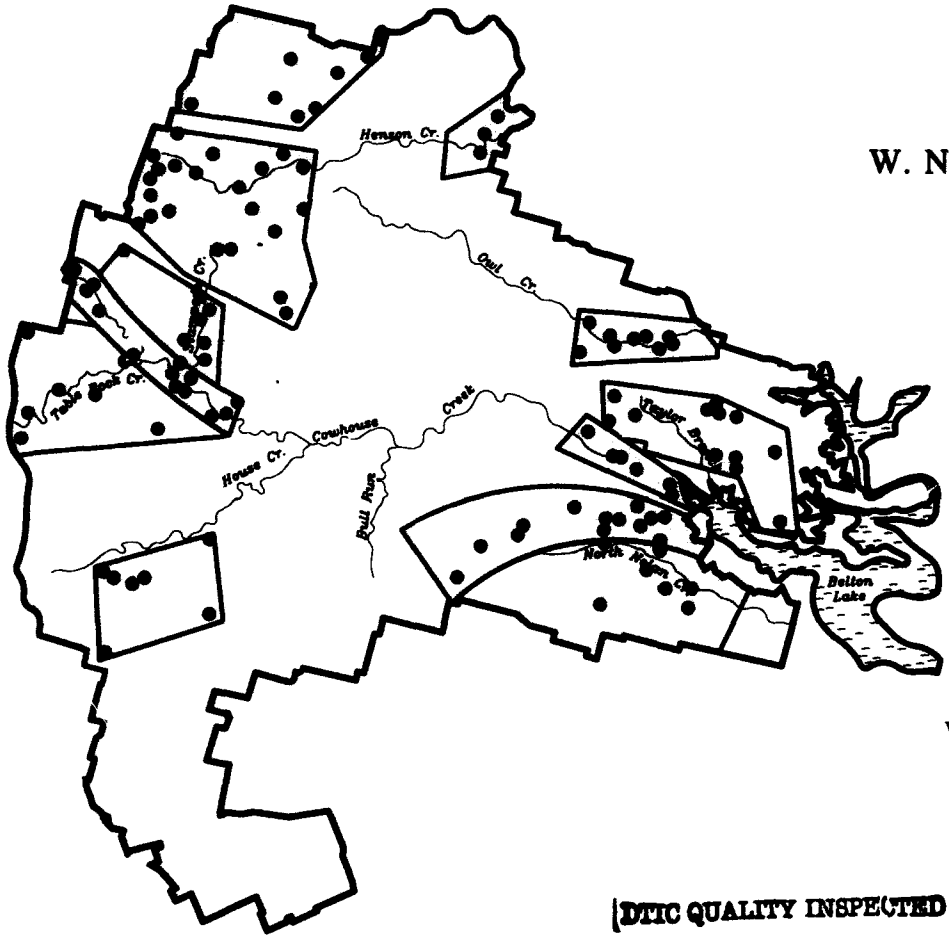
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ARCHEOLOGICAL TESTING AT FORT HOOD: 1994-1995

VOLUME I



Edited by

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RESEARCH REPORT NO. 35

1996

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ARCHEOLOGICAL TESTING AT FORT HOOD: 1994-1995

VOLUME I

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Directorate of Public Works
Environmental Management Office
Fort Hood, Texas

by

TRC MARIAH ASSOCIATES INC.
Austin, Texas

in partial fulfillment of
Contract DAKF48-91-D-0058
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December 1996



In Memory of Jack M. Jackson

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This report presents the results of significance testing on 56 prehistoric cultural resource sites located in maneuver training areas at Fort Hood, Texas. This document has been prepared in compliance with Army Regulation 420-40 (Historic Preservation), as is required by the Fort Hood Historic Preservation Plan.

Under contract to Fort Hood, the testing was conducted by TRC Mariah Associates, Inc. during 1994 and 1995. The 56 prehistoric sites were tested using 158 manually excavated test pits, totaling 185 cubic meters, and 187 backhoe trenches *(continued)*

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totaling about 3,400 cubic meters. These excavations discovered 88 prehistoric features including 44 burned rock middens, 24 hearths, five burned rock mounds, eight burned rock concentrations, three burials, two ash lens, and two occupation zones. The manual excavations removed 4,704 kg (5.8 tons) of burned rock and collected more than 58,000 artifacts and samples. These include 47,519 lithic debitage, 5,206 bone specimens, 2,361 samples, 949 bivalve shells, 883 lithic tools, and 216 projectile points.

Lithics are distributed among 27 named and nine indeterminate varieties of Edwards chert. The great majority of lithics are one of four named varieties - Gray-Brown-Green, Fort Hood Yellow, Owl Creek Black, and Heiner Lake Tan. Twenty forms of lithic tools are identified, but more than half of all tools are utilized flakes. The projectile points are distributed among 34 named types with the most common types being Scallorn and Pedernales. The faunal remains are identified into 17 vertebrate species but are dominated by blacktailed jackrabbit, whitetail deer, bison, and cottontail. Seven freshwater bivalve taxa are represented, but most of the assemblage is equally divided among Unionacea, Ambleminae, and Lampsilinae.

A total of 74 radiocarbon assays, including 65 on wood charcoal, eight on landsnails, and one on bone, yielded calibrated calendar dates from 5321 B.C. to A.D. 1645. Nine dates are placed in the Early Archaic, 13 in the Middle Archaic, 29 in the Late Archaic, 20 in the Late Prehistoric, and two dates are placed in the Historic Period, with one modern assay. Amino acid epimerization assays are conducted on 149 *Rabdotus* sp. snails, including suites of column samples from three sites; A/I ratios ranged from 0.021 to 0.947. Macrobotanical taxon identifications on 60 flotation samples from feature contexts document 11 plant families, including ten types of wood, and six types of inflorescence. Of the woods, Oak is by far the most common.

Using the radiocarbon dates, supplemented with the projectile points, the epimerization assays, and stratigraphic field data, 116 distinct "Analytic Units" are defined, including 46 units which are reliably dated to a single time period, 47 which could not be dated, and 23 which are mixed. Lithics, bone, and bivalve shell are all most frequent, by volume, during the Late Prehistoric I. In contrast, features and burned rocks are most abundant during the Late Archaic. These data are then supplemented with similar information previously obtained from 63 other prehistoric sites at Fort Hood, and the combined data from all 119 sites are then analyzed with respect to time period.

The 56 sites are each evaluated with respect to their potential to inform on the research domains developed in the Fort Hood research design. Twenty sites are determined to have low overall research potential and are recommended as not eligible for inclusion to the NRHP. These sites are: 41BL431, 531, and 850; 41CV45, 71, 90, 201, 240, 271, 332, 397, 484, 493, 582, 849, 900, 913, 927, 1033, and 1472. No further management is warranted for these 20 sites. The remaining 36 sites are determined to have good to high research potential and are recommended as eligible for inclusion to the NRHP. These sites are: 41BL504, 560, 773, and 844; 41CV44, 46, 47, 48, 88, 98, 99, 115, 117, 125, 184, 317, 378, 379, 380, 389, 403, 478, 481, 495, 901, 905, 918, 935, 936, 1080, 1129, 1165, 1166, 1378, 1403, and 1471. These sites should be preserved and protected from adverse impacts. Protection efforts include measures to (1) prevent subsurface disturbance by vandalism, (2) prevent unauthorized mechanical or manual excavations, and (3) minimize vehicle traffic on the site surface. If protection is not possible for any site, then the effects of ongoing or anticipated adverse impacts should be mitigated.

EXECUTIVE SUMMARY

WHAT IS THIS DOCUMENT?

This document has been prepared in compliance with Army Regulation 420-40 (Historic Preservation). It reports on the evaluation of 56 prehistoric cultural resource sites located in Fort Hood maneuver areas, as is required by the Fort Hood Historic Preservation Plan (HPP).

WHAT WORK WAS DONE?

The 56 sites were tested for their eligibility for inclusion to the National Register of Historic Places (NRHP). Testing involved matching the characteristics of each site against a set of objective criteria. These criteria were developed by Fort Hood in 1993 to provide a reasonable and consistent basis for determining NRHP eligibility.

In order to test the sites, new information was collected by means of archeological excavations. Field tactics included 187 mechanically dug trenches to discern site size and depth of cultural deposits and 158 hand dug test pits to obtain a representative sample of artifacts and other archeological materials. More than 81,000 artifacts and specimens were recorded, and more than 54,000 of these were collected for further analysis. These materials were examined and assayed in order to obtain detailed information about when the site was occupied by prehistoric people and what kinds of activities occurred there.

WHAT ARE THE RESULTS?

Testing determined that 36 sites are eligible for inclusion to the NRHP and 20 sites are not eligible.

WHAT ARE FORT HOOD'S RESPONSIBILITIES?

Upon concurrence by the State Historic Preservation Officer for Texas, no further management is warranted for the ineligible sites, but all eligible sites must be preserved and protected. If protection is not possible for any eligible site, then current and future adverse impacts must be mitigated. For most of the sites, mitigation could be accomplished by further archeological excavation.

ABSTRACT

This report presents the results of significance testing on 56 prehistoric cultural resource sites located in maneuver training areas at Fort Hood, Texas. This document has been prepared in compliance with Army Regulation 420-40 (Historic Preservation), as is required by the Fort Hood Historic Preservation Plan.

Under contract to Fort Hood, the testing was conducted by TRC Mariah Associates, Inc. during 1994 and 1995. The 56 prehistoric sites were tested using 158 manually excavated test pits, totaling 185 cubic meters, and 187 backhoe trenches, totaling about 3,400 cubic meters. These excavations discovered 88 prehistoric features including 44 burned rock middens, 24 hearths, five burned rock mounds, eight burned rock concentrations, three burials, two ash lens, and two occupation zones. The manual excavations removed 4,704 kg (5.8 tons) of burned rock and collected more than 58,000 artifacts and samples. These include 47,519 lithic debitage, 5,206 bone specimens, 2,361 samples, 949 bivalve shells, 883 lithic tools, and 216 projectile points.

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ACKNOWLEDGMENTS

This report culminates TRC Mariah's five year program at Fort Hood. Beginning in 1991, we have spent tens of thousands of hours in the field, and a like amount in analysis and reporting. TRC Mariah's projects have always adopted a team approach, and the Fort Hood program, more than most, reflects this successful philosophy. Our team has included, at various times, 75 dedicated professionals, including 36 field personnel, 12 laboratory personnel, and 27 support staff. All of these persons deserve the credit for the integrity of our work and the high quality of our technical results and scientific conclusions. Since 1991, our roster has included the following. Participants in the current investigations are noted in boldface.

Jim Abbott
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directly involved with the fieldwork, Mike Quigg pitched in during final reporting to provide a fresh perspective on the data. Throughout the program, debora White has been Document Production Supervisor. Her attention to detail is gratefully acknowledged and her production skills are responsible for the polished quality of our finished documents.

During fieldwork, Craig Smith served as designated Quality Officer, made periodic field inspections, and reported directly to Mariah's upper management and to Fort Hood. Management oversight was provided by Victor Palma, and the accounting team was managed by Chuck Killion.

Authorship of this report tangibly reflects our team approach. The original site descriptions and results in Chapter 5.0 were largely authored by Jim, Karl, Gemma, and Pat, with analyses of laboratory data written later by Mike and Marybeth, and with final conclusions, syntheses, and recommendations authored by Mike and myself. The background chapters (1.0 through 4.0) were authored primarily by Jim, Mike, and myself, but also inherited some text previously authored by Lain Ellis, Glenn Goodfriend, and Charles Frederick. Similarly, Chapters 7.0 through 10.0 were written primarily by Marybeth, Jim, and Mike, but also include some modified text written earlier by Karl, Gemma, Lain, and Glenn. Mike authored Chapter 11.0 and I contributed Chapters 1.0 and 6.0. Phil Dering contributed Appendix E. Artifacts were illustrated by Carol Mills and maps and line figures were prepared by Mike Hilton and Steve Berg.

Specialized analyses were conducted by consultants Leslie Shaw (faunal) Kathryn Reese-Taylor (ceramic petrography), Beta Analytic, Inc. (radiocarbon), Sam Valastro (radiocarbon), Phil Dering (macrobotanical), and Glenn Goodfriend (snail epimerization), and Tom Hester provided for the obsidian analysis. Electronic field mapping was conducted by Terry Siminton of Ronald Carrol Surveying. An earlier draft of this report was peer reviewed by Tom Hester and by Alan Skinner.

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These investigations have truly been a team effort. As Principal Investigator and Project Director, I have been exceptionally fortunate to have worked with this talented and dedicated team of professionals.

Nick Trierweiler
March 1996

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1.0 INTRODUCTION

W. Nicholas Trierweiler

The Fort Hood military reservation encompasses more than 339 square miles (217,337 acres) of rolling, wooded terrain in Central Texas. Established in the early days of World War II, Fort Hood's defense mission today is to train and maintain the combat readiness of the III Mobile Armored Corps, including two armored divisions, an air brigade, combat engineering battalions, and other supporting units. The size and terrain of Fort Hood admirably suit this mission and large scale training exercises, involving heavy tracked and wheeled vehicles, are common year-round.

Because such intense use of the landscape has the potential to adversely affect cultural resources, and in accordance with Army Regulation 420-40, Fort Hood has developed an active, and successful, program of cultural resource management. An Historic Preservation Officer (HPO) manages all cultural resources on post. The HPO has developed an Historic Preservation Plan (HPP), which has been accepted by the State Historic Preservation Officer, and which specifies management policies and operating procedures. In accordance with the objectives of the HPP, nearly 100% of the terrain has been inventoried.[1] To date, most of the prehistoric sites with potential intact deposits have been tested for their eligibility for inclusion to the National Register of Historic Places (NRHP). Sites determined to be eligible are being preserved and protected. The success of the program has attracted the attention of federal resource managers and of professional archeologists alike. Of interest to archeologists is the size and environmental diversity of the study area, which covers a large sample of its prehistoric culture area (the Central Texas region). The landscape is dissected by a network of creeks and streams, and the resulting terrain offers numerous habitats to support a variety of biotic resources. As a bonus, the area is extraordinarily rich in chert resources, and has several dozen recognized varieties which can be used to trace resource selection and changes in technology. It contains a variety of prehistoric site types, from rockshelters, to open camps, to burned rock features measuring tens of meters in diameter. The landscape reflects a wide range of depositional environments and landform contexts, from subterranean sinkholes, to Holocene T_0 and T_1 terraces, to stable Pleistocene uplands. Archeological evidence documents continuous prehistoric occupations from the Paleoindian period (before about 6500 BC) through the Late Prehistoric period.

1.1 AN HISTORICAL PERSPECTIVE

During the late 1960s and 1970s, about 100 archeological sites were recorded on post by the Fort Hood Archeological Society. This avocational group of soldiers and civilians was replaced in 1977 by the official Fort Hood archeological program (Thomas 1978), when Fort Hood hired a staff archeologist and began a program of systematic inventory. By 1991, extensive field surveys had inventoried over 95% of the post (Jackson 1994:22-23). Site and artifact data were compiled in a computer database for analysis, and a series of published research reports regularly documented the progress of the program (Table 1.1). These surveys recorded more than 2,200 archeological sites, roughly evenly divided between prehistoric and historic sites.

Most of the surveys (especially in the early years) did not include shovel testing, and as a result, little information was available on the potential of sites to contain intact buried deposits. As recently as 1991, more than 85% of the prehistoric sites remained to be evaluated for their NRHP eligibility. Approximately 850 prehistoric sites were then classified as "possibly eligible" or had

[1] Excluding cantonments and some "permanently dudded" terrain where inventory was dangerous.

Table 1.1 Publications in the Fort Hood Archeological Resource Management Series.

Report No.	Publication Date	Author(s)	Topic
1	1981	Skinner et al.	Survey of 66 km^2 (16,315 acres)
2	1984	Skinner et al.	Survey of 40 km^2 (10,000 acres)
3	1989	Dibble and Briuer	Survey of 49 km^2 (12,110 acres)
4	1989	Dibble, Moncure, and Briuer	Survey of 34 km^2 (8,400 acres)
5, 6, 7	1989	Jackson and Briuer	Historical research and remote sensing
8	----	----	not used
9	1986	D. Carlson and Briuer	Analysis of site protection measures
10	1989	Roemer et al.	Survey of 35 km^2 (8,645 acres)
11	1986	D. Carlson et al.	Survey of 96 km^2 (24,000 acres)
12	1984	S. Carlson	Ethnoarcheology of 20th century farmstead
13	1986	Briuer and Thomas	Standard operating procedures for fieldwork
14	1987	S. Carlson et al.	Survey of 42 km^2 (10,380 acres)
15	1988	S. Carlson et al.	Survey of 84 km^2 (20,760 acres)
16	1988	Koch, Mueller-Wille, and Briuer	Survey of 30.8 km^2 (7,612 acres)
17	1989	Koch and Mueller-Wille	Survey of 36.46 km^2 (9,011 acres)
18	1989	Koch and Mueller-Wille	Survey of 64.87 km^2 (16,032 acres)
19	1993	D. Carlson	Testing of two sites and mapping the Leon River Medicine Wheel
20	1990	Mueller-Wille and D.Carlson	Survey of 16.78 km^2 (4,147 acres)
21	1990	Mueller-Wille and D.Carlson	Survey of 68 km^2 (16,802 acres)
22	1993	D. Carlson	Testing one historic and three prehistoric sites
23	1991	Ensor	Survey of 26.4 km^2 (6,442 acres)
24	1994	D. Carlson, Dockall, and Olive	Survey of 26 km^2 (6,425 acres)
25	1992	Nordt	Geomorphology and alluvial stratigraphy
26	1993	D.Carlson	Shovel testing and geomorphology of nine prehistoric sites
27	1993	Thoms	Survey of 7.7 km^2 (1,900 acres)
28	1993	Nordt	Geomorphology addenda
29	1996	D. Carlson et al.	Testing two mound sites
30[a]	1994	Ellis et al.	Prehistoric research design
31	1994	Trierweiler	Shovel testing and geomorphology of 571 prehistoric sites, testing eight mound sites
32	1994	Frederick et al.	Chert patination as a dating technique
33	1996	Quigg, Frederick, and Lippert	Testing of the Leon River Medicine Wheel
34	1995	Abbott and Trierweiler	NRHP testing of 57 prehistoric sites
35	1996	Trierweiler	NRHP testing of 56 prehistoric sites

[a] Published as USACERL Technical Report CRC-94/04.

had "insufficient data." Avoidance of these sites was becoming an increasing management burden to Fort Hood, and one of the objectives of the HPP (Jackson 1990) was to complete NRHP evaluations of the prehistoric sites.

In August 1991 Fort Hood began a phased program designed to implement this HPP objective.[2] Fieldwork for the first phase of site evaluations was conducted between 1991 and 1993. Using reconnaissance, shovel testing, and resurvey tactics, 571 prehistoric sites were evaluated for archeological content and geomorphic context (Trierweiler 1994). This phase resulted in roughly two-thirds of the sites being evaluated as either "eligible" or not "eligible;" the remaining sites could not be fully evaluated using the inventory-level tactics and were classified as having "unknown eligibility."

