minimally altered pieces, usually flakes, that are characterized by a single row of relatively small flake scars (less than 2 mm in width) forming a working edge with an acute angle (less than 50°). One or more edges may have been modified.

Borer

Borers are small, drill-like unifacial tools that are characterized by alternating edge retouch. These pieces are further distinguished by two adjacent concavities formed along an edge through the removal of small flakes, resulting in a sharp, prominent protrusion that was used for perforating.

Burin

A burin is a tool on which a wedge-shaped, chisel-like edge has been produced by the removal of a long, narrow sliver or spall, often perpendicular to the axis of the specimen.

Denticulate

This type of tool is formed by the removal of small flakes along one lateral edge of a piece in order to form a working edge that is multiply notched or serrated.

End scraper

These are pieces with retouch restricted to either the distal or proximal end of the blank, generally producing a convex working edge. Marginal retouch may appear along the lateral edges of the blank. The opposing end of the piece may bear some minimal retouch, that was performed in order to facilitate hafting the piece.

Side scraper

These are pieces with retouch present on one or both lateral edges of the blank. The working edge may be straight to convex or concave.

Scraper with Graver Spur

These specimens are scrapers with an additional carefully flaked, prominent, sharp protrusion formed by the creation of adjacent shallow concavities.

Graver

Gravers are similar to borers, except that the protrusion is retouched from one side only, for the purposes of scoring and engraving.

Notch

This type of tool is formed when small flakes are removed along one lateral edge of a piece in order to form a working edge along a single, relatively deep concave area.

Burin Spall

A burin spall is the small piece that is removed to produce a chisel-like edge, thus forming a burin. Burin spalls often retain minimal retouch along one edge, and in some cases may have been used for graving purposes.

Adze/Gouge

These pieces are identical to bifacial gouges, except that they have been modified unifacially.

UNMODIFIED DEBRIS

Unmodified debris is the unused debris resulting from lithic reduction practices; it usually takes the form of flakes, that must exhibit a platform and a bulb of percussion, and nondiagnostic shatter. Debris may be further distinguished by the amount of cortex remaining on the piece. A total of six categories is recognized: (1) Primary Decortication Flake, 75 percent cortex; (2) Secondary Decortication Flake, less than 75 percent cortex; (3) Tertiary Flake, no cortex; (4) Bifacial thinning flake; (5) Angular shatter; and (6) Not applicable. These categories are subdivided into type classes: (1) Size 1 (1 inch or 25 mm sieve); (2) Size 2 (3/4 inch

or 19 mm sieve); (3) Size 3 (1/2 inch or 12.5 mm sieve); (4) Size 4 (3/8 inch or 9.5 mm sieve); (5) Size 5 (1/4 inch or 6.3 mm sieve); (6) Size 6 (less than 1/4 inch or 6.3 mm sieve); and (7) Not applicable.

Primary Decortication Flake, 75 percent cortex

These are flakes that retain a minimum of 75 percent cortex on their dorsal surfaces.

Secondary Decortication Flake, less than 75 percent cortex

These flakes retain less than 75 percent cortex on their dorsal surfaces.

Tertiary Flakes, no cortex

Tertiary (interior) flakes lack cortex, having derived entirely from the interior of a core.

Bifacial Thinning Flakes

Bifacial thinning flakes are those distinctive flakes that are produced by softhammer reduction or pressure flaking. They are often small, and are usually characterized by diffuse bulbs of percussion and lipped striking platforms.

Angular Shatter

The term "angular shatter" refers to those irregular fragments that do not express the characteristics of a typical flake. Many are flake fragments, while others are simply lithic chunks that were unintentionally produced during the lithic reduction process, as for example when a flake removal failed catastrophically or the striking platform was crushed by an ill-placed blow.

Not Applicable

This term refers to those bits of lithic debris that do not fit into a recognizable category.

UTILIZED FLAKES

Utilized flakes are those that exhibit discontinuous retouch or very abrupt retouch of a thin edge, which likely reflects use wear, rather than intentional modification. Utilized flakes often functioned as expediency tools. Seven varieties are recognized: (1) Primary decortication flake, 75 percent cortex; (2) Secondary decortication flake, less than 75 percent cortex; (3) Tertiary flake, no cortex; (4) Bifacial thinning flake; (5) Angular shatter; (6) Platform-bearing remnant; and (7) Not applicable. Because most of these categories are identical to those recognized for unmodified debris, only Type 6, Platform-bearing remnant, will be defined here. As before, all seven categories are subdivided into type classes: (1) Size 1 (1 inch or 25 mm sieve); (2) Size 2 (3/4 inch or 19 mm sieve); (3) Size 3 (1/2 inch or 12.5 mm sieve); (4) Size 4 (3/8 inch or 9.5 mm sieve); (5) Size 5 (1/4 inch or 6.3 mm sieve); (6) Size 6 (less than 1/4 inch or 6.3 mm sieve); and (7) Not applicable.

Platform-bearing Remnant

A Platform-bearing remnant is a utilized flake fragment retaining the platform. All other utilized flake fragments fall into the category of angular shatter.

CORES

A core is a cobble or mass of lithic material exhibiting scars that are the result of the systematic removal of flakes by human activity. Three subclasses of cores are recognized: (1) Tested pebble/nodule; (2) Complete core; and (3) Fragment/indeterminate. Cores are further subdivided into morphological and technological categories: (1) Bipolar; (2) Discoidal; (3) Blade; and (4) Not applicable.

Tested nodule/pebble

These pieces are pebbles or cobbles with one or very few flakes removed. These specimens represent discards from an early material selection stage of the bifacial reduction process.

Complete Core

As the name implies, this consists of a core that appears to be complete.

Fragment/indeterminate

This category includes all core fragments (including core tablets, which are large flakes that have been removed from a core in order to prepare a new platform) as well as those pieces that may be either core fragments or complete cores.

GROUND/PECKED/BATTERED STONE

This artifact class includes those specimens that have been modified by grinding, pecking, or battering. Fifteen categories, divided further into complete and fragmentary pieces, are recognized: (1) Abrader; (2) Anvil; (3) Celt; (4) Hammerstone; (5) Incised Stone; (6) Mano; (7) Mano/hammerstone; (8) Metate/grinding slab; (9) Pendant/gorget; (10) Polished Stone; (11) Smoothed Stone; (12) Sinker (fishing weight); (13) Bead; (14) Multi-purpose; and (15) Atlatl weight/bannerstone.

Abrader

These specimens are usually limestone or sandstone fragments that exhibit longitudinal, V-shaped grooves resulting from use as a polishing, smoothing, and/or sharpening stone employed in the production of bone or lithic tools.

Anvil

Anvils are cobbles with a small circular indentation in the center of one face, which were presumably used as a base in the processing of nuts and/or grains.

Celt

These pieces are axe-like tools, round or oval in cross section, that are produced by extensive pecking and grinding. These tools may be grooved or nongrooved. Like adze/gouges, they have a steeply angled bit on one end.