Concurrent with these initial site evaluations, Fort Hood developed a comprehensive and problem-based research design (Ellis et al. 1994) to serve as the basis for subsequent formal NRHP eligibility determinations, and also pursued several issue-related studies to further develop contexts for eligibility (Quigg and Ellis, 1994, Frederick et al. 1994).

In 1993, Fort Hood began an intensive program of formal test excavations. Using trenches and 1 m^2 test pits, supplemented with dating and other assays, 57 sites were evaluated for NRHP eligibility. Of these sites, 43 were determined to have significant research potential and were recommended as eligible for inclusion to the National Register (Abbott and Trierweiler 1995). The investigations reported herein continue, but do not complete, this phase of eligibility testing.

1.2 SEQUENCE OF TRC MARIAH INVESTIGATIONS AT FORT HOOD

This report culminates TRC Mariah's five year program at Fort Hood. Since 1991, we have implemented 25 delivery orders (DOs) and have conducted work on 574 prehistoric sites. All delivery orders have been explicitly linked to key objectives in the Fort Hood HPP (Jackson 1990), and the issuance of delivery orders has been logically sequenced by Fort Hood to allow a step-wise approach to assessing research significance and, thereby, eligibility for inclusion to the NRHP. Between 1991 and 1993, 15 delivery orders (DOs 1-6, 8-15, 19) called for reconnaissance and shovel testing of previously surveyed sites. Between 1993 and 1995, seven delivery orders (DOs 17, 18, 20, 22-25) have been for formalized test excavations. Three delivery orders were for specialized studies, including the development in 1992 of a synthetic research design (DO 7), the study of chert patination and of burned rock mound chronology in 1993 (DO 16), and in 1994 the archeological and ethnological documentation of the Leon River Medicine Wheel (DO 21).

Our program is diagrammed schematically in Figure 1.1, which shows the relationships between the various delivery orders, work phases, and reports. The investigations have resulted in five final reports published in the Fort Hood Archeological Management series (Trierweiler 1994; Frederick, et al. 1994; Quigg et al. 1996; Abbott and Trierweiler, 1994; this report), one final report published in the USACERL technical report series (Ellis, et al. 1994), four unpublished procedures manuals (Mariah Associates, Inc., 1991, 1992, 1993a, 1993b), and 694 unpublished letter reports (various authors) submitted to Fort Hood.

[2] All historic components have been investigated by Fort Hood with a parallel program of eligibility assessment.

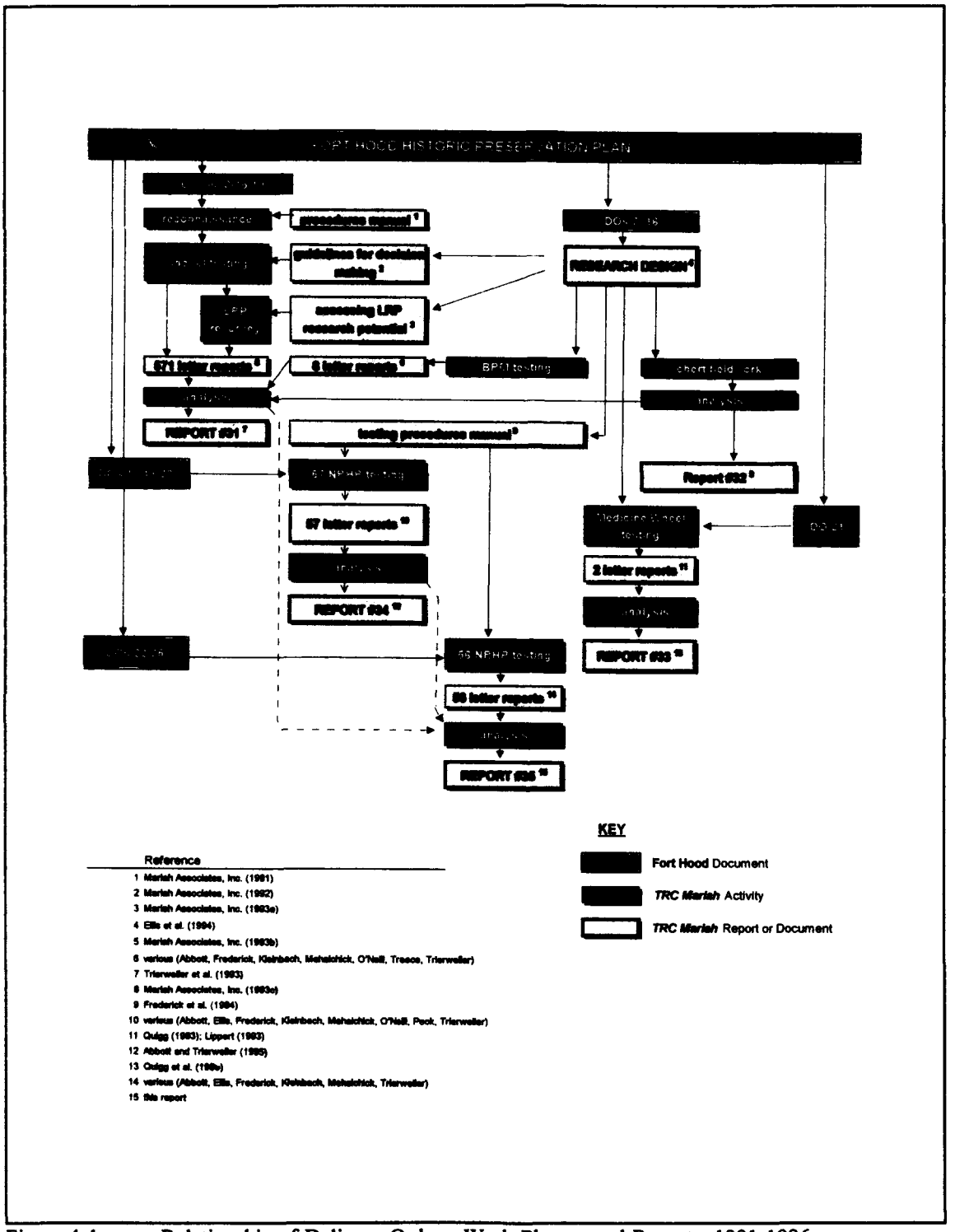


Figure 1.1 Relationship of Delivery Orders, Work Phases, and Reports, 1991-1996.

The sole objective of our testing program has been to collect limited and closely targeted data sets with which to assess site research potential and consequent NRHP eligibility. In this regard, we could have treated each site individually, without much consideration for other sites, and without much thought for the long-range potential to the regional database.[3] However, we recognized this testing program at Fort Hood to be a rare opportunity in which the immediate needs of CRM compliance (i.e., significance assessments of individual sites) could be satisfied together with the broader, long-term potential of significantly developing the regional data base. Accordingly, we put a strong emphasis on ensuring the rigor, consistency, and comparability of methods, not only between different excavators and analysts, but between different sites, separately funded delivery orders, and successive field seasons.

1.3 THE SAMPLE OF SITES

This report presents the results of NR eligibility testing on 56 prehistoric sites. Our earlier testing report (Abbott and Trierweiler 1995) presented comparable data for 57 other sites, and similar testing data was also obtained from eight burned rock mound sites (Quigg and Ellis 1994). Because two of the eight burned rock mound sites overlapped the first sample of tested sites, we have a total of 119 sites with comparable subsurface testing data. In conducting some substantive and summary analyses in Chapters 7.0 through 11.0, we have used this combined sample of 119 sites.

1.4 STRUCTURE OF THIS REPORT

First off, we apologize to the reader for the ponderous size of this document. In truth, there are few other outcomes possible when one is responsible for thoroughly evaluating so many sites within the pages of two covers. We strongly suspect that most of the report will be used more as a reference work - a springboard for future investigations - rather than as light reading. The attentive reader will note that chapters two, three and four are strongly similar (though not completely so) to the parallel chapters we developed for our earlier testing report (Abbott and Trierweiler 1994); the impatient reader may want to skip these three chapters of background material and get right to the good stuff.

1.4.1 Part One

The first four chapters contain background material. In Chapter 2.0, we briefly review the natural environment of the study area. Primary areas of review include climate, structural geology, alluvial stratigraphy, soils, biotic resources, and water resources. We then draw upon these environmental discussions to delineate 12 spatial groupings of sites. These groups include the nine we have defined previously (Abbott and Trierweiler 1995:19-25), plus three new groupings.

Chapter 3.0 summarizes the research framework under which we made assessments of significance and recommendations for NRHP eligibility. This chapter is structured in three discussions. The first part provides the reader with a historical context of archeological investigations at Fort Hood. These investigations, supplemented as necessary with studies from other regions of Texas, are then synthesized into a reconstruction of the currently accepted cultural historical framework. Third, the key data needs for determining site significance, as derived from the Fort Hood research design, are delineated and are distilled into a series of key site attributes.

In Chapter 4.0, we present the methods we used to collect and analyze data from the 56 sites. The chapter is organized into four primary sections. First, methods used in the field are discussed, including backhoe trenching, manual excavation,

[3] Unfortunately, it is often the case on smaller projects, on proximate but unrelated projects, and on sporadically funded projects, that CRM testing proceeds without regard to overall regional data comparability.

site mapping, and preparation of preliminary letter reports. Next, laboratory methods are reviewed, including initial processing and cataloging, flotation, attribute recordation, and preparation for curation. The third section discusses methods of analysis, including those conducted on artifacts, on chronometric samples, and on biotic materials. Lastly, a final discussion summarizes the measures taken to ensure replicability and comparability of all primary data and the conclusions based thereon. This section discusses the program of quality control, including the development of the field manual, the control checkpoints, and the appointment of the independent quality control officer.

1.4.2 Part Two

Chapter 5.0 is the heart of the report. Here we present the testing results for each of the 56 sites. Sites are presented in ascending numerical order, and for ease of navigation, the discussions of each site are organized in a similar manner. First, an introduction to the site briefly describes its setting and location, defines its membership among the 12 site groupings, reviews previous work at the site, and summarizes the new work we conducted during the current testing phase. In the second major discussion we present substantive testing results. Test pits and trenches are individually described, as are each stratigraphic zone and cultural feature. The results of artifact analyses are presented by major artifact classes (such as lithic debitage, lithic tools, bone, etc) as are the results of radiocarbon and other assays. If appropriate, these data are presented by site subdivision (e.g., different terraces, rockshelters, burned rock mounds). In the third section, we analyze these results (especially dating) and define one or more Analytic Units (groupings of excavated proveniences which have been dated to the same time period). Proveniences which can not reliably be assigned to a time period are treated together in an "unclassifiable," group and proveniences with conflicting dating information, or with clear post depositional mixing, are treated together in a "mixed" group. The artifact assemblage of each temporally discrete Analytic Unit is described in detail, including discussions of lithic debitage, lithic tools, and faunal remains. In the fourth and last major discussion for each site, we develop conclusions and offer explicit assessment of research potential.

In Chapter 6.0, we take up a broad brush to summarize the results of the current testing program. First, we highlight our overall level of field effort, and resulting testing sample size, on each of the 56 sites in terms of numbers of test pits and backhoe trenches, and the total excavated volume. We then review the numbers and varieties of artifacts and samples, as well as their ubiquity and density, and we summarize the results of radiocarbon, amino acid epimerization, and macrobotanical assays. These data are first presented on a site-by-site basis, but we then proceed to a temporal perspective, discussing the volume sampled, and artifact and feature diversity by temporally defined Analytic Unit. Finally, these results are synthesized for each site into summary evaluations of research potential. Based on research potential, we assess the eligibility of each site for inclusion to the NRHP and develop management recommendations.

1.4.3 Part Three

In Chapters 7.0 through 11.0 we present the results of substantive analyses conducted on our testing phase database. Our database for these analyses includes not only the 56 sites we discuss in Chapter 5.0, but also the 57 sites we tested earlier (Abbott and Trierweiler 1995) as well as six burned rock mound sites[4] we tested in early 1993

[4] Two of the eight burned rock mound sites are also included in the 57 sites we tested for NR eligibility during the 1993-1994 field season.

(Quigg and Ellis 1994). The resulting sample of 119 sites[5] is, to our knowledge, the largest suite of prehistoric sites ever excavated in Central Texas under a single research framework.

The mere internal comparability of the database is exciting. Moreover, our study area covers a good portion (340 square miles) of the entire Central Texas region. As a bonus, the study area is extraordinarily chert rich, and has several dozen recognized chert varieties with which to trace chert selection and reduction. Our sample of 119 sites includes a wide range of site types, from rockshelters and subterranean sinkholes, to toeslope middens and upland mounds, and it represents a variety of depositional environments and landform contexts. The drawbacks to our database are largely the flip side of the advantages and are characteristic of most NRHP testing projects. We have only a very small spatial "window" into any given site, and usually have a small sample of recovered artifacts with which to make inferences (although some middens with extremely high artifact densities yielded very large samples from just a few test units).

In Chapter 7.0 we examine the distribution of the named varieties of Edwards chert and use patterns of debitage and lithic tool distribution to suggest preferential use of chert raw materials and alternative lithic reduction strategies. Chapter 8.0 looks at the variety of features we discovered, and refines our earlier typology of burned rock features, drawing a sharp distinction between *mounds* and *middens*. In Chapter 9.0 we pursue our previously begun investigations of the three-fold utility of landsnails for dating, context assessment, and paleoenvironmental reconstruction. Next, Chapter 10.0 reassess our knowledge of Fort Hood rockshelters, drawing upon a sample of 37 shelters from 26 sites. Finally, in Chapter 11.0 we apply the temporal perspective afforded by our Analytic Units to look at all 119 sites. Using nearly 500 projectile points and nearly 200 radiocarbon assays, we delineate and summarize one Paleoindian event, seven Early Archaic events, 27 Middle Archaic events, 37 Late Archaic events, 23 Late Prehistoric I events, and 14 Late Prehistoric II [illegible][6] For each period, we summarize t[illegible]ifact assemblage, use the chronometric [illegible]ata to review the existing chronology and phase association, summarize the data for subsistence issues, and finally advance some general interpretations and conclusions. Also summarized are data from 97 unclassifiable and 59 mixed assemblages. A final section in this chapter uses these temporal patterns to diachronically address, in preliminary fashion, key issues in several research domains, including chronology, paleoenvironment, subsistence, and technology.

In some of these inter-site analyses, our data have produced fairly clear conclusions. Occasionally the conclusions are provocative. Other analyses found that the limitations of the database yielded only conflicting or ambiguous results. In every case however, we are hopeful that our studies point the way for future research at Fort Hood and in Central Texas.

1.4.4 Summary

Our investigations at Fort Hood have produced relatively small samples from many sites. We know of no other project in Texas which has used a single methodology to assemble comparable test excavation data from so many prehistoric sites.

[5] The only site which we tested not included in this sample is 41CV1505 (the Leon River Medicine Wheel) which is fully documented in Fort Hood Research Report Number 33 (Quigg et al. 1996).

[6] We subdivided the Late Prehistoric into two parts which correspond temporally to the Austin and Toyah phases. Our generic terminology allows for other occupation/events during these times which do not yield the key diagnostics (Scallorn and Perdiz points), or which have a mixture of types.

As required by each individual delivery order, our work has been strictly focused on assessing site eligibility for inclusion to the NRHP. Inter-site analyses and substantive syntheses were not required nor requested by the Government. Nonetheless, we recognized that our extensive testing level database contained exciting research potential of its own, and we have tried to distill some substantive conclusions from it. Although CRM archeology is often censured for sterile descriptions and lack of meaningful interpretations, we believe that valuable scientific contributions need not be precluded by the structure of the Section 106 consultation process, even during inventory and evaluation phases.

To this extent, we hope that this program is an example of CRM at its best - not only are the management concerns of the United States Army satisfied, but at the same we have been able to conduct some interesting research along the way, and to contribute new important new conclusions to our knowledge of prehistory. Now, in order to advance significantly, central Texas archeology needs the "quantum leap" afforded by more extensive data sets from a smaller and more carefully selected sample of sites. We hope that data recovery excavations, if such are ever needed at Fort Hood, will provide such data sets.

In the mean time, we are excited to make available our complete and unabridged database on CD-ROM (Appendix A). While such a vast and dynamic storage medium existed only in our archeo-fantasies just years earlier (as we squinted at micro-fiche readers), it will just as surely be outdated by some even more prodigious, interactive (and expensive) medium in the very near future. Before then, we encourage the ambitious reader to boot up and play with the data.Under contractual constraints, we have only skimmed the surface of its research potential. No doubt there are many exciting behavioral patterns in our excavated - and now electronic - data which remain to be discovered.

2.0 ENVIRONMENT

James T. Abbott and W. Nicholas Trierweiler

In this chapter, we briefly review the natural environment of the study area. The environmental setting of the Fort Hood area has been presented in considerable detail in Fort Hood's several environmental information documents (e.g., U.S. Army 1979, Fort Hood 1992, Mariah Associates 1994), and has been summarized several times in earlier cultural resource reports by TRC Mariah (Abbott and Trierweiler 1995, Abbott 1994a, Lintz and Jackson 1994).

Because our research orientation has been constant throughout our testing program at Fort Hood, the present chapter largely duplicates the discussion of natural environment we have presented earlier (see Abbott and Trierweiler 1995:5-25). As such, the present chapter is presented principally as a convenience for the reader who may not have access to earlier volumes. The reader already familiar with that discussion may wish to proceed to Chapter 3.0. However, one significant change in this environmental chapter is the delineation of three new site groupings and changes in the boundaries of several others. These changes are fully discussed below in Section 2.4.

2.1 CLIMATE

The modern climate of the Fort Hood area is humid subtropical, characterized by long, hot summers and relatively short, mild winters. Summer temperatures are high, with an overall average of 83°F (28.3°C) and an average daily maximum of 96°F (35.5°C) in Coryell County. It is not uncommon for temperatures in excess of 100°F to occur for days or weeks during the summer months. When coupled with moderate to high humidity imparted by moist air masses originating over the Gulf of Mexico, the high temperature characteristic of summer days can be extremely uncomfortable. Average temperature in winter is 49°F (9.4°C), but tends to vary considerably from day to day due to the periodic passage of rapid cold fronts, resulting in a pattern of alternating bitterly cold and pleasant stretches.

Total annual precipitation is approximately 34 inches (864 mm). Although rainfall occurs year-round, precipitation is concentrated in two peaks that occur in late Spring and early autumn. Frontal storms are the dominant source of precipitation in winter, while convectional thunderstorms predominate in summer. The late spring and early autumn precipitation maxima are the result of a combination of convectional and frontal storms. Tropical storms can occasionally introduce copious moisture from both the Gulf of Mexico and Pacific during the hurricane season. Snow is rare in the area, and measurable accumulations only occur once or twice a decade.