Hammerstone

A hammerstone is a hard nodule of lithic material, usually quartzite, used for direct fracturing of the tool stone during lithic reduction. These pieces exhibit battering on one or more ends, resulting from utilization during the lithic reduction process.

Incised Stone

Incised stones are plano-convex cobbles, usually of limestone, that exhibit a series of three or more incised parallel lines near the center of the specimen. These pieces often exhibit the characteristics of having been thermally altered and apparently were used in the straightening process of shafts for darts or arrows.

Mano

A mano is an ovate-shaped nodule of quartzite or sandstone with one or more surfaces smoothed through grinding.

Mano/hammerstone

These multi-use tools exhibit at least one flattened, ground face and one end that has been battered as the result of use as a hammerstone.

Metate/Grinding Slab

These specimens are large, thick slabs, usually of sandstone, that have been ground smooth on one or both surfaces. These surfaces may be flat or basin-shaped.

Pendant/Gorget

These pieces are ground, smoothed and polished stones, often of an exotic, nonlocal material, that exhibit one or two drilled perforations. They were presumably worn or utilized as decorative ornaments.

Polished Stone

Polished stones are small pebbles that have been ground and smoothed through purposeful modification, as opposed to modification through utilization.

Smoothed Stone

These are small pebbles, such as ochre or limestone, that have been modified and shaped entirely through utilization.

Sinker (fishing weight)

These are medium-sized, usually water-worn pebbles with notches worked into opposite ends; they appear to have been used as net sinkers, although they may have been used as bola stones.

Bead

Beads are small cylindrical or round pieces through which a hole has been bored. They were presumably strung with similar pieces and worn for decorative purposes.

Multi-purpose

Multi-purpose tools are those, such as mano/hammerstones, that were modified and/or utilized for a variety of tasks, such as grinding, polishing, abrading, etc.

Atlatl weight/bannerstone

The function of these rare artifacts remains a matter of debate, but they appear to be atlatl weights, tools used to obtain greater range and accuracy from atlatl darts. Most of these artifacts are winged, hourglass-shaped (similar in shape to a double-bladed executioner's axe), and drilled through the center in order to facilitate their attachment to an atlatl shaft.

UNWORKED STONE

Unworked stone refers to those materials at a site that, though they have not been formally or directly utilized or modified, have nevertheless been impacted by human activity. Two formal classes are recognized: (1) Cobble (manuport); and (2) Burned rock. An additional category, *not applicable*, is included for those materials that do not fit into these two categories.

Cobble (manuport)

Included in this artifact class are those nodules or cobbles that are not a natural part of the site context and that have not been altered by human activity.

Burned Rock

Burned rock includes those cobbles or rock fragments that exhibit angular fractures, crazing, pot lid fractures, or discoloration as a result of being heated. These rocks may have been used as boiling stones, griddles, or linings for earth ovens. The raw material may be limestone, sandstone, or quartzite. The term "Fire-cracked rock" or the acronym "FCR" is also used for describing burned rock.

Geo-Marine, Inc.
Prehistoric Artifact Coding Format
7 April 1994

Compiled by Marianne Marek

Group: (LIT) Lithics

Class: (1) Finished Bifacial Tools

- Type: (1) Dart point
(2) Arrow point
(3) Indeterminate point
(4) Axe
(5) Thinned biface (knife)
(6) Chopper
(7) Drill
(8) Adze/Gouge
(9) Marginal Bifacial Retouch
(10) Indeterminate Biface
- Other: (1) Complete
(2) Tip
(3) Mid-section
(4) Base/stem
(5) Longitudinal fracture
(6) Tang
(7) Blade
(8) Proximal/Medial (all but tip)
(9) Distal/Medial (all but base)

Class: (2) Unfinished Bifaces

- Type: (1) Aborted, Early
(2) Aborted, Late
(3) Arrow Point Preform
(4) Dart Point Preform
(9) Unidentified fragment
- Other: (1) Complete
(2) Fragment

Class: (3) Uniface

- Type: (1) Marginally modified/retouched
(2) Borer (has alternating edge retouch)
(3) Burin
(4) Denticulate
(5) End Scraper
(6) Side Scraper
(7) Scraper with Graver Spur
(8) Graver (retouch from one side only)
(9) Notch
(10) Burin spall
(11) Adze/gouge
(12) Circular Scraper

- Other: (1) Complete
(2) Fragment

Class: (4) Unmodified Debitage

- Type: (1) Primary Decortication Flake, 75% cortex
(2) Secondary Decortication Flake, less than 75% cortex
(3) Tertiary Flake, no cortex
(4) Bifacial Thinning Flake
(5) Angular Shatter
(99) Not applicable

- Other: (99) not applicable

Class: (5) Utilized Flakes

- Type: (1) Primary Decortication Flake, 75% cortex
(2) Secondary Decortication Flake, less than 75% cortex
(3) Tertiary Flake, no cortex
(4) Bifacial Thinning Flake
(5) Angular Shatter
(6) Platform remnant bearing
(99) Not applicable

- Other: (99) not applicable

Class: (6) Core

- Type: (1) Tested nodule/pebble
(2) Complete core
(3) Fragment/indeterminate

Other: (1) Bipolar
(2) Discoidal
(3) Blade
(99) Not applicable

Class: (7) Ground/Pecked/Battered stone

Type: (1) Abrader
(2) Anvil
(3) Celt
(4) Hammerstone
(5) Incised Stone
(6) Mano
(7) Mano/hammerstone
(8) Metate/grinding slab
(9) Pendant/Gorget
(10) Polished stone
(11) Smoothed stone
(12) Sinkers (fishing weight)
(13) Bead
(20) Multi purpose
(21) Atlatl weight/banner stone

Other (1) Complete
(2) Fragment

Class: (8) Unworked stone

Type: (1) Cobble (manuport)
(2) Burned rock (includes FCR)

Other: (99) Not applicable

CCDE	Numeric code for class
CLASS	English translation of class codes (use phistart.prg)
TCDE	Numeric code for type
TYPE	English translation of type codes
OCDE	Numeric code for other
OTHER	English translation of other codes
TYPENAME	Specific names of stone tool types and varieties as applicable (i.e., Gary Point).

MAT Material Type Codes

- (1) Chert
- (2) Quartzite
- (3) Basalt
- (4) Silicified wood
- (5) Petrified wood
- (6) Siltstone
- (7) Quartz
- (8) Limestone
- (9) Sandstone
- (10) Steatite

- (11) Hematite
- (12) Limonite
- (13) Andesite
- (14) Rhyolite
- (15) Schist
- (16) Obsidian
- (17) Silicified breccia
- (18) Scoria/vesicular Basalt
- (19) Metasediment

- (20) Jasper
- (21) Novaculite
- (22) Dolomite
- (25) Tecovas Chert
- (26) Alibates

- (30) Granite
- (80) Igneous, other
- (81) Metamorphic, other

- (98) Unidentifiable
- (99) Not applicable

MATERIAL English translation of material codes

HCDE Heat treatment

- (1) Yes
- (2) No
- (3) Burned (pot lidded)
- (99) Not applicable

HEAT English translation of heat codes

QTY Number of items

SCDE Size code for debitage

- (1) Size 1 (1 inch or 25 mm sieve)
- (2) Size 2 (3/4 inch or 19 mm sieve)
- (3) Size 3 (1/2 inch or 12.5 mm sieve)
- (4) Size 4 (3/8 inch or 9.5 mm sieve)
- (5) Size 5 (1/4 inch or 6.3 mm sieve)
- (6) Size 6 (less than 1/4 inch or 6.3 mm sieve)

SIZE English translation of debitage size code or actual measurements (length x width) of tools

WEIGHT Weight as applicable (normally used for Burned Rock)

GROUP: (CER) Prehistoric Ceramics

Class: (9) Ceramics/Baked Clay

- Type:
- (1) Vessel/Container
 - (2) Bead
 - (3) Pipe
 - (4) Figurine
 - (10) Impressed Daub
 - (11) Baked clay-unimpressed

- Other:
- (1) complete vessel or sizeable fragment (greater than 1/2 vessel)
 - (2) body
 - (3) rim
 - (4) base
 - (5) appendage
 - (6) bowl
 - (7) stem
 - (98) Indeterminate
 - (99) Not applicable

TYPENAME: Specific name of various ceramic types and varieties (i.e., Canton Incised)

MAT: (99) Not applicable

HEAT: (99) Not applicable

QTY: Number of Items

SIZE: Size as applicable (length x width)

WEIGHT: Weight as applicable

GROUP: (FAU) Fauna

Class: (10) Animal Bone

Type: (1) Unworked
(2) Worked
(3) Fossilized
(4) Burned

Other: (1) Bead
(2) Awl
(3)
(4)
(10) Cutmarks
(99) Not applicable

Class: (11) Shell

Type: (1) Unworked
(2) Worked
(3) Fossilized
(4) Burned

Other: (99) Not applicable

TYPENAME: Used to list species identifications

QTY: Number of items

WEIGHT: Weight of faunal remains as applicable

GROUP: (VEG) Vegetal

Class: (12) Vegetal

Type: (1) Charcoal
(2) Seeds
(3)
(98) Indeterminate plant remains

Other: (99) Not applicable

QTY: Number of items as applicable

WEIGHT: Weight of vegetal remains

Geo-Marine Inc.
Fort Sill 3 #1110-013
Prehistoric Artifact Data

Site Number	Unit	Lev	Bag No.	Art No.	Group	Class	Type	Other	Type Name	Material	Heat	Qty	Weight
34CM291	S.T.	1	1	22	3	LITHIC	Unmodified Debitage	Secondary Flake	Size 1	Quartzite	no	1	26.8
34CM291	S.T.	1	1	22	2	LITHIC	Unmodified Debitage	Tertiary Flake	Size 3	Quartzite	no	1	5.2
34CM291	S.T.	1	1	22	1	LITHIC	Core	Complete Core	N/A	Quartzite	no	1	135.0
34CM507	S.T.	3	0	3	3	LITHIC	Unmodified Debitage	Angular Shatter	Size 4	Quartz	no	1	2.7
34CM507	SURF	0	0	2	3	LITHIC	Unmodified Debitage	Angular Shatter	Size 5	Quartzite	no	1	0.8
34CM507	SURF	0	0	2	2	LITHIC	Uniface	Marg modif/retouch	Complete	Chert	no	1	21.7
34CM507	SURF	0	0	2	1	LITHIC	Core	Fragment/Indet	N/A	Chert	no	1	9.6
34CM513	SURF	0	0	6	6	LITHIC	Finished Biface Tool	Dart Point	Complete	ELLIS DART PT. Novaculite	no	1	3.0
34CM514	S.T.	3	1	27	27	FAUNA	Animal Bone	Unworked	N/A	N/A	N/A	4	3.3
34CM515	S.T.	6	1	10	10	LITHIC	Unmodified Debitage	Bifacial Thin. Flake	Size 5	Chert	no	1	0.2
34CM515	SURF	0	0	11	11	LITHIC	Uniface	Marg modif/retouch	Complete	Quartz	no	1	0.9
34CM515	SURF	0	0	12	12	LITHIC	Unworked Stone	Cobble	N/A	Quartz	no	1	84.5
34CM515	SURF	0	0	13	4	LITHIC	Unmodified Debitage	Angular Shatter	Size 6	Quartz	no	1	0.2
34CM515	SURF	0	0	13	3	LITHIC	Unmodified Debitage	Angular Shatter	Size 5	Quartz	no	3	2.0
34CM515	SURF	0	0	13	1	LITHIC	Unmodified Debitage	Tertiary Flake	Size 3	Quartz	no	1	4.3
34CM515	SURF	0	0	13	2	LITHIC	Unmodified Debitage	Angular Shatter	Size 4	Quartz	no	3	3.7
34CM516	SURF	0	0	14	14	LITHIC	Finished Biface Tool	Indet Biface	Tip	Chert	no	1	0.9
34CM519	S.T.	2	1	19	19	LITHIC	Unmodified Debitage	Angular Shatter	Size 5	Quartzite	no	1	0.3
34CM519	S.T.	2	2	20	20	LITHIC	Unmodified Debitage	Bifacial Thin. Flake	Size 5	Chert	no	1	0.2

Geo-Marine Inc.
Fort Sill 3 #1110-013
Prehistoric Artifact Data

Site Number	Unit	Lev	No.	Bag No.	Art No.	Group	Class	Type	Other	Type Name	Material	Heat	Qty	Weight
34CM519	SURF	0	0	21		LITHIC	Unfinished Biface	Aborted, Late	Fragment		Quartzite	no	1	7.3
34CM94	SURF	0	0	23		LITHIC	Unfinished Biface	Aborted, Late	Fragment		Quartz	no	1	5.5
LOC. 270	SURF	0	0	1		LITHIC	Finished Biface Tool	Dart Point	Tip		Jasper	no	1	3.6
LOC. 278	SURF	0	0	4		LITHIC	Uniface	Marg modif/retouch	Complete		Chert	no	1	12.6

APPENDIX B

FRAMEWORK FOR ANALYSIS OF THE HISTORICAL ARCHEOLOGICAL MATERIALS, CODING FORM USED FOR HISTORIC ARTIFACT ANALYSIS, AND SUMMARY TABLE FOR HISTORIC ARTIFACTS

FRAMEWORK FOR ANALYSIS OF THE HISTORICAL ARCHEOLOGICAL MATERIALS

by
Steven M. Hunt

As was discussed in Chapter 4, the analysis of the historic material made use of five major analytical categories or classes of artifacts, consisting of:

- (1) Domestic;
- (2) Furnishing;
- (3) Architectural;
- (4) Personal; and,
- (5) Activities.