Much more research is needed to document the paleoclimatic sequence in Central Texas throughout the culturally relevant period. However, extant studies have provided a useful outline of prevailing trends. The late Pleistocene appears to have been significantly cooler and moister than today (Graham 1987; Toomey 1993; Lundelius 1986). Pollen records and stable carbon isotopes suggest that grasslands expanded at the expense of open deciduous forest through the late Glacial period and early Holocene (Bryant and Holloway 1985; Nordt et al. 1994) as the climate became increasingly warm and dry. This warming trend continued into the middle Holocene, culminating in the widely recognized "Altithermal" (Antevs 1955), when the climate was significantly warmer and drier than at present. Around 4000 BP, the climate apparently shifted to a slightly more mesic state, and oak woodland became the dominant vegetation assemblage (Bryant and Holloway 1985). Late Holocene pollen records suggest that around 1500 BP the climate shifted toward slightly drier conditions again, resulting in the establishment of an oak savannah environment (Bryant and Holloway 1985). By approximately 1000 BP, many streams on the southern Plains and Edwards Plateau once again abandoned their floodplains and

began to entrench (Hall 1990), probably as a result of the continuing shift toward drier conditions. In the last few hundred years, the climatic signal in vegetation and geomorphic records is largely masked by the much more significant impact of agriculture and grazing on the natural system.

2.2 GEOLOGY AND GEOMORPHOLOGY

Fort Hood is situated in northwestern Bell and southeastern Coryell counties, Central Texas, adjacent to the city of Killeen (Figure 2.1) and encompasses an area of approximately 878 km^2 (339 square miles) in the Grand Prairie Land Resource Area. This part of the state occupies the transition zone from the humid east to the semi-arid west, and the environmental gradient is steep enough that distinct changes in landscape and vegetation are observable moving east to west across the reservation. Geologically, Fort Hood is situated on Cretaceous-age carbonate rocks a few tens of kilometers west of the NNE-SSW-trending Balcones Fault Zone. Although no pronounced scarp exists along the fault zone in Bell County, the character of soils and vegetation developed on the upper Cretaceous rocks east of the fault zone is markedly different than what exists on the lower Cretaceous rock to the west.

2.2.1 Structural Geology

The Fort Hood landscape is a result of a dissection of the eastern margin of the uplifted Edwards Plateau, and reflects variability in the resistance of various geologic formations to erosion. The Fort lies a few miles to the west of the Miocene-age Balcones Fault trend, which separates the dissected Edwards Plateau to the north and west from the gently rolling upper Gulf Coastal Plain to the south and east. Although the relief provided by the escarpment is typically less than 100 m, major differences in character of relief, climate, soils, and vegetation are apparent between the two sides of the fault zone.

Structurally, the region is situated between the stable continental interior and the subsiding Gulf Coast basin, and is underlain by a deep-seated extension of Paleozoic Ouachita origin. During the Cretaceous Period, Central Texas was the site of a very broad shelf covered by a shallow sea. For more than 80 million years, calcareous limestones and marls were deposited on the shelf as the shoreline fluctuated. Occasionally, relatively thin deposits of terrigenous clastics were washed onto the shelf from the west, resulting in interbedded formations like the Paluxy Sandstone, Hensell Sandstone, and Antlers Formation. As the Gulf Basin subsided in the Miocene, severe, extensive stresses developed in the formerly flat-lying Cretaceous marine rocks across a hinge formed by deeply buried remnants of the Ouachita range and fracturing occurred, forming the Balcones fault system (Woodruff and Abbott 1986).

Fort Hood is situated west of the fault zone in an area underlain by relatively flat-lying lower Cretaceous rocks (Figure 2.2), and exhibits a two-tiered topography locally termed the Lampasas Cut-Plain (Hayward et al. 1990). This landscape is developed between the Brazos and Colorado rivers west of the Balcones Fault zone and consists of large, mesa-like remnants of an early Tertiary-age planation surface surrounded by a broad, rolling pediment formed during the late Tertiary and early Quaternary. These two surfaces differ by 25 to 40 m in elevation and form the "high" and "intermediate" uplands of Hayward et al. (1990) and the "Manning" and "Killeen" surfaces of Nordt (1992). Modern stream valleys are in turn incised up to approximately 40 to 70 m into the pediment surface (Figure 2.3).

The oldest rocks exposed on the fort belong to the Trinity Group, including the Glen Rose Formation and Paluxy Sandstone. The Glen Rose Formation consists of alternating beds of fossiliferous limestone, dolomite, and marl up to 375 ft, although only the upper part is exposed on the reservation. The formation is relatively thin-bedded and alternates between resistant limestone and erodible marl slope resulting in a stair-step slope topography. The Paluxy Sandstone consists of fine to very fine quartz sand with

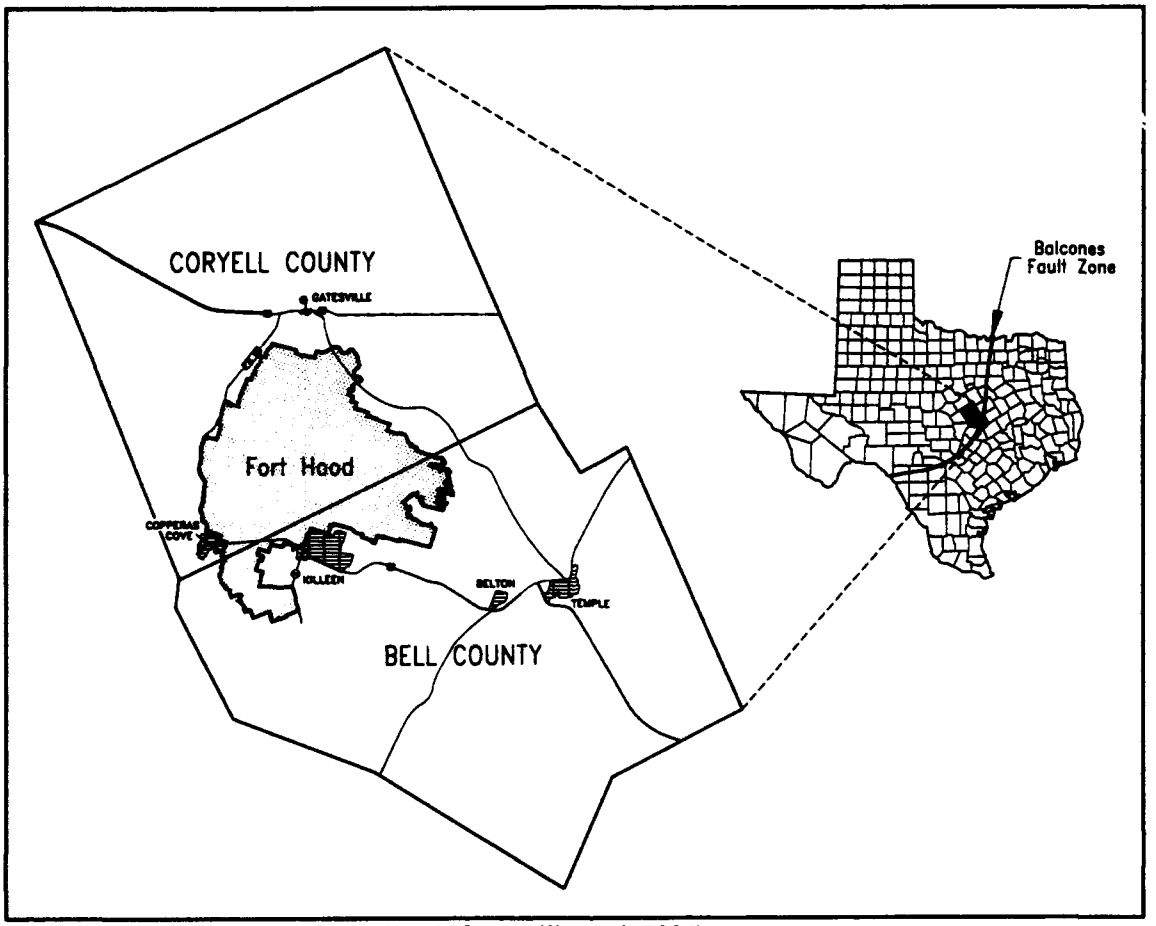


Figure 2.1 Location of Fort Hood (from Ellis et al. 1994).

interbeds of shale and limestone that rests on top of the Glen Rose Formation, and is present on the reservation as a thin, eastward-pinching wedge of material that rarely exceeds 10 to 20 ft in thickness. These formations crop out on the western side of the fort where relatively deep dissection of the landscape by Cowhouse Creek and its tributaries has removed overlying rocks (Sellards et al. 1932; Barnes 1970).

Resting on top of the Trinity Group rocks are rocks of the lower Cretaceous Fredericksburg Group. The lowest unit is the Walnut Clay, which consists of highly fossiliferous clays, limestones, and shales up to 175-ft thick. The Walnut Clay is widely exposed on the fort through lateral stripping of the overlying rocks, and forms the principle substrate of the broad intermediate upland (Killeen) surface. Above the Walnut Clay lies the Comanche Peak Limestone, which consists of hard, thin-bedded limestones and shales that form the intermediate slopes of the higher upland (Manning) surface. The highest extensive rock unit is the Edwards Limestone, a thick-bedded, cherty limestone up to 60-ft thick that forms the resistant cap of the high upland mesas. Although they are not individually mapped (Barnes 1970), rocks of the Washita Group, including the Kiamichi Clay and Duck Creek Limestone, are probably preserved in places on the high upland surface in the eastern

half of Fort Hood. Because the Cretaceous rocks in the vicinity dip more steeply to the east than the present land surface, Cowhouse Creek essentially flows up-section as it traverses the base, moving from the upper Trinity Group rocks on the western side into lower Fredericksburg Group rocks on the eastern side.

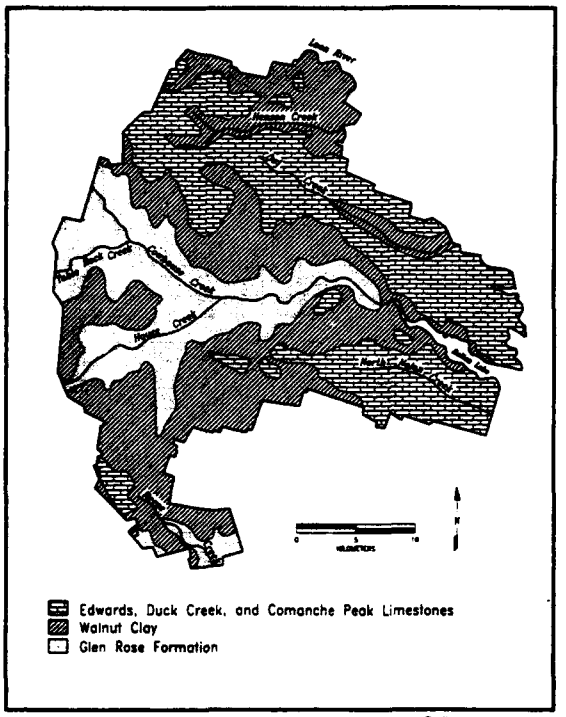


Figure 2.2 Structural Geology of Fort Hood.

2.2.2 Alluvial Stratigraphy

The stratigraphy and soil geomorphology of a number of larger Fort Hood streams has been studied in detail by Nordt (1992; 1993b), who identifies six principal allostratigraphic units in the study area, four of which are common to most of the streams examined on Fort Hood (Figure 2.4). From oldest to youngest, these units are termed the Reserve Alluvium, Jackson Alluvium, Georgetown Alluvium, Fort Hood Alluvium, West Range Alluvium, and Ford Alluvium (Nordt 1992). The Reserve Alluvium is a fill of middle to late Pleistocene age that forms the T_3 terrace of the Leon River. The Jackson Alluvium is a poorly dated but clearly late Pleistocene fill (or sequence of fills) that forms the T_2 terrace of Cowhouse Creek and its larger tributaries. It consists of relatively thin, frequently gravelly, reddish brown loams and sandy loams supporting a moderately developed soil (an A-Bt-Bk profile is most common). Cultural material deposited on the Jackson terrace is either visible at the surface or shallowly buried by thin alluvial and/or colluvial sediments that form the upper horizon in places.

With radiocarbon ages ranging from approximately 11,300 to 8200 BP (Nordt 1992), the Georgetown Alluvium is the oldest fill on the reservation that has the potential to contain cultural materials dating to the incontrovertible span of human occupation in North America. It is always buried, and can be encountered only in cutbanks underlying the T_1 surface, where it is capped by a buried paleosol termed the Royalty paleosol by Nordt (1992). The Georgetown alluvium consists of 2 to 5 m of fine, well sorted channel gravels overlain by light yellowish to grayish overbank alluvium. The overbank deposits typically grade up from loams and silty loams into clay loams, and exhibit strong pedogenic structure in the Royalty paleosol. The sedimentologic characteristics, pale yellowish to grayish reducing colors of the fill, and frequent occurrence of strong mottling in the substrate suggests that the Georgetown probably accumulated relatively rapidly under conditions of perennial streamflow and a relatively high water table.

The Fort Hood Alluvium consists of thick, dominantly loamy to clayey deposits that underlie the T_1 terrace in all of the principal valleys on the reservation. It forms the most extensive suite of deposits underlying the terrace in most larger valleys. Twelve radiometric ages on charcoal and bulk humates obtained from the fill suggest that it began to accumulate shortly after cessation of the Georgetown alluviation at roughly 8000 BP and continued until changing climatic conditions caused another shift in fluvial style approximately 4500

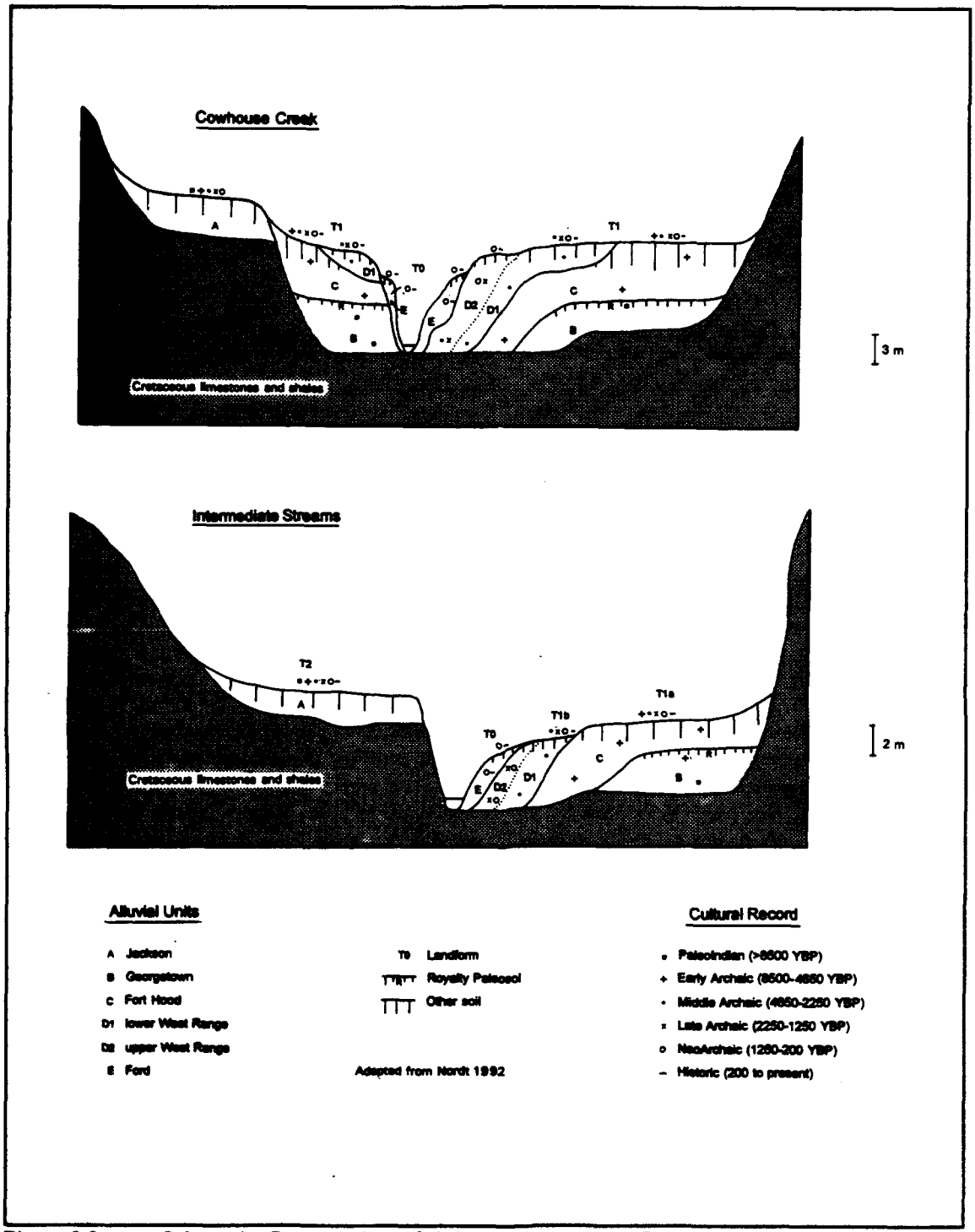


Figure 2.3 Schematic Cross-section of Selected Streams on Fort Hood with the Stratigraphic Positions of Various Cultural Manifestations Indicated (after Nordt 1992).

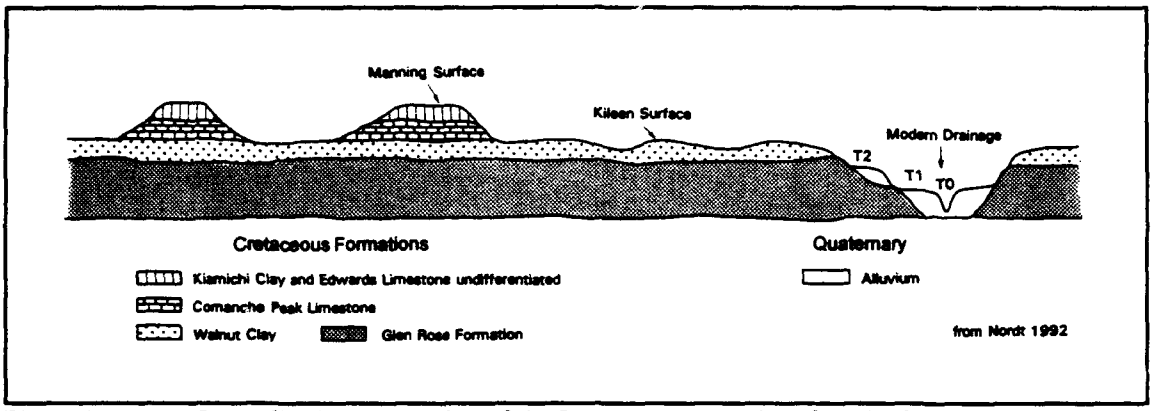


Figure 2.4 Generalized Cross-section of the Lampasas Cut Plain (after Nordt 1992).

BP. In some cases, the Fort Hood fill is truncated and overlain by a drape of the subsequent West Range fill, but in most instances it is exposed at the T_1 surface. Fort Hood Alluvium is dominated by thick (up to 10 m), loamy to clayey overbank facies overlying a relatively thin (1-2 m) channel component. Sediment colors are predominantly brown to very slightly reddish-brown. Soil development in the unit is relatively thick but somewhat poorly expressed; A-Bk-C and A-Bw-Bk-C profiles are most common.