Unidentified metal fragments and ceramic or glass sherds which were unclassifiable as to category were placed in a separate, indeterminate category. Although the use of these artifact categories may perpetuate ideas about functional classifications, it is felt that at the survey level of research, such an analytical framework is the most efficient way to handle the artifactual data.

Major artifact categories were sorted into various subcategories, including animal bone, shell, ceramic, glass, metal, plastic, building materials, and natural materials. These were then sorted into various classes, types, and subtypes, depending on the type of subcategory. In the case of ceramics and glass, when these subtypes could be associated with manufacture or use dates, they were used to compute Mean Ceramic Dates (MCD) or Mean Glass Dates (MGD). The general nature of each of the major artifact categories is discussed below.

Domestic Artifacts

The domestic category was applied to artifacts related to food service (i.e., tableware), food storage (including food preparation), and household furnishings. The tableware subcategory subsumes some ceramic, glass, and metal artifact types. Ceramic tablewares include stoneware, refined earthenware, coarse earthenware, and porcelain types. Particular items were identified as to types and subtypes, based on temporally sensitive technological (e.g., white/whiteware, light blue tint whiteware, blue tint whiteware, blue tint ironstone, high-fired ironstone, ironstone/whiteware, transitional whiteware), decorative (e.g., decalcomania, flow blue, blue shell edge), and/or other attributes (e.g., nonvitrified, vitrified, molded), and assigned dates of production on this basis.

Food storage items or storagewares also were subdivided as to whether they were ceramic (stoneware), glass, or metal. The stoneware items were further subdivided into types and subtypes using technological and decorative attributes, such as paste (e.g., colored) and various combinations of exterior treatment (e.g., gray bodied, bristol, cobalt, slipped, Albany slip, natural slip) and interior treatment (e.g., blue gray, Bristol, slipped, Albany slip, unglazed). These attributes then formed the basis for assigning production dates to individual specimens.

Glass storageware was subdivided on the basis of color (e.g., clear, manganese solarized, ash tint, amber, light amber, brown/amber, opaque, cobalt blue, blue, aqua, light green, ruby); form (generally bottle); and either decorative characteristics (e.g., etched, embossed, stippled base), manufacturing attributes (e.g., mold made, machine made, press molded), or sometimes function (e.g., soda, beer/liquor, canning seal, depression glass, extract bottle). Individual items were then given artifact-specific dates based on the production dates for each of its various attributes, in combination.

Finally, an unidentified domestic category absorbed the remainder of the food-related items (such as bone and shell), and this material was not analyzed further. It should be noted that not all ceramics or glass artifacts fall within the domestic category. In some cases, artifacts of these materials belong within the architectural or activities categories.

Furnishings

The furnishings category includes all nonfood service or food storage-related household items, such as furniture, stoves, and lamp glass. The furnishings subcategory often comprises only a small proportion of the total identifiable historic artifact assemblage from rural sites and the actual recovered items may vary greatly. In many cases, the majority of the artifacts classified as furnishings consist of fragments of lamp glass.

Architectural Artifacts

The architectural category includes all items which could be related to buildings or structures. Subcategories of architectural items include such things as window glass, nails, brick, mortar and/or plaster, ceramic tile or pipe, and electrical items. Nails were further subdivided as to whether they were wrought, cut, or wire; while the brick was distinguished as to whether it was handmade, machine made, or high fired.

Personal Artifacts

The category of personal items was created to contain items of individual use, such as clothing, buttons, shoes, doll parts, cosmetic bottles, snuff bottles (identified on the basis of characteristics such as glass color, bottle shape, and lip shape), musical instruments, and smoking pipes. Usually, artifacts which can be classified in this category are rare, making this category the least frequently represented at most archeological sites.

Activities Artifacts

The final analytical category relates to what have been called activities items. This category includes all nonhousehold items, such as those associated with transportation activities and farm-related equipment. As with personal items, this category often makes up only a small proportion of the overall assemblage of identifiable historic artifacts from a site. Activity category items which may occur include truck or tractor parts, harness buckles, fence staples, fence wire, horseshoes or horseshoe nails, and firearms cartridges. Subcategories for activities items include tools, harness and equipment, transportation, machinery, farm-related, weapons, and coal.

Geo-Marine, Inc.
Historic Artifact Analysis Codebook
7 April 1994

Compiled by Marianne Marek

PROJNO	Geo-Marine Project Number
RECNO	Record Number, consecutive for each line of data
BAGNO	Field Bag number
ARTNO	Artifact Number. Identification number for individual artifacts or groups of similar artifacts.
GROUP	Analysis Group
HST	Historic Artifacts (all historic artifacts - ceramics, building materials, etc.)
FAU	Fauna, Animal Bone (see prehistoric codebook)
VEG	Charcoal and other plant remains (see prehistoric codebook)
NAT	Natural
SHL	Shell

CLASS Artifact Class

CCDE English Translation

10	Animal Bone
11	Shell
13	Ceramic
14	Glass
15	Metal
16	Plastic
17	Other/miscellaneous materials
18	Building materials (brick, mortar, tile, stone, etc.)
19	Natural materials (coal, manuports, etc.)

Composite artifacts (artifacts made from a combination of the above classes) are classified under either the most diagnostic or the most predominant of the class types.

TYPE Subdivision of class (see codes following pages)

TCDE English Translation

For All Classes:	98.	Indeterminate
	99.	Not Applicable

- Class: (13) Ceramic
1. Stoneware
 2. Whiteware
 3. Ironstone
 4. Ref. Earth
 5. Coarse
 6. Porcelain
 7. Buffware
 8. British Brown Ware
 9. Yellowware
- Class: (14) Glass
1. Aqua
 2. Manganese/solarized
 3. Lt. Tint
 4. Ash tint
 5. Clear
 6. Milk glass (subclass = translucent or opaque)
 7. Olive
 8. Amber/Brown
 9. Green
 10. Cobalt blue
 11. Emerald Green
 12. Red
 13. Colored Milk Glass
 14. Depression era colors (other = specific color, i.e., yellow, pink, green, etc.)
 15. Flash/Overlay (clear glass dipped and coated with another color)
- Class: (15) Metal
1. Iron
 2. Brass
 4. Alloy
 5. Iron/Brass
 6. Tin
 7. Zinc
 8. Copper
 9. Brass/Copper
 10. Aluminum
 11. Lead
- Class: (16) Plastic
1. Bakelite
 2. Modern Plastic (1942-present)
- Class: (17) Other/Misc.
1. Slag
 2. Graphite
 3. Rubber

Class: (18) Building Materials

1. Mortar
2. Brick (subclass = handmade or machine made)
3. Stone
4. Tile
6. Concrete/Cement

OTHER Formerly SUBTYPE. Additional descriptive information either written or coded as applicable.

DATES Diagnostic dates for the classified group (entered under typename in computer).

QTY Quantity of artifacts within the classified group.

FAMILY Functional grouping for classified artifacts.

Code English Translation

DOM	Domestic
FUR	Furnishing
ARC	Architectural
PER	Personal
ACT	Activities
IND	Indeterminate
N/A	Not Applicable

COMMENT Any other comments about the classified artifact or group.

(note: these groups are normally analyzed by the prehistoric analyst or other specialists)

Class: (19) Natural

- 1. Coal**
- 2. Slate**
- 3. Stone**

Class: (10) Animal Bone Type: (1) Unworked
(2) Worked
(3) Fossilized
(4) Burned

Class: (11) Shell **Type:**

(1) Unworked
 (2) Worked
 (3) Fossilized
 (4) Burned

Class: (12) Vegetal Type: (1) Charcoal
(2) Seeds
(3) Peach Pits
(4) shells/hulls
(98) Indeterminate plant remains

B-8

Date: 12/20/94

Geo-Marine Inc.
Fort Sill 3 #1110-013
Historic Artifacts

Site Number	Unit Type	Unit No.	Bag Lev	Art No.	Group	Class	Type	Other	Dates	Qty.	Family	Comment
34Cm510	S.T.	5	1	5	1	HISTORIC GLASS	Clear	BOTTLE	1910-1994	11	Domestic	ABM; MOLDED (ALL SAME VESSEL)
34Cm511	SURF	0	0	24	5	HISTORIC GLASS	Milk Glass	TRANSLUCENT	1870-1930	1	Domestic	FRUIT JAR INSET CAP;EMBOSS ".OR MAS.."
34Cm511	SURF	0	0	24	1	HISTORIC METAL	Iron	WRENCH		1	Activities	HEX SOCKET/CRESCENT
34Cm511	SURF	0	0	24	3	HISTORIC GLASS	Mang/Solar	BOTTLE	1880-1920	1	Domestic	
34Cm511	SURF	0	0	24	4	HISTORIC GLASS	Milk Glass	OPAQUE	1870-1930	1	Domestic	PLAIN FRUIT JAR INSET CAP
34Cm511	SURF	0	0	24	2	HISTORIC CERAMIC	Whiteware	DECORATED PURE WHITE	1890-1994	1	Domestic	FADED GILDED RIM BAND; SM
34Cm511	SURF	0	0	24	6	HISTORIC GLASS	Amber/Brown	BOTTLE BASE	1940-1963	1	Domestic	PLATE/SAUCER EMBOSS;CORRUGATED BASE;DURAGLASS(SCRIP T)
34Cm514	S.T.	3	1	8	3	HISTORIC METAL	Zinc	FRUIT JAR LID	1870-1930	1	Domestic	"GENUINE ZINC CAP/FOR BALL MASON JARS"
34Cm514	S.T.	3	1	8	2	HISTORIC METAL	Iron	Indeterminate		1	Indeterminate	
34Cm514	S.T.	3	1	8	1	HISTORIC METAL	Iron	WIRE NAIL	1880-1994	1	Architectural	WHOLE; 6.3MM(8D)
34Cm514	S.T.	3	1	27	1	FAUNA ANIMAL BONE	Unworked	Indeterminate		4	Indeterminate	
34Cm514	S.T.	4	1	7	2	HISTORIC METAL	Iron	FENCE STAPLE		1	Activities	
34Cm514	S.T.	4	1	7	1	HISTORIC GLASS	Clear	BOTTLE	1910-1994	2	Domestic	ABM; (1 PIECE IS CORRUGATED)
34Cm514	S.T.	12	1	9	5	HISTORIC GLASS	Clear	BOTTLE	1910-1994	10	Domestic	ABM
34Cm514	S.T.	12	1	9	6	HISTORIC GLASS	Clear	TABLE	1920-1950	1	Domestic	PRESSED GLASS, BERRY BOWL BASE

Date: 12/20/94

Geo-Marine Inc.
Fort Sill 3 #1110-013
Historic Artifacts

Site Number	Unit Type	Unit No.	Lev	Bag No.	Art No.	Class	Type	Other	Dates	Qty.	Family	Comment
34Cm514	S.T.	12	1	9	4	HISTORIC GLASS	Clear	BOTTLE	1940-1963	1	Domestic	DURAGLASS (INSCRIPT)
34Cm514	S.T.	12	1	9	1	HISTORIC CERAMIC	Whiteware	H IVORY TINTED	1920-1994	3	Domestic	
34Cm514	S.T.	12	1	9	3	HISTORIC GLASS	Clear	BOTTLE	1910-1960	2	Domestic	ABM; RELIEF MOLDED
34Cm514	S.T.	12	1	9	7	HISTORIC GLASS	Lt. Tint	WINDOW		8	Architectural	THICKNESS 2.4MM
34Cm514	S.T.	12	1	9	2	HISTORIC GLASS	Amber/Brown	BOTTLE	1910-1994	1	Domestic	ABM; CORRUGATED (MODERN BEER)
34Cm517	S.T.	1	1	15	1	HISTORIC GLASS	Milk Glass	BOTTLE/JAR		1	Domestic	OPAQUE
34Cm517	S.T.	2	1	16	1	HISTORIC GLASS	Clear	Indeterminate		1	Indeterminate	SLIVER
34Cm517	S.T.	6	1	17	1	HISTORIC CERAMIC	Whiteware	UNDECOR., PURE WHITE	1890-1994	1	Domestic	
34Cm517	SURF	0	0	18	2	HISTORIC CERAMIC	Whiteware	UNDECOR. PURE WHITE	1890-1994	2	Domestic	
34Cm517	SURF	0	0	18	1	HISTORIC GLASS	Mang/Solar	BOTTLE	1880-1920	1	Domestic	
34Cm520	S.T.	3	1	25	1	HISTORIC METAL	Iron	WIRE NAIL	1880-1994	1	Architectural	WHOLE; 5.1MM(6D)

APPENDIX C
PROFILE AND BACKHOE TRENCH DESCRIPTIONS

PROFILE AND BACKHOE TRENCH DESCRIPTIONS

Depth (cm)	Soil Horizon	Description
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PROFILE 1: West side of Post Oak Creek approximately center of E/4 of Section 14, due west of sharp bend in section line road.