The West Range alluvium consists of dominantly loamy to clayey deposits containing a higher proportion of coarse-grained sediment than the preceding Fort Hood fill. Nordt (1992) subdivides the West Range into a lower, more gravelly member deposited between 4300 BP and 2400 BP and an upper, relatively fine-grained member deposited between 2800 BP and 600 BP. The sediments are predominantly grayish brown, gray, and black gravelly clay loams, and typically exhibit a thick, cumulic A-Bk-C profile. Typically, West Range sediments can achieve thicknesses in excess of 10 m, and buried cultural material has been observed at depths of up to 6 to 7 m in many locations. Multiple, stacked occupation surfaces are common in the upper 5 m unit. The unit usually lies at essentially the same elevation as the Fort Hood fill in the Cowhouse Creek drainage, but does truncate and overlap the older unit in a few localities. In the intermediate streams, the West Range terrace often lies slightly (typically less than 1.5 m) below the elevation of the Fort Hood surface, which led Nordt (1992) to subdivide the T_1 terrace into a T_{1A} surface associated with the Fort Hood fill and a T_{1B} surface associated with the West Range fill.

The Ford Alluvium is the most recent fill identified on the reservation, and underlies the T_0 surface. Twelve radiocarbon ages on charcoal from the fill (Nordt 1992) suggest that the unit has been accreting since approximately 700 to 800 BP. Typically, it consists of stratified loamy, sandy and clayey overbank deposits underlain by 1 to 2 m of channel gravels. The fill may be up to 9 m thick but typically has limited lateral extent in the valleys, except in a few localities where a thin drape of Ford overlies portions of the T_1 terrace. Frequently, primary stratification is well preserved in the overbank deposits, reflecting a relatively rapid rate of accumulation and short period of pedogenic modification. Ford sections are composed primarily of clay loams and gravelly clay loams, but frequently display interstratified sandy and gravelly beds, indicating strongly fluctuating discharges and the development of chute channels on the floodplain surface during high stage flow. Although soil development in the Ford deposits is typically very weak (cumulic A/C profiles are common), films and filaments of calcium carbonate are almost always present and may be abundant through the profile.

In addition to alluvial deposits in the valleys of tributary and trunk streams, colluvial and slopewash deposits form an integral suite of archeologically significant sediments within the reservation. They occur both as relatively thick wedges at the base of steeper slopes and as thin mantles on most slopes and uplands, and they overlie and interdigitate with a number of alluvial fills at valley margins. The textural and architectural characteristics of colluvial/slopewash deposits on the reservation span the range from relatively thin, fine-grained mantles representing a predominance of slopewash deposition to coarse, very poorly sorted wedges and aprons of gravity-delivered material at the bases of steeper slopes. They form the matrix of a large number of archeological sites, and clearly contain both primary and secondary cultural material. The texture, color, and degree of soil development of these deposits varies considerably, suggesting that several different temporal episodes of increased slope activity are represented. However, additional basic research is necessary to define the colluvial sequence.

2.2.3 Soils

Soils on Fort Hood (Figure 2.5) reflect the influence of relief, underlying geology, semi-arid to subhumid climate, and duration of pedogenesis. Most soils on the base are classified as Mollisols by the USDA Soil Conservation Service (McCaleb 1985; Huckabee et al. 1977). These soils are developed on calcareous substrates and may be either weakly or strongly horizonated depending on their age. Important secondary soil orders include Alfisols, Vertisols, and Inceptisols. Alfisols typically occur on weakly calcareous or decalcified substrates such as the outcrop of the Paluxy Sandstone and Pleistocene alluvial deposits of the Leon River and Cowhouse Creek. In most cases, Alfisols on Fort Hood probably represent an extended period of pedogenesis under a succession of climatic conditions. Vertisols on the reservation typically form in drainages and depressions where considerable volumes of expandable clay accumulate. The extensive, upland vertisols typical of the Blackland Prairie east of the Balcones fault zone do not occur on Fort Hood. Inceptisols are poorly horizonated soils typical of recent deposits and areas that have experienced relatively recent erosion.

2.3 ECONOMIC RESOURCES

The distribution of resources on Fort Hood represents a "spatial patchwork" of economic opportunities and constraints (Butzer 1982) that the prehistoric populations adapted to through the development of complex economic strategies. In order to fully understand these strategies in their proper context, it is first necessary to understand the nature of the spatial distribution of resources they were designed to exploit. While this goal is clearly unattainable in its entirety, it does provide a useful framework for examination of prehistoric activity in an ecologic context. Although many different types of resources played a role in the prehistoric economy, three broad categories of resources that were particularly important to the prehistoric inhabitants of the Fort Hood area can be identified: biotic resources, lithic resources, and water.

2.3.1 Biotic Resources

Fort Hood lies in a portion of the state variously termed the Cross Timbers and Prairies Vegetation Area (Gould 1975), Hill Country Savannah (Allred and Mitchell 1955), Juniper-Oak Savannah (Kuchler 1964), and Balconian biotic province (Blair 1950). The biotic assemblage in the area of the base represents a transitional zone between elements of the Blackland Prairie to the east and the Edwards Plateau to the west (Figure 2.6). The fort as a whole is composed of 57% woodland and scrub, 38% grassland and savannah, and 5% developed urban areas (U.S. Army 1979). The eastern side of Fort Hood is characterized by dense oak/juniper forest and scrub, while upland areas to the west and south are generally more open. Grasslands are most common on the intermediate upland surface within the live fire area and in the western maneuver areas, while the

high upland surface is typically wooded. Riparian habitats are common along drainages, and exhibit a variety of hardwood species. The impact area in the center of the base is dominated by grasslands even on the high upland surface, probably as a result of artillery impact and resulting fires.

Woody vegetation on the reservation is dominated by a few arboreal species, primarily Ashe juniper (*Juniperus ashei*), live oak (*Quercus fusiformis*), Texas red oak (*Q. texana*), Texas ash (*Fraxinus texana*), Texas persimmon (*Diospyros texana*), and cedar elm (*Ulmus crassifolia*). Mesquite (*Prosopis glandulosa*), typical of areas to the west of the fort, also occurs in relatively low numbers.

Riparian habitats support a diverse assemblage of woody species, including pecan (*Carya illinoinensis*), slippery elm (*Ulmus rubra*), American elm (*U. americana*), burr oak (*Quercus macrocarpa*), black walnut (*Juglans nigra*), plum (*Prunus americana*), netleaf hackberry (*Celtis reticulata*), and red mulberry (*Morus rubra*).

Grasslands consist of a mix of species typical of both the tall-grass prairie to the east and short grass prairie to the west. Common species include blue grama (*Bouteloua gracilis*), sideoats grama (*B. curtipendula*), hairy grama (*B. hirsuta*), Texas grama (*B. rigidiseta*), little bluestem (*Schizachyrium scoparium*), Indian grass (*Sorghastrum avenaceum*), silver bluestem (*Bothriochloa saccharoides*), buffalo grass (*Buchloe dactyloides*), and bermudagrass (*Cynodon dactylon*). Equally common, and usually more abundant in disturbed areas, are a variety of forbs and weedy species including broomweed (*Xanthocephalum texanum* and *X. dracunculoides*), prairie-tea (*Croton monanthogynus*), painted euphorbia (*Euphorbia cyanthrophora*), snow-on-the-prairie (*E. bicolor*), ragweed (*Ambrosia artemisiifolia*), and triple-awn (*Aristida* sp.).

A 1979 inventory of faunal species documented the presence of 22 species of amphibians and reptiles, 80 species of birds, and 15 species of mammals

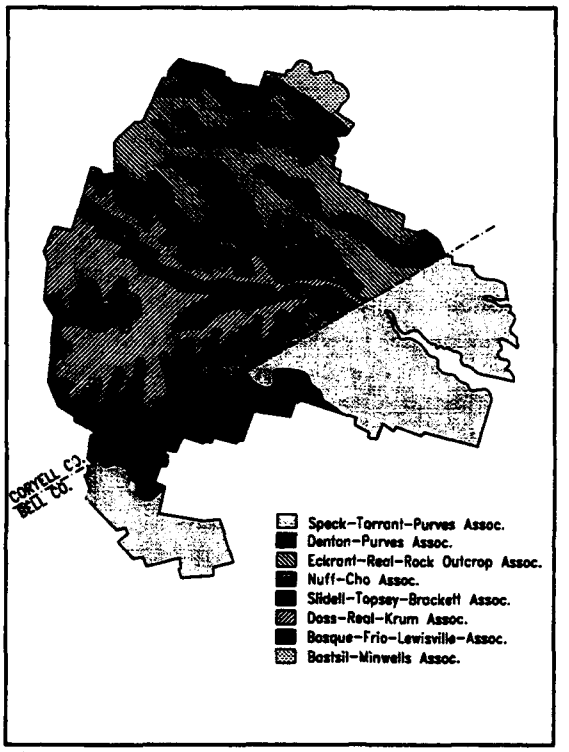


Figure 2.5 Soil Associations on Fort Hood.

(U.S. Army 1979). Many more species are likely to occur because Fort Hood lies within the range of over 48 species of mammals, 79 species of reptiles and amphibians, and 324 species of birds (U.S. Army 1979). Bird species occurring in the greatest numbers include the tufted titmouse (*Parus bicolor*), Carolina chickadee (*P. carolinensis*), cardinal (*Cardinalis cardinalis*), bobwhite (*Colinus virginianus*), house sparrow (*Passer domesticus*), and lark sparrow (*Chondestes grammacus*). The turkey vulture (*Cathartes aura*), while not occurring in numbers as great as the smaller birds, is a particularly prominent fixture on the reservation. Wild turkey (*Meleagris gallopavo*) is another species that has considerable potential significance as a food resource for prehistoric inhabitants. Common mammals include white-tailed deer (*Odocoileus virginianus*), northern raccoon (*Procyon lotor*), black-tailed jackrabbit (*Lepus californicus*), fox squirrel

(*Sciurus niger*), gray fox (*Urocyon cinereoargenteus*), nine-banded armadillo (*Dasypus novemcinctus*), eastern cottontail (*Sylvilagus floridanus*), and deer mouse (*Peromyscus maniculatis*). With the exception of the gray fox, predators are relatively uncommon at present, but documented species include the coyote (*Canis latrans*) and bobcat (*Lynx rufus*).

Biotic resources are one of the most important and difficult classes of resources to address archeologically due to their impermanent nature. The spatial patchwork of biotic resources is a function of complex interrelationships between substrate, slope, aspect, moisture, and edaphic factors, tempered by the historical trajectory of environmental change. Ideally, interpretation of economic strategies would be based on a thorough knowledge of the spatial distribution of biotic resources through time.

Unfortunately, such a reconstruction is impossible to attain. While an inventory of the species occurring in aggregate at any particular time is possible, and the location of individual species may be firmly established by fortuitous preservation of macrobotanical remains or phytoliths, identification of the overall spatial distribution of resources through time is beyond the limits of both technical expertise and fiscal prudence. Therefore, analysis must proceed at the level of relatively gross subenvironments through analogy with extant assemblages.

Several basic suites of biotic resources with specific environmental contexts can be identified. Upland resources include a variety of plants, many with seasonal availability (e.g., prickly pear fruit, acorns), and many species of game animals. The distribution and density of plant resources can be expected to vary temporally and spatially in response to changes in moisture availability, slope, aspect, and edaphic conditions. Similar fluctuations probably also affected game availability, such as the variable presence of bison through time documented by Dillehay (1974). Riverine resources include a wide variety of

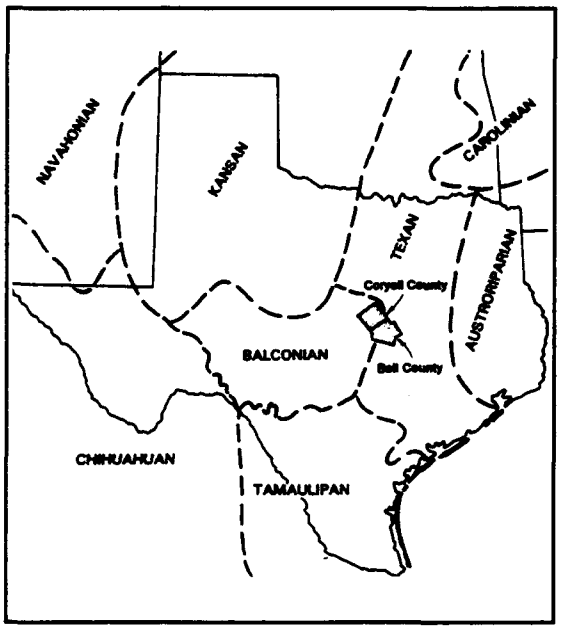


Figure 2.6 Biotic Provinces of Texas (after Blair 1950).

seasonal and perennial plants and a suite of fauna that overlaps, but is typically distinct from, animals available in the uplands. In addition, the suite of riverine resources tends to change with the size of the stream and attendant shifts in sediment thickness, depositional energy, groundwater conditions, and floodplain size and stability. Finally, the availability of aquatic resources, including fish and shellfish, varies both temporally and spatially in response to fluctuations in water velocity, water depth, the degree to which flow is sustained throughout the year, sediment supply, and the width-to-depth ratio of the channel.

2.3.2 Chert Resources

Chert occurs in prodigious quantities on Fort Hood, and was a very valuable resource for a prehistoric population that based much of its economy on the production and use of stone tools. Chert nodules and tablets occur on Fort Hood in bedrock outcrops, colluvial and alluvial deposits, and as resistant lag in upland settings underlain by

the Edwards Formation. One of the primary foci of analysis in this report concerns the movement and utilization of this chert by prehistoric peoples. This analysis is based on a taxonomy of Fort Hood cherts developed by Frederick and Ringstaff (1994; Abbott and Trierweiler 1995, Appendix I). These material types are associated with four broad "Chert Provinces" on the reservation; three of these provinces (the Southeast Range, North Fort, and West Fort provinces) represent bedrock chert sources, while the fourth represents alluvial chert available in the Cowhouse bedload (Figure 2.7). Other than the Leon River, which skirts the northeastern boundary of the reservation, Cowhouse Creek and its tributary Table Rock Creek are the only streams flowing through Fort Hood that have a substantial watershed upstream, and thus the potential to deliver "exotic" cherts in their bedload. Examination of the recovery pattern of these chert types relative to their "home" province allows for examination of chert movement patterns and intensity of exploitation by the prehistoric population.

2.3.3 Water Resources

Water is another important resource utilized by the prehistoric population. Arguably, the availability of fresh water placed a significant constraint on the potential for any given locality to be selected for cultural utilization, regardless of its other characteristics. Although the prehistoric availability of water can be inferred with a reasonable degree of accuracy on the basis of modern conditions and what is known of the paleoenvironmental record, the resource was by no means static through time. Rather, the availability of flowing groundwater almost certainly varied over the long term in response to fluctuations in climate, and probably varied spatially as the subterranean delivery network evolved. This spatial variability is currently reflected in the distribution of "wet" and "dry" rockshelters and fossil travertines, which suggests that the activity of individual springs and seeps may increase or decrease independent of broader shifts in groundwater availability. This independence probably occurs as the subterranean network of pores and fractures evolves through dissolution of limestone and reprecipitation of phreatic carbonate in the subsurface at spring heads.

The persistence and character of open-channel flow in the stream network also clearly varied throughout the Holocene, probably in direct relation to the amount of groundwater discharge feeding the net. The availability and quality of this water also probably varied with fluctuations in sediment supply, precipitation timing and intensity, and channel form. A steady supply of surface water was probably enhanced by more uniform, low-intensity precipitation, moderate to low sediment supply, and a deep, meandering channel. Factors that probably would have decreased availability and/or water quality include a decrease in overall precipitation, an increase in the intensity of individual storms, and an increase in coarse sediment delivery to the channel.

2.4 SPATIAL SITE GROUPINGS

For analytical purposes, we have grouped the 119[1] sites into 12 distinct spatial groups, as illustrated in Figure 2.8. These include the nine previously defined groupings (Abbott and Trierweiler 1995:19-25), plus three newly defined groupings. Additionally, we expanded the boundaries of six of the previously defined groups. As discussed previously (Abbott and Trierweiler 1995:19), these groups are not the product of a deductive analysis, but have been delineated post-hoc on the basis of proximity and general environmental setting. We consider the groups to be useful clusters of sites which share a local landscape and have broadly similar environmental characteristics. The boundaries of groups are fluid and the membership

[1] The 119 sites include the current 56 sites plus 57 sites reported earlier in Abbott and Trierweiler (1995) and six sites reported in Quigg and Ellis (1994:203-274). Of the eight sites reported in Quigg and Ellis (1994), two (41BL743 and 41CV1027) are duplicated in Abbott and Trierweiler.

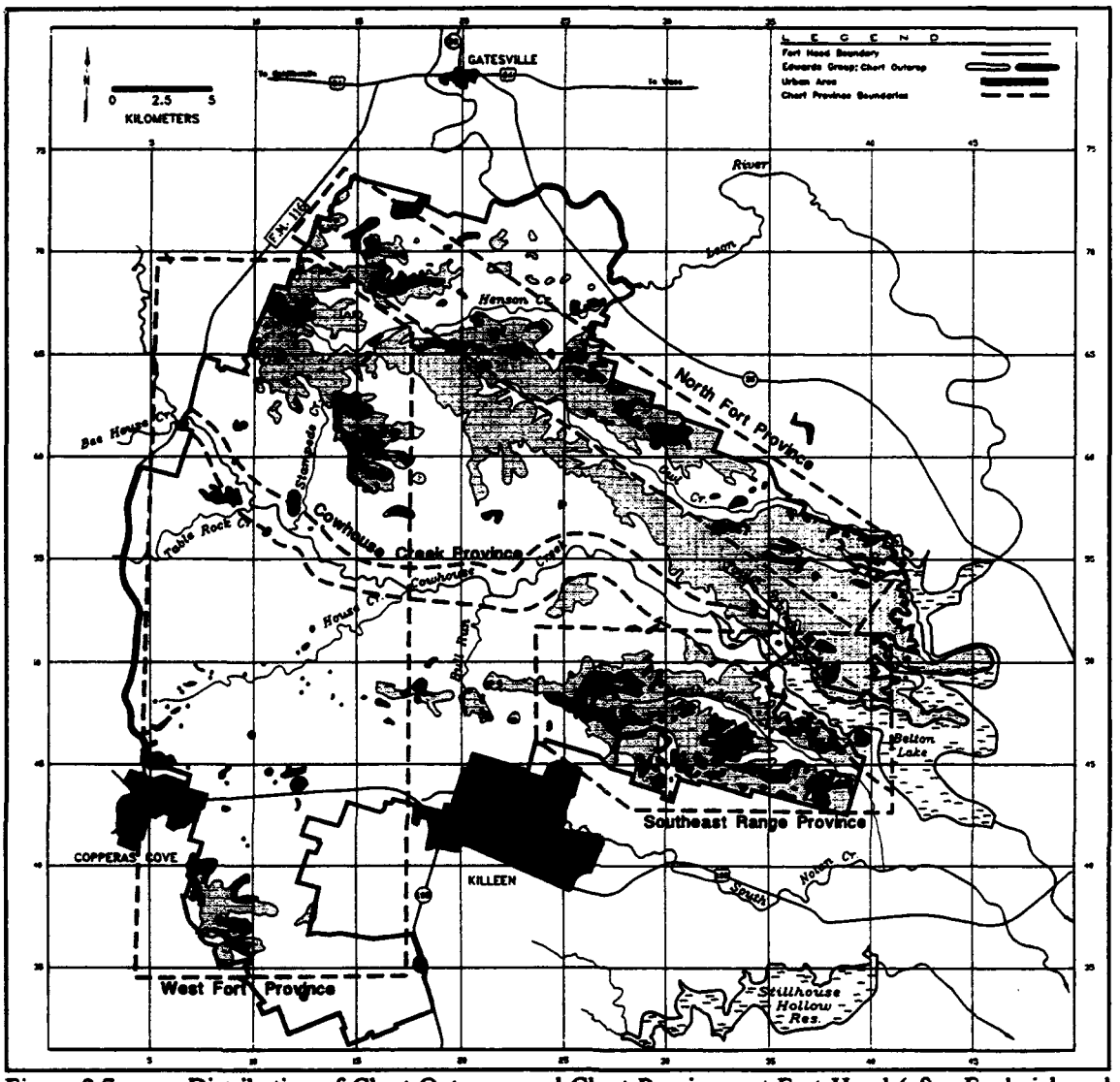


Figure 2.7 Distribution of Chert Outcrops and Chert Provinces at Fort Hood (after Frederick and Ringstaff 1994).

of specific sites between one or another of adjacent groups may be debatable. Nonetheless, we argue that the groupings provide a preliminary mechanism to broadly compare and contrast the characteristics of the sites within a spatial framework.