0-38	AC1	Dark yellowish brown (10YR 4/4) slightly silty sand; massive; friable; abundant rootlets; common small pink granitic rock fragments; gradual to clear boundary.
38-138	AC2-C1	Reddish brown (5YR 4/3) grading to yellowish red (5YR 4/6) sandy clay; blocky; firm; grayish brown clay coats on ped faces; common rootlets in upper portion; common woody roots; highly bioturbated; common sand grains and small pink granitic rock fragments particularly on ped faces; boundary gradual and marked by gravels and cobbles up to 8 cm in size.
138-280	C2	Reddish brown (5YR 4/4) sandy clay; firm; coarse blocky; arkosic sand coats on ped faces; abundant open rootlet holes and insect burrows; common black decaying rootlets and woody roots; zone lightens in color slightly with depth; boundary clear.
280-346	C3k	Strong brown (7.5YR 4/6 to 5/6) coarse-grained sand with common gravels, gravel ranges from pea size to cobbles up to 4 cm in size, with varying amount of clay; very firm to dense; texture obscured by level of cementing; zone heavily cemented with calcareous cement; common open rootlet holes and insect burrows; common purple-black decaying roots and organic matter particularly in 5 to 6 cm thick gravel layer 40 cm below top of zone; zone contains several finely interbedded and laminated layers of sand and clay (flood events); clear boundary.
346-391	C4	Yellowish red (5YR 4/6) sandy silt; friable; weak fine blocky; trace calcareous cement; common open rootlet holes; common fine woody roots; common small pink granitic rock fragments; gradual boundary.
391-541	C5	Dark reddish brown (5YR 3/4) clayey silt; firm to slightly friable; weak blocky; pink arkosic sand coats on ped faces in upper portion; clay content increases downward with zone being a silty clay at base which is firm, fine blocky with grayish brown clay coats on ped faces; zone bioturbated; common open rootlet holes and insect burrows containing some arkosic sand; abundant black decaying roots 30 cm below top; base of profile in creek.

PROFILE 2: SW/4 of SE/4 of SE/4 of Section 11, east side of west fork of Post Oak Creek north of low water crossing on north section line road of Section 14.

0-57	AC	Dark yellowish brown (10YR 4/4) clayey sand; friable; massive; common rootlets, woody roots, and pea sized gravels; clear boundary marked by first occurrence of sand beds.
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Depth (cm)	Soil Horizon	Description
57-94	2Ab	Interbedded dark brown (7.5YR 3/3 to 4/3) clayey silt to silty clay and strong brown (7.5YR 5/6 to 5/8) arkosic sand; clay and silt firm, massive; sand very friable to loose, massive, coarse-grained with abundant pea gravel; beds 2 to 5 cm thick with sand layers being in the form of lenses with the silt and clay; common rootlets; boundary abrupt, smooth and marked by dewatering features.
94-106	2C	Strong brown (7.5YR 5/6 to 5/8) coarse-grained arkosic sand; few clay balls or lenses; very friable to loose; massive; few rock and granitic fragments; boundary is abrupt and smooth.
106-136	3Ab	Dark brown (7.5YR 3/3 to 4/3) silty clay; firm; fine blocky; few rootlets; abundant open rootlet holes and insect burrows partially filled with arkosic sand as above; common charcoal flecks and one piece of bone; boundary is abrupt, slightly irregular and marked by soft sediment deformation features.
136-206	3C	Strong brown (7.5YR 5/6 to 5/8) coarse-grained arkosic sand as above; sand has faint horizontal layering; base of profile at water table at creek level.

NOTE: 3 m (10 ft) southeast of profile in same cutbank, lowest sand unit becomes a coarse sand gravel zone with large cobbles. Top of this gravel bar is marked by Fe mineralization and overlying clay is mottled orange and black with Fe and FeMn stain.

PROFILE 3: Upstream of Profile 2 on west side of west fork of Post Oak Creek; cutbank is 8 to 10 m in height but only top portion is described.

0-17	C1	Pale tan; common rootlets and woody roots; contact abrupt.
17-67	C2	Reddish brown (5YR 5/4 dry) sandy silt; firm; massive; sand arkosic; zone partially cemented with white calcareous cement; abundant woody roots; highly bioturbated; common open rootlet holes with white calcareous lining; boundary gradual to clear.
67-367	C3k	Dark brown (7.5YR 4/3) clayey silt; firm; fine blocky; abundant open rootlet holes and insect (ant) burrows; arkosic sand as fillings in rootlet holes and insect burrows and as coatings on ped faces; clay content varies with depth; clayey portions slightly darker in color; zone reddens with depth being dark reddish brown (5YR 3/3) at base; white calcareous cement throughout zone particularly as deposits in open rootlet holes; lower portion of zone contains considerable granitic gravels up to 4 cm in size; in some places zone has been cemented to form a caliche.

PROFILE 4: West side of Post Oak Creek, approximately center of E/2 of NE/4 of Section 2.

0-150	A	Dark brown (7.5YR 3/2) silty clay, sandy in part; firm; massive; common rootlets and woody roots, rootlets abundant in upper portion; common large gravels and highly weathered fragments of bedrock (Permian?); in lower portion zone has common open rootlet and insect burrows; color lightens slightly with depth; boundary clear to gradual.
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Depth (cm)	Soil Horizon	Description
150-205	C	Dark brown (7.5YR 3/4) silty clay; very firm; fine blocky structure; abundant gravels and highly weathered rock fragments of bedrock (Permian?), weathered fragments yellowish green in color, gravels are arkosic and pea sized; common rootlets; common open rootlet holes and insect burrows; boundary clear to abrupt.
205-290	2C	Interbedded strong brown (7.5YR 4/6 to 5/6) coarse-grained arkosic sand and dark brown (7.5YR 4/2) silty clay; zone consists of four beds being from the top 13 cm of clay, 20 cm of sand, 7 cm of clay, and 45 cm of sand; beds all dip gently south in profile; clay firm to plastic with abundant pea sized gravels, common open rootlet holes and highly weathered rock fragments as zone above; boundaries between four beds all abrupt and irregular; top of lower clay zone marked by layer of small gravels; sand is coarse, poorly sorted, very friable to loose and massive; lower sand zone contains numerous thin gravel lenses which dip more steeply to the south in profile; gravel lenses are heavily mineralized and stained black by FeMn; base of described profile approximately 1 meter above weathered bedrock.

NOTE: Profile is between two large bedrock outcrops (see Figure 3). In same cutbank, sand/clay unit grades into a gravel point bar deposit which rests directly on bedrock.

BHT 1: East edge of NE/4 of Section 14.

0-16	A1p	Dark brown (10YR 3/3 to 4/3) silty sand; friable; massive; abundant rootlets; few pea sized gravels; gradual boundary.
16-55/65	A2	Dark brown (7.5YR 3/2) very silty sand, clayey in part, clay increases downward; friable to firm; weak coarse blocky; highly bioturbated with abundant krotovina filled with material from overlying zone, gives zone a mottled appearance; common rootlets; common gravels up to 1 cm in size; few open rootlet holes and insect burrows; few charcoal flecks; boundary clear to abrupt and very irregular.
55/65- 62-75	C	Strong brown (7.5YR 4/6 to 5/6) coarse-grained arkosic sand; very friable to loose; massive; abundant gravels, most angular, up to 5 cm in size; bioturbated with considerable dark brown clay from zone above in some portions; common rootlets; boundary is abrupt and irregular.
62/75- 86-95	2A1b	Dark brown (7.5YR 3/2) clay; massive to weak blocky; firm to plastic; few rootlets; common vertical sand filled fine krotovina penetrating from zone above (worm burrows?); trace sand and gravel, probably as filling in shrink-swell lines or as result of bioturbation; clear boundary.
86/95- 190	2A2bk	Dark brown (7.5YR 3/3 top 60 to 78 cm of zone, 7.5YR 4/2 below) coarse-grained sand, silty and clayey in part; friable and massive in upper 60-78 cm of zone wetted by recent rains, firm to dense, cemented with calcareous deposits; zone highly stained by orange Fe deposits in area of wetting front; few thin lenses of coarse-grained arkosic sand; upper portion highly bioturbated with moderate size krotovina filled with arkosic sand as above, particularly in upper 15 cm of zone; few rootlets; gradual boundary.

Depth (cm)	Soil Horizon	Description
190-240	2C	Strong brown (7.5YR 4/6 to 5/6) very coarse-grained arkosic sand; very friable to loose; massive; color redder or pinker in places where more granitic rock fragments are present; zone mainly poorly sorted with granite gravels and cobbles up to 25 cm in size; some portions are medium to coarse-grained; well sorted and subangular.

BHT 2: 55 m west of BHT 1 and 50 cm lower.

0-24	AC	Dark brown (7.5YR 4/3) silty sand, clayey in part; friable; massive; abundant rootlets; bioturbated; few pea sized gravels; clear boundary.
24-74	2A	Dark brown (7.5YR 3/2) clayey sand; friable; massive at top, becoming fine blocky with depth; clay content increases with depth; common rootlets; heavily bioturbated with many fine krotovina filled with material from zone above; bioturbation gives zone a mottled appearance; common gravels up to 5 cm in size; boundary clear.
74-134	2AC-2C	Dark brown (7.5YR 3/3 to 4/3) in upper portion to strong brown (7.5YR 4/6) at base, clayey sand grading to coarse-grained, poorly sorted arkosic sand with common rounded to subangular gravels up to 5 cm in size; friable to loose; massive; upper portion of zone has abundant flat, angular to rounded cobbles up to 15 cm in size (lag surface?); lower portion of zone contains several black mineralized lenses surrounding decaying granitic cobbles; boundary abrupt, smooth, slightly wavy.
134-230	3C	Strong brown (7.5YR 5/6 to 5/8) medium to coarse-grained, well sorted, angular arkosic sand; very friable to loose; massive; few angular cobbles in lower portion.

BHT 3: 55 m west of BHT 2 and 60 cm lower; 65 m east of east edge of Post Oak Creek across from Profile 1 (trench 85 to 90 m from profile and 2 m lower than top of profile) in woods adjacent to and parallel with small channel or washover fan chute cut.

0-20	A	Dark brown (10YR 3/3) clayey silt, trace of sand; massive; friable to firm; abundant rootlets; common woody roots; bioturbated; few charcoal flecks; boundary clear to abrupt.
20-35	C1	Strong brown (7.5YR 4/6 to 5/6) coarse-grained arkosic sand; massive; loose; abundant rounded to subangular gravels; few rootlets; common woody roots; boundary abrupt, irregular, and bioturbated with many krotovina penetrating downwards into underlying zone.
35-80	C2	Dark brown (7.5YR 4/4) to strong brown (7.5YR 4/6) silty sand, clayey in part; friable to firm; weak fine blocky; abundant woody roots; very bioturbated; zone darkens with depth to 7.5YR 4/3 at base; clay content increases with depth; boundary abrupt, smooth, and wavy.
80-85	C3	Strong brown (7.5YR 4/6 to 5/6) arkosic sand as C1 zone above; few woody roots; common small pea-sized gravels; boundary abrupt, smooth, and wavy.

Depth (cm)	Soil Horizon	Description
85-100	C4	Dark brown (7.5YR 4/4) to strong brown (7.5YR 4/6) clayey sand, silty in part; friable to firm; massive to weak blocky; bioturbated with many fine krotovina filled with sand from overlying zone; common open rootlet holes and insect burrows; boundary is clear.
100-113	C5	Dark brown (7.5YR 4/2) silty clay, trace sand; firm; fine blocky; few fine woody roots; common open rootlet holes and insect burrows; few charcoal flecks; common black decaying organic matter; boundary abrupt, smooth, and slightly wavy, marked by 3 cm thick layer of coarse arkosic sand containing abundant pea sized gravel.
113-180	C6k	Yellowish brown (10YR 5/4) silty sand; very firm becoming friable with depth as level of calcareous cementing decreases; massive; zone grades downward to a loose, coarse-grained, arkosic sand with rounded cobbles up to 15 cm in size (fining upward sequence); color grades from yellowish brown (10YR 5/4 dry) at top to brownish yellow (10YR 6/6 dry) to strong brown (7.5YR 5/6 to 5/8 dry) at base; common open rootlet holes and insect burrows.

BHT 4: 100 m east of BHT 1 and 1.5 m higher.

0-30	AC	Dark brown (7.5YR 4/3 to 10YR 4/3) sandy clay; friable to firm; weak fine blocky; abundant rootlets and pea sized gravels; common rounded gravels up to 6 cm in size; few woody roots; clear boundary.
30-110/ 127	C1	Strong brown (7.5YR 5/6 to 5/8) coarse-grained arkosic sand, clayey in part, poorly sorted; very friable; massive; abundant rounded to subangular gravels and cobbles up to 8 cm in size; clay as balls or lenses, dark reddish brown to yellowish red (5YR 3/4 to 4/6) in color; few decaying cobbles of sandstone bedrock, particularly in lower portion; few black mineralized zones near base of zone; few fine woody roots in upper and middle portion; large horizontal krotovina in upper 20 cm filled with material from overlying zone; boundary smooth, abrupt and dips west in trench wall.
110/127- 160	C2	Dark brown (7.5YR 4/4) sandy clay with few fragments of decaying sandstone bedrock and light olive brown (2.5YR 5/6) heavily weathered bedrock (Permian?).

BHT 5: Approximately 250 m east-southeast of Profile 2, immediately south of north boundary line road of Section 14.

0-16	A1	Dark brown (7.5YR 3/2) clayey silt, sandy in part; firm; blocky; few fine pink granitic rock fragments; abundant rootlets; bioturbated; boundary gradual.
16-26	A2	Dark brown (7.5YR 3/3) slightly sandy clay; firm; blocky with dark gray clay and pink arkosic sand coats on ped faces; heavily bioturbated; few large gravels; common fine krotovina filled with orange-brown colored (7.5YR 3/4) material; common open rootlet holes and insect and worm burrows; boundary gradual to clear.