In general, we have drawn the boundaries of each site group as conservatively as possible, so that each site is included in only one group, while minimizing the total area of each group. In effect, this resulted in each group being polygonal in shape, with sites "anchoring" the corners. The "edge effect" is thus amplified and we caution against using the groups for statistical spatial analyses.

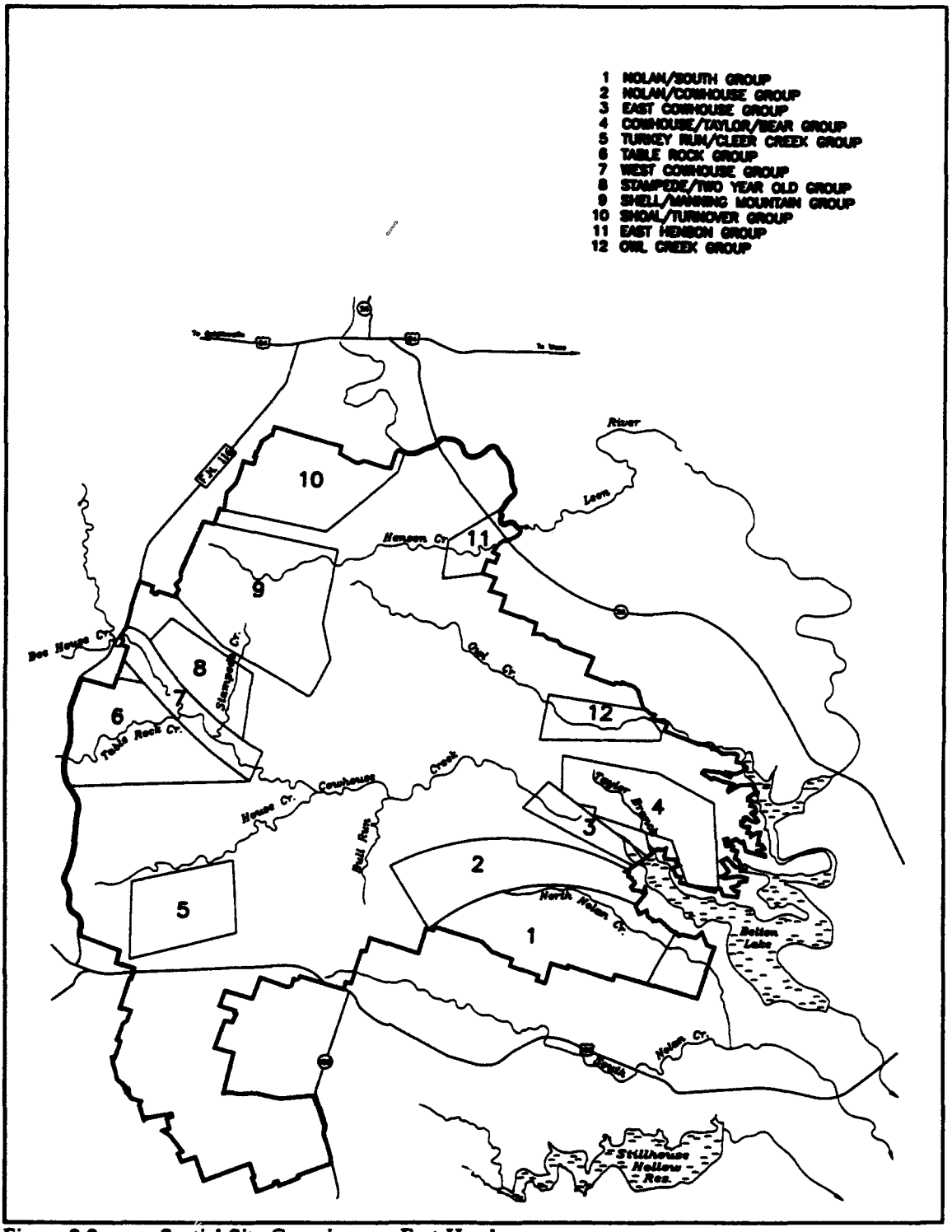


Figure 2.8 Spatial Site Groupings on Fort Hood.

The 12 site groupings range in area from 9 km^2 (East Henson, three sites) to 57 km^2 (Shell Mountain, 24 sites), with a mean area of 28 km^2 (Table 2.1). When combined, the 12 site groupings cover approximately 334 km^2, or only 38% of the entire area of Fort Hood (880 km^2). Moreover, this areal sample is not representative of the entire post. While much of the western portion of the post is included and the eastern portion is fairly well represented, there are major areas which are absent, including all of the "live fire" training areas in the central portion of the post as well as the southwestern dog-leg surrounding the Robert Gray airfield. This is, of course, because the 119 sites were selected for NRHP testing on the basis of management priorities and location within Training Area, and do not comprise a random sample of known prehistoric sites at Fort Hood. We know of other prehistoric sites in virtually all of the 12 sites groups, as well as a great many sites outside of the currently defined group boundaries. Further augmentation of the sample of 119 sites by future researchers will likely require creation of new site groupings and/or further revisions to the boundaries of the currently delineated groupings.

2.4.1 Nolan/South Group

Sites in the Nolan/South group are centered around the North Nolan Creek valley and its tributaries south of Nolan Creek Road. This group includes six sites previously reported (Abbott and Trierweiler 1995), plus two new sites (41BL844 and 41BL850) for a total of eight sites. In order to include the two new sites, the previously defined boundary was expanded to the south, and now encompasses a total of 47 km^2.

The bedrock underlying the North Nolan Creek area consists exclusively of rocks of the upper Fredericksburg and Washita Groups, including the Edwards, Duck Creek, and Comanche Peak limestones, which are the stratigraphically highest rocks occurring within the boundary of Fort Hood. Thus, the uplands and tributaries surrounding North Nolan Creek represent topography developed by dissection of the higher Manning surface. Incision of the high surface has been limited, and no equivalent of the broad intermediate upland (Killeen) surface exists in the Nolan/South area. Rather, the valleys of North Nolan Creek and its major tributaries occupy roughly the same stratigraphic position as the Killeen surface on the rest of the base.

The valley of North Nolan Creek and its tributaries are relatively shallowly incised and moderately broad. All of the sites in the group are situated on alluvial and/or alluvial/colluvial deposits either in the valleys of North Nolan Creek and its higher-order tributaries or in narrow, low-order tributary valleys incised into the Manning surface. Due to the shallow incision of the valleys, rockshelters are relatively rare in comparison to other areas of East Range.

Soils in the Nolan/South area are typical of those developed on the Edwards and Washita group limestones of the Manning surface in East Range. Here, the upland soil cover is better preserved than anywhere else on the base. This area is part of the Speck-Tarrant-Purves Soil Association defined by the USDA Soil Conservation Service (Huckabee et al. 1977). Speck soils are typical of the broad uplands, and are characterized by a relatively thin but strongly developed A-Bt-R profile. Typically, the strongly developed Bt horizon contains a considerable concentration of residual chert, suggesting that the clayey Speck soils are the product of long-term weathering of the Edwards bedrock. On the beveled margins and more dissected portions of the upland, Speck Soils give way to thin silty clay and stony clay soils of the Tarrant and Purves Associations. These soils both exhibit an A-R profile and appear to represent areas where either incremental erosion and/or accelerated stripping at some point in the past has prevented formation of the strong Bt horizon typical of the Speck series. Alluvial soils in the valley of North Nolan Creek and its tributaries vary from gravelly loams through gravelly clays to thick vertic clays and clay loams. The soils are mapped as the Krum-Lewisville Association

Table 2.1 Site Groupings on Fort Hood.

Site Group	Area (km^2)	No. of Sites	Sites Reported in this Volume	Sites Reported by Abbott & Trierweiler (1995)	Sites reported by Quigg & Ellis (1994)
Nolan South	47	8	BL844, BL850	BL154, BL208, BL740, BL821, BL834, BL853	—
Nolan/Cowhouse	37	15	BL773	BL168, BL198, BL421, BL427, BL432, BL433, BL743[a], BL744, BL751, BL754, BL755, BL765, BL886, BL888	BL743[a]
East Cowhouse	10	5	BL431	BL339, BL415, BL470, BL454	—
Cowhouse/Taylor/ Bear	31	12	BL504, BL531, BL560	BL513, BL532, BL538, BL564, BL567, BL568	BL233, BL598, BL608
Turkey Run	24	6	CV117, CV1378, CV1403	BL1391, BL1400	CV1195
Table Rock	38	7	—	CV164, CV174, CV319, CV1116, CV1136, CV1423	CV594
West Cowhouse	18	18	CV88, CV90, CV98, CV99, CV317, CV389, CV582, CV1033, CV1129	CV95, CV97, CV960, CV1038, CV1097, CV1098, CV1099, CV1105, CV1200	—
Stampede	17	4	CV478	CV595, CV1023, CV1027[a]	CV1027[a]
Shell Mountain	57	24	CV71, CV125, CV240, CV403, CV481, CV484, CV493, CV495, CV913, CV918, CV927, CV935, CV936, CV1080, CV1165, CV1166	CV137, CV587, CV1007, CV1008, CV1011, CV1085, CV1167	CV124
Shoal/Turnover	33	8	CV115, CV201, CV332, CV397, CV901, CV905, CV1471, CV1472	—	—
East Henson	9	3	CV184, CV271, CV849	—	—
Owl Creek	13	9	CV44, CV45, CV46, CV47, CV48, CV378, CV379, CV380, CV900	—	—

All site designations are preceded by "41."

[a] Sites 41BL743 and 41CV1027 are reported by both Quigg & Ellis (1994) and by Abbott and Trierweiler (1995).

(Huckabee et al. 1977), which also includes areas of Frio and Purves soils, and appear to be developed almost exclusively in Holocene alluvium.

Modern vegetation in the uplands consists of a closed Ashe juniper/live oak woodland except where military activity has resulted in a dense network of vehicle trails or where extensive areas have been cleared to create pasture (e.g., in the vicinity of Heiner Lake). Secondary tree species include cedar elm, netleaf hackberry, and Texas oak. The undergrowth is characteristically dense in the wooded areas, with species including scrub oak, greenbriar, redbud, Mexican buckeye, and Texas persimmon. Relatively lush grasses (e.g., hairy grama, blue grama, ruellia, and painted euphorbia), and composites such as broomweed, young juniper, and prickly pear are characteristic of cleared areas. The biodiversity and vegetation density of the area, as in other areas of East Range, is currently the highest of any area on Fort Hood. Although much of this contrast is clearly due to environmental degradation of maneuver-intensive areas on the western side of the base, the presence of the Speck series soils indicates that anchoring vegetation prevented the type of widespread stripping of the uplands apparent elsewhere, and it is likely that economic plants and animals were readily available throughout most of the culturally-relevant past.

The Nolan/South area coincides roughly with the densest chert outcrops occurring in the Southeast Range chert province. Large nodules and tablets of Heiner Lake Tan, Heiner Lake Blue, and Fossiliferous Pale Brown cherts occur in large quantities as upland lag and in the bedload of the streams. Several other varieties of chert, including Heiner Lake Translucent Brown, also occur in significant numbers, but tend to appear as smaller clasts that are more difficult to utilize as a raw material. Interestingly, the dense chert pavement typical of the Southeast Range province is best exposed where anthropically-stimulated soil erosion in the uplands has been the most severe, suggesting that the prehistoric availability of these cherts was probably much more limited than it is at present. Still, the quantities of chert apparent in the alluvial deposits, suggest that some chert has been available throughout the Holocene.

Water resources are also relatively abundant in the Nolan/South area. In addition to the streams, a number of seeps and springs are present in the area. Moreover, indications of gleying and/or redox reactions are apparent in many of the alluvial sediments investigated in the area, indicating a periodically high water table, particularly in the North Nolan Creek valley. Thus, water availability does not appear to have been a limiting factor to site location throughout most of the Holocene.

2.4.2 Nolan/Cowhouse Group

The sites of the Nolan/Cowhouse group are situated on the interfluve between the North Nolan Creek valley and the Cowhouse Creek valley. This group includes 14 sites previously reported (Abbott and Trierweiler 1995), plus one new sites (41BL773) for a total of 15 sites. To include the new site, the previously defined boundary was expanded to the west, and now encompasses a total of 37 km^2.

On the southern side of the upland interfluve, low slopes lead down to the shallowly incised North Nolan Creek valley, while the dissected northern side of the interfluve steps down to a moderately wide, partially dissected part of the intermediate upland (Killeen) surface before dropping again into the more deeply incised Cowhouse Creek valley.

Dissection of the upper surface is incomplete, and several isolated mesas that represent remnants of the Manning upland rise above the rolling Killeen surface. Many of the sites in the Nolan/Cowhouse group are rockshelters formed beneath the thick Edwards limestone, particularly on the northern side of the interfluve. Here, small tributaries of Cowhouse Creek have incised deep notches into the margin of the high upland, and broad, level upland surfaces are rare. As a result, Speck soils

give way to the more erosive soils of the Tarrant series as the most common high upland soil. The Manning surface slopes are typified by Real and Brackett soils, while the dissected Killeen surface is mantled with a complex assemblage dominated by Brackett, Altoga, Krum, and Purves soils (Huckabee et al. 1977).

Vegetation on the top and slopes of the Manning surface is a thick oak-juniper woodland similar to the upland vegetation in the North Nolan group, but gives way to an oak-juniper savanna assemblage on many parts of the lower Killeen surface. As a result, maneuver activity has been less restricted, and many parts of the intermediate surface show relatively severe, ongoing tracked vehicle damage over wide areas. Most drainage in the Nolan/Cowhouse area flows north to Cowhouse Creek, and intermittent springs that provide the source for many of these small drainages dot the margin of the Manning upland. Because no major streams cross the area, Late Quaternary deposits are limited to colluvium and slopewash, particularly at the base of the Manning slope, gravelly clay alluvium in the confined drainages on the margin of the dissected Manning surface, and clayey alluvium in the shallow drainages that cross the Killeen surface.

The Nolan/Cowhouse area is included in the Southeast Range chert province. Although some chert does occur within the Nolan/Cowhouse area as lag and outcrop material on the Manning surface, in colluvium on the Manning surface flanks, and in the bedload of the small streams, the amount of available material pales in comparison to that in the adjoining Nolan/South area, which corresponds to the core of the Southeast Range province. Although it is not prodigious anywhere in the Nolan/Cowhouse area, the availability of chert drops off dramatically in the north due to the lack of chert in the Walnut Clay, which underlies much of the Killeen surface. However, chert is readily available in the Nolan/South area to the south, and was also probably readily obtained from the Cowhouse valley to the north, although the construction of Lake Belton has eliminated the availability of this resource in the modern era.

2.4.3 East Cowhouse Group

The sites of the East Cowhouse group are situated on and in Pleistocene and Holocene terraces of Cowhouse Creek downstream of East Range Road. This group includes four sites previously reported (Abbott and Trierweiler 1995), plus one new site (41BL431) for a total of five sites. To include the new site, the previously defined boundary was expanded to the east, and now encompasses a total of 10 km^2.

On this side of the base, Cowhouse Creek flows on rocks of the Fredericksburg Group (e.g., Walnut Clay), having yet to cut down into the underlying Trinity Group rocks that are widely exposed on the western side of Fort Hood. The Cowhouse terraces are underlain by a variety of Late Pleistocene and Holocene alluvial fills up to approximately 8 m thick, and mantled primarily by soils of the Bosque and Krum series.

Vegetation on the Holocene terraces is substantially modified from the natural assemblage by clearing and agriculture. Prehistorically, the lower terraces appear to have been covered by a diverse riparian woodland that included American elm, hackberry, burr oak, pecan, slippery elm, and mulberry. Remnants of this community are still preserved, but much of the terrace system has been cleared and is now vegetated with dense grasses and compositae. The southern valley walls are typically vegetated with a closed, live oak-Ashe juniper woodland that grades into the riparian woodland (or fronts on cleared areas) at the rear of the terraces. On the northern side of the valley, the valley slopes are mantled with a more open, xeric assemblage of similar species. Juniper has invaded some of the preserved riparian woodlands and some of the formerly cleared areas on the terraces. The higher Pleistocene terraces are currently either open oak/juniper woodland or grassland, and also appear to have been extensively

cleared and frequently plowed or terraced during the historic period.

Water availability is currently excellent due to the presence of Lake Belton, and it is likely that Cowhouse Creek assured a supply as abundant as anywhere on Fort Hood throughout the Holocene. Alluvial chert was also presumably readily available at most times in the past, although the construction of Lake Belton has now eliminated access to the resource and sustained high flow conditions may have limited availability at times in the prehistoric past.

2.4.4 Cowhouse/Taylor/Bear Group

The sites of the Cowhouse/Taylor/Bear group are situated in the northeastern part of Fort Hood east of East Range Road and north of Cowhouse Creek. This group includes six sites previously reported by Abbott and Trierweiler (1995), three sites reported by Quigg and Ellis (1994), plus three new sites (41BL504, 41BL531, and 41BL560) for a total of 12 sites. Although the three new sites are wholly within the boundaries defined by Abbott and Trierweiler (1995), the boundaries have here been expanded to include the three sites reported earlier by Quigg and Ellis (1994). As a result, this area totals about 31 km^2.