Depth (cm)	Soil Horizon	Description
26-72	C1	Strong brown (7.5YR 4/6) clayey sand; massive to weak blocky; firm; few gravels, pea or smaller in size, in upper portion becoming more numerous with depth being abundant at base; few fine pink granitic rock fragments; zone lightens with depth to orangish brown (7.5YR 5/8); few woody roots; boundary is abrupt, irregular and marked by Fe stain.
72-72/92	C2	Light red (10YR 6/8) coarse-grained arkosic sand; loose; massive; where cemented zone is dark grayish brown (10YR 4/2), dense and texture is obscured by level of cementing; zones pinches out to east; dense portion of zone has common open rootlet holes and insect burrows and has small clay and silt content; few large gravels; boundary abrupt, irregular and dips in a series of "steps" to the west.
72/92- 118/150	2C1g	Upper 10 cm is brown (10YR 5/3) silty fine grained sand, clayey in part with abundant orange mottles; below zone is gray (10YR 5/1) in color; massive to weak blocky; firm to friable; few fine woody roots; abundant insect burrows and black decaying organic matter; abrupt, irregular boundary which dips west in trench wall.
118/150- 240	2C2	Strong brown (7.5YR 4/6 to 5/6) coarse-grained arkosic sand; loose; massive; poorly sorted; common gravels and cobbles up to 10 cm in size; water table at 215 cm below surface.

BHT 6: 75 m west of BHT 5 and at same elevation.

0-28	Ap	Dark brown (7.5YR 3/2 to 4/2) clayey sand; friable; massive; few rounded gravels; bioturbated; few fine krotovinas filled with material from underlying zone; abundant rootlets; few woody roots; boundary abrupt, wavy with possible plough or disc scars 12 cm apart and 3 cm deep.
28-33/38	C	Strong brown (7.5YR 5/6) medium to coarse-grained, arkosic sand; loose; massive; poorly sorted; boundary abrupt and smooth.
33/38-85	2Ab	Dark brown (7.5YR 3/2) sandy clay; firm; weak blocky; few fine woody roots; increasing amounts of sand with depth; few rounded cobbles which increase in number with depth; few open rootlets holes and insect burrows in upper portion; contact clear to gradual.
85-210	2C	Strong brown (7.5YR 5/6) coarse to very coarse-grained arkosic sand; loose; massive; abundant rounded cobbles up to 30 cm in size; grained size increases downward with sand composed of angular quartz grains, feldspar crystals, and granitic rock fragments.

BHT 7: 325 m east of BHT 5 and 20 m west of east section boundary line of section 14 on section line between sections 14 and 11.

0-10	A	Dark brown (7.5YR 3/2) clayey silt; massive; friable; common fine and large woody roots; thick leaf litter at surface with considerable charcoal, burnt wood, and ash; some modern military debris on surface; clear boundary.
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Depth (cm)	Soil Horizon	Description
10-55	AC	Dark brown (7.5YR 3/3 to 4/3) silty, clayey fine to medium grained sand; friable; massive; common to abundant woody roots; bioturbated; zone coarsens downwards grading into underlying zone; gradual boundary.
55-200	C	Strong brown (7.5YR 5/6) arkosic sand; friable; massive; fine to medium grained at top but coarsening downwards being very coarse, pea gravel sized grains; few large cobbles up to 10 cm in size in upper portion; few woody roots; large horizontal dark filled krotovina 50 cm below top of zone (tree roots?).

BHT 8: 25 m west of east boundary line road of Section 2 in eastern portion of NE/4 of section.

20-27	A1	Dark brown (7.5YR 3/2) fine sandy clay; slightly friable to firm; fine blocky; bioturbated; 1 large krotovina penetrating underlying with zone some charcoal (burned root?); sand is pink, arkosic; gradual boundary.
27-50	A2	Dark brown (7.5YR 3/3) fine sandy clay; firm; massive to weak fine blocky; common fine pink granitic rock fragments; fine woody roots; heavily bioturbated with abundant fine krotovina (worm and insect); common rootlets; clear to gradual boundary.
50-113	AC	Dark brown (7.5YR 4/3) sandy clay; very firm; blocky with coats of clear quartz grains and fine pink granitic rock fragments on peds; common fine woody roots; bioturbated with several large krotovina filled with dark material from overlying zones (tree root holes?); common open rootlet holes and insect burrows; few small gravels; clear boundary.
113-163/ 168	2A1bkc	Dark brown (7.5YR 3/3) silty clay, trace sand; very firm; fine blocky; wetting front from recent rains 25 cm below top; dry portion dark brown (7.5YR 4/2), dense, has abundant white calcareous cement, black and orange Fe and FeMn stain, light brown silt or clay coats on ped faces; few fine FeMn concretions; common open rootlet holes and insect burrows; few small gravels and small pink granitic rock fragments; gradual boundary.
163/168- 185	2A2b	Dark gray (10YR 4/1) clay grading to a clayey silt with depth; dense; strong, coarse blocky with light brown silt coats on ped faces; few pink arkosic sand grains; gradual boundary.
185-215	2Ck	Yellowish brown (10YR 5/4) clayey silt, sandy in part; very firm; fine blocky; common small gravels; zone becomes sandier with depth; common gray and orange mottles; some black decaying organic matter; white calcareous cement.

BHT 9: 170 m southeast of Profile 4 and 60 m west of BHT 8.

0-28	A1	Dark brown (7.5YR 3/2) sandy clay; friable; massive; abundant rootlets; heavily bioturbated; common fine krotovina filled with orange arkosic sand; common woody roots; gradual boundary.
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Depth (cm)	Soil Horizon	Description
28-54	A2	Dark brown (7.5YR 3/3 to 4/2) fine sandy, silty clay; friable to firm; massive; clay increases toward base; common woody roots; few rounded gravels; gradual boundary.
54-75	Bt	Dark brown (7.5YR 4/2 to 4/3) clay; firm to very firm; fine blocky with trace of pink arkosic sand on ped faces; bioturbated with common fine dark filled krotovina; woody roots; gradual to clear boundary.
75-116/ 120	C1	Strong brown (7.5YR 4/6) clayey sand; friable to slightly firm; massive to weak blocky; heavily bioturbated with common large and fine dark filled krotovina; sand content increases downward; common woody roots; base clear to abrupt and slightly irregular.
116/120- 167	C2kc	Dark brown (7.5YR 4/2) silty sand; very firm; texture obscured by white calcareous cement; zone pinches out 2 m from west end of trench at a depth of 120 cm and zone's base dips sharply westward; at west end of trench zone is 51 cm thick, basal 30 cm consists of coarse rounded gravel interbedded with coarse-grained arkosic sand; abundant open rootlet holes and insect burrows; common orange mottles; common fine black FeMn concretions; boundary smooth and abrupt.
120/167- 200	2Abcg	Dark gray to dark grayish brown (10YR 4/1 to 4/2) slightly silty clay; very firm to dense; very coarse blocky to columnar prismatic structure with clay skins on ped faces; ped faces often mottled orange in part; few rootlets; common fine black FeMn concretions; few small gravels; common open rootlet holes; some purple-black decaying organic matter; zone lightens downwards in color being gray (7.5YR N5/) at base. See Figure 7 for profile of trench wall.