The Cowhouse/Taylor/Bear area consists of a moderately dissected Manning surface plateau north of Cowhouse Creek. The uplands are gently rolling and cut by a number of deep drainages, notably Taylor Branch and Bear Creek. As in the dissected high upland surface in the North Nolan area, this dissection has led to the formation of a number of rockshelters on the margin of the Manning surface and facilitated stripping of the upland surface soil. As a result, the well-developed Speck series soil is relatively rare, and the upland surface is dominated by soils of the Tarrant association (primarily Tarrant, Purves, and rock outcrop). Vegetation is typically a closed, Ashe juniper-live oak woodland, and can be extremely dense in places due to local profusion of undergrowth species including scrub oak, greenbriar, flameleaf sumac, Texas persimmon, and redbud. A notable component of the area is a relict population of bigtooth maple near the headwaters of Taylor Branch and Bear Creek. Modification of the natural cover by military and civilian activity is variable, but large tracts of essentially unmodified forest persist on the uplands and in the narrow, incised valleys.

The majority of the Cowhouse/Taylor/Bear group occupies a location south of the North Fort Chert province and north of the Southeast Range province. Overall, even though the area is underlain primarily by Edwards limestone, chert availability in the Cowhouse/Taylor/Bear area is low. This paucity is probably due in large part to the character of dissection in the area; the deeply incised canyons have resulted in almost vertical incision of the Edwards limestone rather than extensive beveling of the upland margin. Thus, while similar quantities of chert may be contained in the limestone as are present in the adjacent chert provinces, the pattern of weathering and erosion has not provided broad, downwasting surfaces upon which the material is exposed. Water availability is moderate to good, with most streams originating at small, low-volume but relatively frequent point sources along the margin of the Manning surface.

2.4.5 Turkey Run Group

The sites of the Turkey Run Group are situated in the vicinity of Turkey Run Creek and Turkey Run Road in the southwestern portion of Fort Hood. This group includes two sites previously reported by Abbott and Trierweiler (1995), one site reported by Quigg and Ellis (1994), plus three new sites (41CV117, 41CV1378, and 41CV1403) for a total of six sites. So as to include the two new sites, the previously defined boundary was expanded to the south and east as far as Clear Creek, and now encompasses a total of 24 km^2.

Turkey Run Creek is a tributary of House Creek, and flows across a portion of the intermediate upland (Killeen) surface developed on upper Glen

Rose and lower Walnut Clay rocks. These rocks underlie all of the Turkey Run group area, and support a variety of soil associations including the Brackett-Topsey Association, which occupies the highest portion of the local landscape; the Nuff-Cho Association, which occupies a series of relatively narrow, north-south-oriented interfluves underlain primarily by Glen Rose rocks; the Doss-Real complex, which occupies the flanks of these interfluves; and Krum soils, which are typical of the alluvial fills in the drainages (McCaleb 1985). The upland surfaces are almost completely cleared and are the site of very heavy maneuver activity. A relatively open, discontinuous juniper-oak forest mantles the flanks of the intermediate upland and the valley bottoms. Springs and seeps are relatively rare in the area, and no chert resources are readily available.

2.4.6 Table Rock Group

The sites of the Table Rock group are situated on Table Rock Creek and its surrounding uplands in the extreme western part of Fort Hood. This group includes six sites previously reported by Abbott and Trierweiler (1995) and one site reported by Quigg and Ellis (1994). Although no new sites are in this site group, its boundaries have been expanded from those defined in Abbott and Trierweiler (1995) to include the site reported earlier by Quigg and Ellis (1994). As a result, the area now encompasses about 38 km^2.

The Table Rock Creek group straddles a chertless terrain underlain almost entirely by rocks of the upper Glen Rose Formation, although the highest parts of the landscape include limited outcrops of the lower Walnut Clay and narrow outcrop bands of the Paluxy Sandstone. Principal soil associations in the area include the Doss-Real Complex on the sloping surfaces underlain by Glen Rose rocks, Cisco and Wise soils on the Paluxy outcrops, Nuff-Cho Association soils on the lower Walnut Clay, Lewisville and Bosque soils on the broad Pleistocene and Holocene stream terraces of Table Rock Creek, and Krum soils in some of the smaller tributaries (McCaleb 1985). The area is largely cleared and has a sparse, patchy upland tree cover consisting of open oak-juniper woodland alternating with broad areas of grass and forbs. As elsewhere, the chemically distinct Paluxy soils (which can have a soil pH as low as 6.1, in comparison to a minimum of 7.9 in the soils of the surrounding Nuff-Cho and Doss-Real associations; McCaleb 1985) support a slightly different vegetation assemblage than the surrounding calcareous soils. Although the character of this difference has yet to be quantified, the sandy Paluxy soils typically support fewer juniper and more oak (particularly post oak and blackjack oak) than the calcareous soils, and also seem to support a slightly different assemblage of grasses.

Maneuver activity and accompanying landscape impact is relatively heavy, but is not as pronounced as it is farther to the south (e.g., the Turkey Run area). The Table Rock Creek valley supports a relatively diverse, if not particularly dense riverine assemblage that includes a variety of large hardwood tree species. A sample stand in the Table Rock Creek valley (U.S. Army 1979) was dominated by pecan, cedar elm, and netleaf hackberry, with bur oak, buckthorn, Texas oak, and American elm also occurring. Springs and seeps are rare, and naturally occurring lithic raw material is practically nonexistent, although some small nodules of Seven Mile Mountain Novaculite have been observed in the area.

2.4.7 West Cowhouse Group

The sites of the West Cowhouse group are situated on Pleistocene and Holocene terraces of Cowhouse Creek upstream of West Range Road. This group includes nine sites previously reported (Abbott and Trierweiler 1995), plus nine new sites (41CV88, 41CV90, 41CV98, 41CV99, 41CV317, 41CV389, 41CV582, 41CV1033, and 41CV1129) for a total of 18 sites. All of the new sites are wholly within the previously defined boundaries, which encompass a total of 18 km^2.

This group includes large, deeply-stratified sites on and in the principal Holocene fill units as well as

a few sites situated partly or wholly on Pleistocene terraces. Principal mapped soil associations include Lewisville, Bosque, Seawillow, and Frio soils on the alluvial terraces and the Real-Rock outcrop association on the valley flanks (McCaleb 1985). In general, Lewisville soils are associated with the Pleistocene (T_2) terraces, Bosque soils are associated with the Holocene (T_1 and T_0) terraces, Frio soils are associated with filled swales on the T_1 surface, and Seawillow soils are associated with the erosionally beveled margins of the late Pleistocene Jackson fill. The Cowhouse valley, like Table Rock Creek, is characterized by a relatively diverse riparian woodland assemblage that has been largely cleared off the broad terrace surfaces during the historic period. Principal taxa include pecan, American elm, burr oak, hackberry, cedar elm, and buckthorn, with oak/juniper woodland occupying the valley walls. Chert availability is limited to the channel of Cowhouse Creek, as no chert at all crops out on the surrounding uplands. Although its flow characteristics are sure to have varied through time, the Cowhouse channel also probably served as the most copious and dependable source for fresh water throughout most of the Holocene.

2.4.8 Stampede Group

The Stampede group of sites is situated along the lower stretch of Stampede Creek east of Old Georgetown Road in West Range. This group includes three sites previously reported (Abbott and Trierweiler 1995), plus one new site (41CV478) for a total of four sites. To include the new site, the previously defined boundary was expanded to the west as far as Two Year Old Creek, and now encompasses a total of 17 km^2.

These sites occupy narrow valleys incised into the intermediate upland (Killeen) surface that span the contact between lower Fredericksburg Group rocks (e.g., the Walnut Clay) and upper Trinity Group Rocks (e.g., the Paluxy Sandstone and the Glen Rose Limestone). All four sites in the Stampede group are associated with the outcrop of the Paluxy Sandstone or sediments derived from that outcrop. Soil associations in the area include the Nuff-Cho Association on the rolling Killeen surface, the Doss-Real Complex on the stepped Glen Rose Formation outcropping on the valley slopes of Stampede Creek and Two Year Old Creek, and Cisco and Wise soils on the outcrop of the Paluxy Sandstone (McCaleb 1985). As in the Table Rock area, the majority of the area is covered with an open oak-juniper woodland, while the Paluxy sand substrate is an oak woodland. Maneuver damage is moderate on the sloping valley walls and heavy on the Killeen upland.

No chert resources are known from the area, although a limited amount of alluvial chert is probably available in the bedload of the major streams, which drain the margin of the Manning upland. Springs and seeps are limited in the area, and usually occur as broad, muddy seeps along the outcrop of more marly beds. These seeps are active for short periods following heavy rains and would have been very difficult to utilize as an effective water source.

2.4.9 Shell Mountain Group

As currently delineated, the Shell Mountain site group extends from the southern flanks of Manning Mountain and Shell Mountain in the south to just south of Royalty Ridge in the north, and from West Range Road in the east to the reservation boundary in the west. The majority of sites in the Shell Mountain Group are situated around the margins of Manning surface remnants, including Shell Mountain, Manning Mountain, and western Henson Mountain, while the remainder are situated on the Manning surface or in the valley of upper Henson Creek. This group includes seven sites previously reported by Abbott and Trierweiler (1995), one site reported by Quigg and Ellis (1994), plus 16 new sites (41CV71, 41CV125, 41CV240, 41CV403, 41CV481, 41CV484, 41CV493, 41CV495, 41CV913, 41CV918, 41CV927, 41CV935, 41CV936, 41CV1080, 41CV1165, and 41CV1166) for a total of 24 sites. To include the new sites, the previously defined boundary was significantly expanded to the north

and southeast. In terms of both area (57 km^2) and number of sites, this is the largest group at Fort Hood.

This group includes sites in the upper reaches of the Two Year Old Creek, Stampede Creek, Clabber Creek, Brown's Creek, and Henson Creek watersheds. Shell Mountain is a remnant of the Manning surface that is both highly eroded and remarkably free of lag chert. Manning Mountain and Henson Mountain are similar, but both have relatively more available chert mantling their surfaces, and soil cover on Manning Mountain tends to be somewhat better preserved. There is no real topographic break between Manning Mountain, Shell Mountain, and Henson Mountain; all three represent interconnected remnants of the same high plateau surface, and it is possible to walk from each to the others without leaving the high Manning surface. The margins of the high upland, where many of the sites are situated, is characterized by steep slopes developed on Comanche Peak limestones. At the base of the slope, the surface flattens out into the intermediate Killeen upland, which is underlain by the Walnut Clay. Much of the Henson Creek valley appears to be a sloping bedrock surface cut into the Walnut. The upper surfaces of Shell Mountain and western Henson Mountain are primarily mapped in the Eckrant/rock outcrop soil association, and are characterized by thin, patchy clay soils mantling an undulating surface of hard limestone. A few areas in the center of the upper surface retain thicker soils, and are mapped as the Evant silty clay association. Manning Mountain is dominated by Evant silty clay, with the Eckrant/rock outcrop association present as an erosional strip around the margin of the surface. The steep margins of the Manning surface are primarily mapped as the Real/rock outcrop association, with some areas mapped as the Doss/Real complex and a few isolated areas mapped as the Topsey/Pidcoke association and Lewisville association in the upper valleys of Brown's Creek and its tributaries. The Killeen surface around the margin of the mountain are typically mapped as the Brackett/Topsey Association, but grade down into the Nuff/Cho association as the intermediate upland surface drops gently away to the south from the high upland mesas toward Cowhouse Creek. The valleys of the streams draining the surface, including Stampede Creek, Henson Creek, Two Year Old Creek, Clabber Creek, and Brown's Creek, include associations mapped as the Slidell silty clay and Krum silty clay (McCaleb 1985).

The Manning upland is vegetated with an open juniper/oak woodland cut with a profusion of cross-cutting vehicle trails. The understory is relatively light, especially in comparison with the Manning surface on the eastern side of the base. The steep slopes of the Manning surface are vegetated with a closed oak/juniper woodland that becomes particularly dense on north-facing slopes. In contrast to the upland, the slope assemblage typically has a relatively closed canopy and dense growth in the understory. The base of the slope grades rapidly into the heavily maneuvered grassland and savanna of the Killeen surface. Despite its heavily denuded character, very little lag chert is available on Shell Mountain, while relatively more lag chert is present on the surface farther to the east and south. Water availability is limited to a series of springs around the upland margin and the channels of the small streams draining its margins. Although several springs with appreciable flow are present around the upland margin, the frequency of escarpment springs is noticeably lower than in comparable areas in the eastern part of the base. Several factors probably influence this lower frequency. First, the lack of soil cover on the upland surface probably increases the rate of surface runoff and decreases the amount of moisture that is able to infiltrate, leading to less efficient recharge of the system. Second, the development of karstic depressions is more pronounced than any other segment of the Manning surface observed on the fort, particularly on Shell Mountain. This suggests that the subsurface network may be so developed and integrated that water is able to move through the subsurface system almost as fast as it moves through the surficial network. This would lead to high-volume discharge from relatively few springs

for limited periods following precipitation events rather than lower volume, longer duration discharge from a higher number of small springs.

2.4.10 Shoal/Turnover Group

This site group is the first of the three newly defined groups. It is located at the extreme northern edge of the post and contains eight sites (41CV115, 41CV201, 41CV332, 41CV397, 41CV901, 41CV905, 41CV1471, and 41CV1472). This site group includes sites in the watersheds of Turnover Creek, Shoal Creek, and their tributaries and encompasses an area of about 33 km^2. The southern part of the site group is dominated by Royalty Ridge, which is a linear remnant of the Manning surface. Three of the sites (41CV901, 41CV905, and 41CV115) represent rockshelters formed on the margin of the Manning surface. North of Royalty Ridge, the landscape is dominated by the rolling intermediate upland (Killeen) surface. This surface is open and has been very heavily damaged by maneuvering, particularly west of Turnover Creek Road. Several isolated outliers of the Manning surface rise as discrete mesas above the intermediate upland, and the shallowly incised Shoal Creek and Turnover Creek valleys trend southwest-northeast across this surface. Four of the investigated sites (41CV201, 41CV332, 41CV397, and 41CV1471) are associated with these streams or their tributaries. Finally, the northeastern corner of the site group includes terraces of the Leon River. Site 41CV1472 is developed in sandy colluvium on the margin of a high Leon River terrace. As in the Shell Mountain group, bedrock underlying the Manning surface is Edwards Limestone, the Manning side slopes are underlain by Comanche Peak limestone, and the extensive Killeen surface is underlain by Walnut Clay.

As in the Shell Mountain group, soils developed on the Manning surface thin markedly from east to west. The western part of Royalty Ridge, roughly west of the intersection of Royalty Ridge Road and Turnover Creek road, is dominated by Eckrant/rock outcrop soil association, while areas to the north and east are dominated by the Evant silty clay and Bolar gravelly clay associations, with the Eckrant/rock outcrop association forming a thin strip around the margin of the upland. The slopes of the Manning upland are dominated by the Real/rock outcrop association, and discontinuous areas of the Manning toeslope are occupied by the Doss/Real complex. The Killeen surface is dominated by the Brackett/Topsey association and the Topsey/Pidcoke association. Many of these dense, clay soils on the Killeen surface have been thoroughly mixed by armored vehicles, and deep criss-crossing ruts often extend for kilometers across the surface. The shallowly incised valleys of Turnover Creek and Shoal Creek are dominated by gently-sloping bedrock surfaces characterized by Nuff and Cho soils. Depositional areas in the valleys are dominated by the Slidell silty clay association upstream and the Bosque clay loam association downstream. Isolated remnants of older alluvium mapped as the Lewisville clay loam association are present at intervals in the smaller valleys and on the high Leon River terraces in the northeast corner of the site group. Older, decalcified alluvium supporting the Bastil fine sandy loam association is also present adjacent to the Leon River (McCaleb 1985).

Vegetation on the Manning surface typically consists of an open oak/juniper forest, except in grassy areas where the trees have been cleared. The side slopes of the Manning surface are characterized by dense oak/juniper forest. The extensive Killeen surface is almost devoid of trees and supports and assemblage ranging from dense to very sparse grasses and forbs. The few trees that do occur tend to cluster, and are particularly common around historic sites, suggesting that much of this distribution is probably a result of historic clearing for agriculture. The smaller streams and Leon River terraces support a diverse assemblage that includes live oak and juniper as well as more mesic trees (e.g., American elm, hackberry, pecan, burr oak) and a grassy to brushy understory.

Water availability varies considerably on a seasonal basis, although the Leon River probably provided a dependable water source at most times in the culturally-relevant past. Turnover Creek and Shoal Creek currently have a low, sustained flow throughout the year derived from small springs and seeps, but it is likely that both of these systems have only flowed intermittently throughout the Holocene.

2.4.11 East Henson Group

This newly defined site group is located along the northeastern perimeter of Fort Hood and contains three sites (41CV184, 41CV271, and 41CV849). It is the smallest site group at Fort Hood, both in terms of area (9 km^2) and numbers of sites. All three sites abut Henson Creek, and the tested areas at each site consist of Holocene deposits laid down by that stream. However, the sites also extend away from the stream onto higher surfaces, including the intermediate upland (Killeen) surface and at least one level Pleistocene terrace. The terrain climbs to the Manning surface in the southern part of the site group boundary. Edwards Group limestone outcrops here, while the remainder of the landscape is underlain by the Comanche Peak Limestone and Walnut Clay. Chert resources are quite sparse around the sites, but may be more common in the south on the Manning surface.

Soils in the East Henson Group reflect the distribution of bedrock and landforms. The thin, stony soils of the Eckrant/rock outcrop association are typical of the Manning surface, and Real/rock outcrop soils are typical of the Manning side-slopes. The relatively rugged Killeen surface south of Henson Creek is dominated by the Brackett/Topsey association, with the Doss/Real association occurring at intervals along the Manning toeslope and in a tributary valley. North of Henson Creek, the Killeen surface is smoother and dominated by the Topsey/Pidcoke association on higher points and the Slidell silty clay association in depressions. The Holocene fill of Henson Creek is mapped in the Bosque clay loam association, while higher terraces of the stream are variously occupied by Krum, Doss, Real, Lewisville, and Seawillow soils (McCaleb 1985).

Vegetation in the East Henson group is strongly affected by the topography. The steeper, north-facing slopes south of Henson Creek provide ample shade and are relatively heavily vegetated with live oak, scrub oak, juniper, and a frequently dense woody understory. The irregular Killeen surface here is much more open, and contains many isolated oak and juniper stands separated by cleared areas and vehicle trails. North of the stream, the Killeen surface has been extensively cleared for agriculture, and is now populated with plots of relatively young juniper of differing sizes that reflect the timing of abandonment. The stream harbors a diverse riparian assemblage of trees, with the north side tending to have an open understory while the south side is generally heavily overgrown with various scrub species. Water availability in lower Henson Creek has probably been relatively good throughout the culturally-relevant period, although the stream may have been intermittent during drier intervals.

2.4.12 Owl Creek Group

This newly defined site group is located along Owl Creek in the northeastern portion of Fort Hood. The area encompasses a total of 13 km^2 and contains nine sites (41CV44, 41CV45, 41CV46, 41CV47, 41CV48, 41CV378, 41CV379, 41CV380, and 41CV900). The Owl Creek valley is extremely asymmetric through the area; the stream is situated on the southern side of the valley, where it is abutted against a steep slope that drops off the high upland (Manning) surface, while the northern side of the valley is primarily a gently sloping bedrock strath that is similar in form and soil development to the Killeen surface elsewhere on base. Nordt (1992) reports that some Pleistocene alluvial deposits up to 2 m thick are intimately interdigitated with bedrock on this surface, but these terrace remnants appear to be a distinctly secondary component of the substrate. This sloping terrace/pediment surface grades into

alluvial deposits of Owl Creek at its lower (southern) end, and ramps up to a low Manning Surface scarp at its northern end. The southern side of Owl Creek is marked by Pleistocene and Holocene terrace deposits and a series of relatively large alluvial fans issuing from tributary canyons. These extensive fans were not explicitly recognized by Nordt (1992), although they appear to be primarily of early-middle Holocene age and are thus equivalent with fan systems that he noted elsewhere on the base (Nordt 1993). They are typically inset against Pleistocene alluvium, and in turn have younger (i.e., late Holocene) alluvium inset against them. None of these fans appears to be active, and the feeder streams have typically incised a single thalweg channel that traverses the fan and often has at least one associated inset alluvial surface. At least one considerably older unit, which possibly correlates with the Reserve Alluvium of Nordt (1992), is represented by a thick wedge of alluvium filling a narrow tributary valley at the exposure known locally as "Red Bluff."

As in other parts of the base, the Manning upland is typified by thin, stony clay soils of the Eckrant/rock outcrop complex, and the Manning slopes are characterized by the Real/rock outcrop complex. The sloping terrace/Killeen pediment on the northern side of the stream includes large areas mapped as the Doss/Real complex, which is typical of the higher portion of the surface away from the stream, and the Brackett/Topsey association, which is typical of the lower part. The majority of the Owl Creek fill is mapped as the Lewisville association, while Frio soils are mapped at the eastern end of the site group and Krum soils are mapped in the tributaries.

Vegetation reflects the influence of valley asymmetry and historic clearing. The steep, north-facing Manning side slopes are relatively shielded from desiccating sunlight exposure and are too steep and rocky to cultivate; consequently, they are vegetated with a closed oak/juniper forest. The Manning upland is also an oak/juniper forest, albeit with a considerably more open canopy, as is the south-facing Manning surface escarpment. Much of the high surface is also criss-crossed with a network of vehicle trails, which tend to further open the canopy. The higher, sloping surface in the broad, asymmetrical valley of Owl creek is almost totally cleared of trees, with the exception of a few former fence rows and young juniper that have grown up since abandonment of the agricultural fields. The majority of the valley surface is covered in relatively dense grasses except where maneuver damage has created bare ground. The stream itself is bordered with a diverse riverine assemblage that includes a few relatively large deciduous trees. Water supply by Owl Creek is relatively constant due to springs and seeps upstream, and appears to have flowed at most times in the Holocene.

3.0 RESEARCH FRAMEWORK

W. Nicholas Trierweiler, and J. Michael Quigg

In this chapter, we summarize the framework under which we made assessments of significance and recommendations for NRHP eligibility. Our program of NRHP eligibility testing at Fort Hood was designed from the outset as a single research program. However, for the purposes of reporting, our work was divided by delivery orders into two seasons, 1993-1994 (reported in Abbott and Trierweiler 1995) and 1994-1995 (reported herein). Because the research framework was constant throughout the program, this chapter largely duplicates the discussion of research contexts presented earlier (see Trierweiler, Ellis, and Quigg 1995) and is presented as a convenience for the reader who may not have access to the earlier volume. The reader already familiar with that discussion may wish to proceed to Chapter 4.0.

This chapter is structured in three discussions. The first part provides the reader with a historical context of archeological investigations at Fort Hood. Next, the results of these investigations, supplemented as necessary with studies from other regions of Texas, are synthesized into a reconstruction of the currently accepted cultural historical framework. Third, the key data needs for determining site significance, as derived from the Fort Hood research design, are delineated and are distilled into a series of field observable traits.

3.1 HISTORY OF ARCHEOLOGICAL STUDY AT FORT HOOD

The following discussion is summarized from Mariah's previously published research design (Ellis et al. 1994b) and reviews the results of archeology within a 50 km-radius of Fort Hood (Figure 3.1), an area of approximately 15,700 km^2. The use of the arbitrary and generous 50 km radius highlights the sparsity of substantive archeological information for the Fort Hood area.

3.1.1 Preliminary Research in the Fort Hood Area

The earliest professional excavation in the review area was performed by A. T. Jackson in 1933 at the Willison Farm in eastern Bell County (Young 1988). This work was apparently never reported. In the early 1930s, the Ranney Creek Cave Site in eastern Coryell County was excavated by H. Ramseur, but similarly has not been reported (Prewitt 1974). The Belton area was preliminarily surveyed by Robert Stephenson in the late 1940s (Shafer et al. 1964).

Early archeological research in the review area was dominated largely by Frank Watt, the driving force behind the Central Texas Archeological Society and the author and editor of most of the material published by the society (Lawrence and Redder 1985). A tireless avocational with professional sensibilities (Stephenson 1985), Watt surveyed and excavated over a wide area centered around Waco. Among several sites excavated by Watt in the review area is the Aycock Rockshelter (also known as Kell Branch Shelter #1, in eastern Bell County), from which Watt recovered more than 20 burials (Watt 1936) which were analyzed by a physician (Aynesworth 1936). Watt gained a thorough knowledge of artifact styles in Central Texas and other areas of the state (Stephenson 1985; Lawrence and Redder 1985; Redder 1985), including defining the Waco sinker as an artifact class with apparent geographic variation (Watt 1938). Although Watt's aims and techniques were consistent with the state of the art in Central Texas throughout his 40-year career (cf. Willey and Sabloff 1980), his emphasis on artifact typology has relatively limited utility for studies that rely on discriminating the details of behavior or the systemic properties of hunter-gatherer adaptations (cf. Johnson 1989; Guderjan et al. 1980).

Beginning in the 1950s, the pace of professional archeology in the review area increased as reservoir development activities demanded

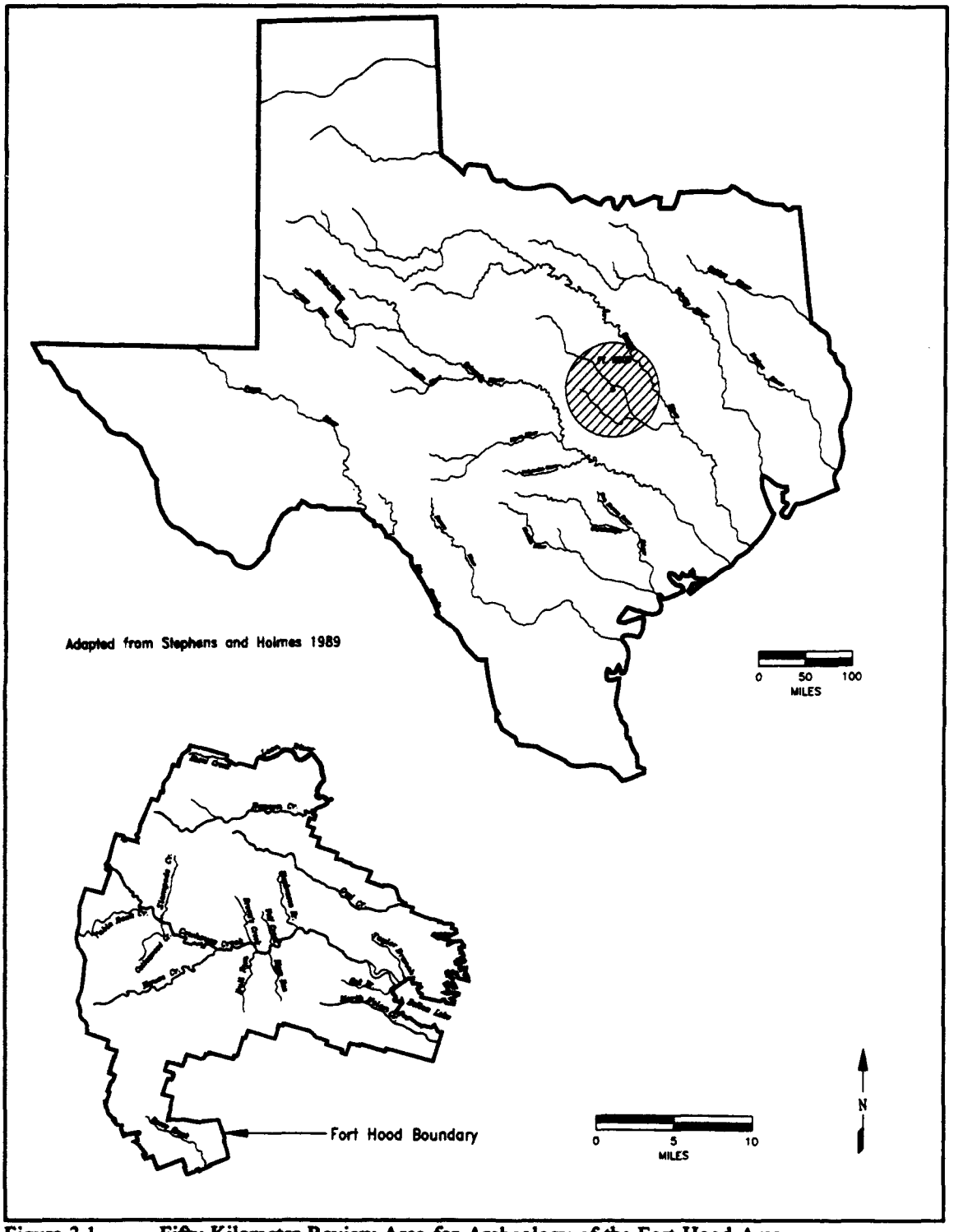


Figure 3.1 Fifty Kilometer Review Area for Archeology of the Fort Hood Area.

attention to cultural resources. Miller and Jelks (1952) surveyed the area on the eastern side of Fort Hood anticipating the construction of Belton Reservoir. Testing in middens and rockshelters failed to provide substantial evidence that would sort out chronological information (cf. Henry et al. 1980). Johnson (1962) surveyed the Stillhouse Hollow Reservoir about 10 km south of Fort Hood in Bell County, performing the first organized archeology on the Lampasas River and laying the groundwork for later mitigation efforts (Sorrow et al. 1967).

Substantial test excavations were conducted by Shafer (1963) at the Youngsport site, about a mile upstream from Stillhouse Hollow, on the Lampasas River. Although Shafer recognized that his excavation strategy prevented him from confirming stratigraphic relationships between excavation units, his results nonetheless implied that the projectile point sequence at Youngsport was largely consistent with the recently developed sequence in Southwest Texas (Johnson et al. 1962), and he provided a provisional definition for the Early Archaic Gower point. However, Shafer reported no subsistence or paleoenvironmental data, and no behavioral data beyond basic descriptions of some aspects of lithic artifact production techniques. Shafer et al. (1964) surveyed the Belton Reservoir in 1962. At least 12 sites were tested to some extent. The analysis in the report dealt largely with typological descriptions of the various artifact classes found in both surface and test collections, and the assignment of culture-chronological position to sites. Faunal material was collected, but not reported, and no paleoenvironmental or behavioral data was reported beyond some basic descriptions of lithic artifact production techniques.

In 1964, Sorrow et al. (1967) conducted test and mitigation excavations in Stillhouse Hollow Reservoir. On the basis of excavations at the Landslide and Evoe Terrace sites, they defined a series of local occupational phases which they compared to other areas of the region. These excavations provided further support for the Early Archaic status of the Gower point and further evidence that the projectile point sequence at least broadly conformed to that in other areas. Although they reported faunal remains associated with burned rock features, no paleoenvironmental data were provided, and behavioral information was again restricted to descriptions of basic elements of tool production.

Thus, as of the mid 1960s, archeology in the Fort Hood area was largely absorbed in establishing chronological and typological baselines for identifying culture-area affiliations, a focus that was consistent with state of the art problems then current in archeology throughout Central Texas (cf. Willey and Sabloff 1980).

3.1.2 Problem-Oriented Research in the Fort Hood Area

No substantial research was conducted in the review area between the mid 1960s and the mid 1970s. However, in the mid 1970s, archeologists working in the Fort Hood area began to augment chronologic goals with specific problem-oriented research. Archeologists from Southern Methodist University (SMU) began a long-term project in the Hog Creek Reservoir in northeastern Coryell County and southwestern Bosque County (Larson and Kirby 1976; Henry et al. 1980). The project involved the testing and mitigation of rockshelters and open sites. In addition to reporting the traditional typological and chronological data, the SMU reports contained substantial information to support functional interpretations of tool assemblages and paleoenvironmental interpretations.

The reports are notable with respect to technological studies in that they incorporate statistical tests of assemblage similarity and difference (Larson and Kirby 1976; Henry et al. 1980). Reconstruction of paleoenvironmental conditions attempted to incorporate data from a variety of sources (pollen, snails, and sedimentation), although poor preservation inhibited the use of pollen (Henry et al. 1980).

The absence of faunal and other reliable seasonality data led to creative use of the exposure direction of rockshelters as a proxy for more direct data (Henry et al. 1980). The SMU research also was remarkable for its attempts to integrate the Hog Creek data into models of hunter-gatherer land-use patterns (Larson and Kirby 1976; Henry et al. 1980). The settlement data led Henry et al. (1980:523) to conclude that the Hog Creek area represented "a detached portion of Central Texas" which may have had at least some contacts with areas to the north (Lake Whitney area) and south (Canyon Reservoir area). Thus, the Hog Creek project stands as a major contribution of behaviorally and systemically relevant research. Unfortunately, the bulk of the Hog Creek data pertains to the Late Prehistoric.

3.1.3 Excavations on Fort Hood

On Fort Hood itself, numerous surveys have been conducted since the late 1970s. However, the only recent report of excavations is Carlson (1993), although some other reports currently are in preparation. Test excavations by a Texas A&M University field school in 1990 concentrated on two rockshelters and the area immediately outside one of them. Analyses of pollen, phytoliths, and macrobotanical materials from the excavations were attempted, but the results were limited (Olive 1993). Faunal analysis identified 15 edible genus- or species-level taxa at the rockshelters. Although the analysts did not claim that all taxa were culturally significant (Sanchez and Shaffer 1993), they did show that an array of diverse environmental niches were represented, including niches somewhat distant from the sites. Thus, even allowing for representation of natural faunal elements, the faunal analysis implied a substantial likelihood that people utilized a variety of niches away from the immediate rockshelter surroundings (cf. Carlson 1993). Lithic analysis allowed for rough assignment of the sites to chronological periods via the presence of diagnostic types (Dickens 1993a; Carlson 1993). A visual study of chert types showed that lithic materials had been transported to the site from a number of different source areas on Fort Hood (Dickens 1993a), further reinforcing the implication that the rockshelter residents exploited diverse niches across the Fort (Carlson 1993). The combination of lithic and faunal evidence may provide a basis for suggesting that lithic procurement was incidental to other activities.

Beginning in 1991, a program of extensive subsurface testing was conducted at Fort Hood (Trierweiler 1994). Observations of geomorphic context were collected on 571 previously located sites and on 414 of these sites having the potential for buried deposits, more than 5,800 shovel tests and test pits were excavated at 30 m intervals. In addition, limited excavations were conducted on nine burned rock mounds, and multiple AMS radiocarbon assays demonstrated complex sequences of use-reuse of these features from 170 to 6500 years BP (Quigg and Ellis 1994). The resulting artifact assemblage constituted the first significant collection of subsurface data from Fort Hood sites. The program also documented the spatial distribution and variability of Edwards chert throughout Texas and developed a working typology of 16 distinct varieties of Edwards chert present at Fort Hood (Frederick and Ringstaff 1994).

3.2 CULTURAL-HISTORICAL FRAMEWORK

The most recent published overview which includes Bell and Coryell Counties and most of south Texas, is that of Black (1989a:17-38) which focuses on the Central Texas Plateau Prairie. He provided a brief history of the investigations up to that time, summarized information which pertained to specific site types, and addressed special sites and intra-site features. The presented data follows a three-part chronological framework for Central Texas based on Prewitt's (1985) radiocarbon data even though it was acknowledged that a single regional chronology is not yet viable (Black 1989a:25). That information was used and expanded upon by Ellis et al. (1994b:43-104) in developing the theoretical perspectives to guide the

research design for Fort Hood. In general, Ellis et al. concluded that the traditional cultural-history focus in Central Texas has been largely unproductive and there is a definite need for a "back to basics" approach for Fort Hood (Ellis et al. 1994b). Ellis et al. (1994b) discusses the shortfalls of the chronological approach and then provides a means to address and understand the hunter-gatherer adaptations in Central Texas.

The Prewitt (1981b), Black (1989a), and Ellis et al. (1994) overviews identify the broad chronological periods used below and highlight what is known in each period. However, these broad temporal periods provide only a working framework and do not attempt to address problems of hunter-gatherer adaptive processes that may cross time periods. Detailed analyses of the cultural assemblages will allow adaptive processes to be address. Johnson (1987) criticizes Prewitt's selected samples in the radiocarbon data base, as he found poor correspondence of the phase assays and the phase diagnostics. This may indicate a problem of age-equivalent dates for Prewitt's phases as more dates become available for the region and specifically Fort Hood.[1] Identifying the absolute age of a particular cultural assemblages is a high priority, given the questions raised about the present Central Texas temporary framework.

3.2.1 The Paleoindian Period

This is the earliest (about 9200-6000 B.C. after Black 1989a:25) indication of human occupation in Central Texas, but actual sites/components are very poorly represented. Projectile points, mostly large lanceolate types including Clovis, Folsom, and Plainview assigned to this age, have been recovered from the surface, but few intact Paleoindian components have been discovered, intensively excavated, and reported. Those components previously discovered are often problematic because of stratigraphic or other problems. Most of the present understanding of the subsistence, technology, settlement data, and so on, is extrapolated from adjacent regions (cf. Hofman 1989; Bement 1989; Hester 1989; Turpin 1991). The recent excavations at the Wilson-Leonard site in Williamson County, an open-air terrace site, will hopefully add considerable information to the Central Texas data base. Any sites or components with Paleoindian materials should be of high priority since they are so rare in Central Texas.

A controversial area is the division of the late Paleoindian and the Early Archaic period as limited information and sites are available to address this division. The separation into two temporal units is generally centered on a subsistence change from the postulated big game hunting in the Paleoindian to a more diversified small game and plant utilization in the Early Archaic. Growing evidence indicates that the Paleoindian period was not solely focused on big game (Johnson 1964; 1967). Therefore, this subsistence issue is indeed an important research question in clarifying and identifying these periods and the change from one to the next. Not often discussed is the technological change from the lancelot to the stemmed or notched projectile points and what accounts for this change in weaponry. Is the weaponry change solely a response from one resource base to another, or were there other contributing factors? The division of the two periods may also be linked to environmental conditions and therefore, it is important to assess environmental aspects at the site or component level. The lack of intact components in Central Texas has hindered our ability to address the basic questions concerning the Paleoindian period. Therefore, any sites containing Paleoindian components would be extremely important if the materials are preserved in primary or semi-primary context.

[1] Recently, Johnson and Goode (1994) provide alternate archeological timing for the Archaic and redefine cultural content, and speculate on major climatic events.

3.2.2 The Early Archaic Period

The Early Archaic period (about 6000-3000 B.C. after Story 1985) is not much better represented by intact components than the Paleoindian period. The data base is still too small and limited to flesh out answers to specific regional research questions concerning subsistence, technology, and settlement patterns. Many of the known sites containing artifacts projected for this age are mixed multiple events that can not be analyzed separately. Most sites are known by projectile points and lack discrete assemblages, thus context has again limited the contributions to our understanding specific aspects of this period. Specific tool forms recovered from the Early Archaic sites are recognized far beyond the boundaries of Central Texas. This distributional pattern denotes broad settlement patterns and resource utilization. Early Archaic sites from adjacent regions have provided the general timing for this period and our current understanding of what is postulated for Central Texas. Recent reports on Camp Pearl Wheat, an open-air, short-term, single event (Collins et al. 1990) and the Sleeper Site (Johnson 1991) provide new information concerning the Early Archaic, but are just a start to what is needed for a comprehensive understanding of this period. Absolute temporal placement has not even been established for Central Texas.

3.2.3 The Middle Archaic Period

The Middle Archaic period (about 3000-1000 B.C. after Story 1985) is much better known through numerous and extensive excavations of burned rock middens and a few small rockshelters. However, the burned rock middens have often lacked clear stratigraphy which has hampered the interpretations and blurred the association of the material assemblage. The presence of many Middle Archaic points in most burned rock middens led researchers to suggest a shift in subsistence strategy from the previous period (Weir 1976; Prewitt 1981b; Creel 1986). However, the reliance on point types alone without substantial radiocarbon assays to verify the actual feature ages has created problems. Projectile points have also served as the major tool in identifying phase or interval periods, therefore a number of divisions and modifications to the chronological framework has occurred (Weir 1976; Prewitt 1981b). Although ages of burned rock features have been postulated for years on the basis of point types, minimal direct evidence exists as to how these features functioned and what resources were used with them. Nuts and deer have been postulated as the principle resources used with the middens (Weir 1976; Black and McGraw 1985; Creel 1986) with yucca, fish, and mussels as supplemental resources (Weir 1976).

Ellis et al. (1994a:69-70) points out that research into burned rock middens had earlier reached a crisis. As a result of the 1990 burned rock symposium, new direction from middle-range theories and application of more vigorous laboratory analyses directed at the macroscopic scale (cf. Collins 1991) have been established for investigating burned rock features. This same approach can be applied to nonmidden sites. Thus, new approaches are being directed toward sites in general. A recent sample of nine burned rock mounds from Fort Hood yielded 43 radiocarbon assays. These assays have extended burned rock mound use back into the Early Arachic period, through the Late Arachic period, and into the Late Prehistoric period (Quigg and Ellis 1994:203-274). Consequently, the postulated shift in subsistence strategy during the Middle Archaic period may have occurred much earlier and lasted longer at Fort Hood.

The high frequency of Pedernales points (n=42) recovered during the resurvey and evaluation of 571 sites at Fort Hood (Trierweiler 1994:300) imply that hunting was still relied upon and in use during the Middle Archaic period. Available data indicates potential variation in the Middle Archaic subsistence adaptations (Black and McGraw 1985; Peter 1982). Apparently, regional variability in subsistence patterns is possible if not probable, demanding a need to examine human adaptation in localized areas.

Middle Archaic events were nearly absent from two intensively excavated sites, 41HY202 and 41HY209, near Buda with no components or features being assigned to this period (Ricklis and Collins 1994). Diagnostic projectile points were identified from the excavations, but they appeared in redeposited context.

3.2.4 The Late Archaic Period

The Late Archaic period extends from about 1000 B.C. to A.D. 800 (Black 1989a:30) and is often subdivided into the Late Archaic (1000 B.C. to 300 B.C.) and the Transitional or Terminal Archaic (300 B.C. to A.D. 800) on the basis of shifts in projectile point styles, although the basic subsistence system appears to remain relatively constant throughout (Turner and Hester 1993). The number of Late Archaic sites and components in Central Texas is dramatically higher than the preceding and successive periods, leading to the speculation that populations peaked during the period (Weir 1976; Prewitt 1985). High frequencies of Castroville (n=21) and Ensor points (n=23), the second and third highest counts of projectiles from Mariah's resurvey and evaluations at Fort Hood (Trierweiler 1994:300), support a high frequency of Late Archaic occupations in the study area.

Sufficient data exists from previous investigations for researchers to have postulated frequent use of specific areas by certain prehistoric groups (cf. Twin Sisters Sites in Williams County, Weir 1976; and Driftwood Sites in Williamson County and vicinity, Prewitt 1985). Besides the higher frequencies of sites, the diversity of site types increased as well, with the addition of large cemeteries (i.e., Hall 1981; Huebner and Comuzzie 1992) and bison bones in sites. Bison kill sites appear outside the Central Texas region in the Lower Pecos region (Dibble and Lorrain 1968) and in the Texas Panhandle (Hughes 1977), therefore use of bison is extrapolated for Central Texas, and some Central Texas sites exhibit bison remains.

As in previous periods much of what is known about the Late Archaic comes from palimpsest middens. Both Weir (1976) and Prewitt (1991) postulate that burned rock midden use declined during this period but accumulating evidence supports continued and possibly increased use, throughout the Late Archaic (Peter 1982; Black and McGraw 1985; Goode 1991; Treece 1992, Quigg and Ellis 1994). With the addition of bison to the subsistence base, it is evident that new resources were available in some areas and that at least some populations engaged in various adaptations.

South of Fort Hood, Late Archaic events from 41HY209-M near Buda indicated use of a burned rock midden with a central rock lined oven principally used by peoples employing the Darl point although other dart point types were recovered (Ricklis and Collins 1994). Other small rock features dating to about 2000 BP include basin shaped hearth(s) and a circular rock feature at 41Y202-B. The latter rock features were associated with bison bones while the oven is thought to imply plant resource utilization.

Extensive trade patterns start to emerge at this time with marine shell showing up in Central Texas cemeteries and throughout the region (Hall 1981; Lukowski 1987) while corner tang knives are widely distributed across much of Texas (Hall 1981) and beyond. These trade networks document widespread population interaction (Hall 1981). However, Prewitt (1981b:82) states that his last identified phase, Driftwood, shows limited exotic materials and a more restricted territory use. He also notes an increase use of rockshelters during the Driftwood phase which denotes a major settlement pattern shift from the more widely distributed early phases employing more open campsites.

3.2.5 The Late Prehistoric Period

The Late Prehistoric period (about A.D. 800 to 1600 after Black 1989a:32) reveals a major shift in technology with the bow and arrow and ceramic

vessels added to cultural assemblages. Where these new industries came from and how they were incorporated into the lifeways of the populations is unclear. In Central Texas, the Late Prehistoric is dominated by two phases, the Austin and Toyah (Prewitt 1981b; 1985). In this report, we have divided the time period into two parts, labeled the Late Prehistoric I and the Late Prehistoric II; we recognize these as being temporally equivalent to the Austin and Toyah phases, but we have tried to avoid imputing cultural affiliations. We intend these modifiers strictly as descriptive of chronology and do *not* mean to suggest new phase names for Central Texas.[2]

3.2.5.1 The Late Prehistoric I

The Austin phase exhibits its earliest dates, about 1350 BP, in sites toward the north, and may indicate the direction from which it came (Prewitt 1985). This phase lacks the ceramic industry of the later Toyah phase implying ceramic vessels were not in use in Central Texas until after A.D. 1300. Even with the emergence of the new weaponry system, Prewitt (1981b:74) states that the "basic exploitive strategies" did not change significantly from the previous period. Subsistence is interpreted for the Austin phase as a balance between gathering plant foods and hunting (Prewitt 1981b:74). The cemeteries of the Late Archaic, with their marine shell artifacts, continue into the Austin phase (cf. Prewitt 1981a). Evidence exists that intragroup warfare was ongoing since many bodies in the cemeteries contained projectiles. Mortuary practices vary as cremation and non-cremation occur as does individual burials along with the cemeteries (Prewitt 1981a:83). This variability would imply population movements and pressures in the region. However, cemeteries associated with this phase have not been identified at Fort Hood.

Few campsites/components of the Austin phase have been intensively investigated and reported on, and material assemblage characteristics are not well documented. The survey data recovered from TRC Mariah's evaluation of 571 sites at Fort Hood revealed a high percentage of Scallorn points (n=29, 44% of total arrow points) which indicate considerable occupation at Fort Hood (Callister et al. 1994:312).

Excavations at Mustang Branch (41HY209-Terrace), on Onion creek near Buda, yielded a discrete Austin phase component between a Late Archaic component below and a Toyah component above (Ricklis and Collins 1994). The Austin component included a small stone tool assemblage with five Scallorn points, associated with two clusters of burned rocks, *Rabdotus* concentrations and burned areas, and a faunal assemblage denoting a broad based subsistence strategy indicated by bones from mammals and reptiles, *Rabdotus* snails, mussel shells, and macrobotanical evidence for plant resource utilization. This event(s) was dated to between A.D. 1278-1285 based on the weighted average of five δ13C corrected radiocarbon assays. The significance of this discrete occupation being that this cultural group was still present in this region in "pure" form at this late time and that bison may not have been in the region at this time.

At the small Lemans Rockshelter in Somervell County (100 km north of Ft. Hood), two human skeletons were recovered and at least the adult burial was believed to be associated with Austin Phase materials (Smith 1994). Diagnostic points from culturally bearing deposits (20-60 cmbd) included nine Perdiz, 40 Scallorn, three Bonham, two Washita, eight side-notched, two Ellis, and two Godley. The four dart points were principally from 50-60 cmbd with the arrow points from

[2] In general, proveniences dating between A.D. 800 and A.D. 1200 and/or those with Scallorn points were placed in the Late Prehistoric I, whereas proveniences dating between A.D. 1200 and A.D. 1600 and/or those with Perdiz and/or Bonham points were placed in the Late Prehistoric II.

above. The shelter is interpreted as a temporary hunting camp primarily used between A.D. 600 to 1050, during the Austin period.

3.2.5.2 The Late Prehistoric II

The Toyah phase is one of the better documented and dated phases in Central Texas with new data from large site excavations now available for West-Central Texas (Creel 1990; Johnson 1994b; Treece et al. 1993; Quigg and Peck 1995). Prewitt (1985) used the available data to postulate population movements on a north-to-south trek through Texas. A major shift in the subsistence base from the Austin to Toyah is documented as bison became the principal resource (cf. Creel 1990; Treece et al. 1993; Quigg and Peck 1995) with some hunting of deer and antelope (Ricklis and Collins 1994) also occurring. This subsistence change also affected the tool assemblage which featured items related to bison processing such as beveled knives and large end scrapers. As ceramic vessels came into use, the need for burned rock became diminished (cf. Quigg and Peck 1995). Other technological changes, such as communal hunting and pemmican processing, appear to be represented at this time (Quigg and Peck 1994). As populations focused on the killing of bison, groups moved to follow and obtain that resource. Johnson (1994b) has found strong evidence for localized communities in the Toyah phase. Contrary to other data sets in Central Texas, only four Perdiz points (6% of the total arrow points) were recovered during Mariah's investigations of 571 sites at Fort Hood (Trierweiler 1994:12). This low frequency may imply limited use of the area by this group. Interestingly, seven points recovered (10% of the total arrow points) were classified as Bonham, which Turner and Hester (1993:202) show as concentrated in Northeast Texas. This may indicate use or interaction of groups from outside the immediate region and could be tied to chert or bison resources.

Three Toyah Phase components at Barton (41HY202) and Mustang Branch (41HY209) sites on Onion creek near Buda, Texas document a subsistence focussed on medium size animal resources including deer and antelope, as bison is minimally represented (Ricklis and Collins 1994). At the Barton - North site, an intense lithic activity area revealed the production of thin bifacial knives (n=26) and Perdiz arrow points (n=139) from an obviously plentiful lithic resource. Ricklis and Collins (1994:236) see the flake byproducts of biface manufacture selected for arrow point production. The terrace site at Mustang Branch yielded an excellent intact spring occupation focussed on processing antelope and deer carcasses obtained from a possible communal kill based on the high frequency of animals represented. This event yielded a broad range of cultural features, a large stone tool assemblage, numerous ceramic vessels, and was dated to between the late fifteenth and early seventeenth centuries.

The Toyah phase is the last archeological manifestation documented prior to the European invasion. If the Toyah phase has separate, identifiable communities as might be postulated with observed regional variations in recovered tool assemblages from central, southern and western Texas archeological sites, then regional patterns should be distinguishable. Potentially, detectable communities could be discovered in places corresponding to locations of ethnographically documented groups. This may provide an opportunity to explore the direct historical linkage.

3.2.6 The Historic Period

This period (about A.D. 1600 to 1870 after Black 1989a:32) involved the use of the region by both Native Americans and Europeans. Consequently, drastic changes occurred in the Native populations and their movements which reflect the various European pressures felt in different parts of the state. One significant influence was the introduction of the horse by Spaniards. Once horses were obtained by the Natives, mobility drastically changed as did much of their past cultural lifeways. Different tribes were able to greatly increase the distance of hunting and raiding expeditions. First the Apaches and then the

Comanches swept through the region from the north and the Plains. Their warring attitude pushed original Native occupants out of Central Texas and killed many others. European diseases also took a heavy toll on Native populations (Ramenofsky 1987).

The Native period of occupancy ended with most Natives either being removed to reservations outside the state or being killed. Today, the only Native group to claim Central Texas as their ancestral homeland are the Tonkawa. However, to say that the Tonkawa are an indigenous Central Texas tribe is an oversimplification. Although historic maps show that the Tonkawa (Tancoa) lived in western Oklahoma and Southern Kansas during the early 1600s (Vehik 1986), several clan names are names linked to the Tonkawa refer to ethnic groups from east-central and south Texas (Johnson 1994a:406). It would behoove researchers to think of the Tonkawa as an amalgamation of several ethnic entities that are now considered Tonkawa one or more of which had their origins in Central Texas.

Fort Hood lies just north of the expedition route postulated for de Soto-Moscoso in 1542 (Bruseth 1992), so encounters between the Natives and the Spanish may have occurred in the vicinity. Artifacts and sites dating to this contact period may be in the Fort Hood region and help document these early expeditions and contribute data to address the ethnology of Central Texas groups.

Because the focus of our investigations was contractually limited by Fort Hood to "prehistoric" archeological sites, no resources dating to the historic period are here treated. These resources have been separately investigated by Fort Hood

3.3 SIGNIFICANCE CRITERIA

At the start of our multiple-year, phased program at Fort Hood, there was no satisfactory research design in place to guide the investigations. Determinations of site significance, when attempted at all by previous investigators, had been based on unorganized and largely ad hoc sets of criteria, which while based on site integrity and generalized data potential, had not been developed within a research design focusing on gaps in the archeological knowledge of the region.

To remedy this situation, a new and comprehensive research design for Fort Hood was developed by TRC Mariah in 1993 (Ellis et al. 1994a). The research design integrates discussions of middle range theory and the nature of archeological context with a historical perspective of Central Texas archeological research. Based on these issues, the research design identifies key data gaps in the archeological record for Fort Hood, together with the data needed to address these. It then develops a detailed framework to guide future archeological research at Fort Hood. Despite the previous investigations and culture-historical framework outlined above (Sections 3.1 and 3.2), Ellis et al. (1994b) approach Fort Hood archeology as if it were new territory to be explored on the basis of limited prior information. The argument goes that by doing so from the outset, this method ensures that as little as possible is taken for granted, and that basic data from Fort Hood serves as the foundation for conclusions about prehistory at Fort Hood.

Under this argument, the research design develops two very different kinds of research domains: fundamental questions and substantive questions (Ellis et al. 1994a:100-172). Fundamental research domains address the basic issues which underlie archeological analyses, but which are usually glossed over or collapsed into other domains. Substantive domains include the (generally more interesting) topic areas which develop after basic culture-historical research has established fundamental foundations. The full research design includes 11 sets of fundamental questions and 19 substantive hypotheses. For readability, these have been organized below into four key domains, combining the fundamental and substantive questions. These delineate the criteria which were used to determine site significance. The ambitious reader is directed to the full research design for

substantial discussions of middle-range theory and especially for the amplifying details of the hypothetico-deductive approach, including full arguments of relevance and test implications.

3.3.1 Chronology

As a key domain, the research design identifies a series of questions dealing with chronological frameworks applicable to Fort Hood (Ellis et al 1994a:103-109). These questions involve the identification and temporal refinement of cultural sequences through the use of temporally diagnostic marker artifacts and chronometric assays of stratigraphically controlled samples from cultural and noncultural contexts. Key data sets include:

- temporally diagnostic artifacts in primary contexts;
- artifacts and associated materials amenable to chronometric assays; and
- stratigraphic sequences of distinct depositional units.

3.3.2 Paleoenvironment

In a second research domain, the research design develops a series of questions which bear on paleoclimatic reconstruction, paleotopography, and paleoecology (Ellis et al. 1994a:110-117). Broadly, the research design argues that understanding the difference between available and selected resources (and the changes in these over time) is critical to understanding hunter-gatherer adaptations. Key data sets include:

- climatically sensitive plant and animal (vertebrate and invertebrate) species;
- pedogenic carbonate nodules and speleothems;
- pollen and phytoliths in noncultural settings; and
- stratified noncultural depositional sequences with soil organic matter.

3.3.3 Prehistoric Subsistence Strategies

A third domain calls for identifying and quantifying variability in food-getting behaviors (Ellis et al. 1994a:117-121). In addition to identifying the variety of culturally selected resources (and changes in these over time), these questions call for refinement of our understanding of the diversity in subsistence behaviors through studies of resource seasonality, prey age/sex selection, butchering patterns, and processing methods. Understanding variability in patterns of resource selection and utilization allows substantive research into the more subtle questions of social structure. Key data sets include:

- pollen and phytolith samples;
- macrobotanical assemblages;
- faunal assemblages;
- human bone;
- chemical residues on artifacts;
- coprolites; and
- food-processing features.

3.3.4 Prehistoric Technologies

A final research domain encompasses several questions dealing with identification of the technologies involved in food-getting (Ellis 1994a:121-126). These questions focus on variability in the dual processes of tool manufacture and tool use, including the selection among alternative raw materials, their respective performance properties, methods of tool construction, and patterns of tool use. Key data sets include:

- manufactured lithic tools;
- manufacturing waste;
- use-modified lithic tools;
- distinct and identifiable raw materials; and
- nonlithic tools (including ceramics).

3.3.5 Implementing the Significance Criteria

The current investigations are a "testing" phase in the sense that they test site integrity and data

potential. They have not been intended by the US Army, nor designed by TRC Mariah, to recover substantive scientific data with which to actually address specific hypotheses. Rather, as called for under Section 106 and its implementing regulations, the current testing work has been narrowly designed to determine site significance, and hence NRHP eligibility, by matching (testing) the site against the predefined significance criteria. For each site, the empirically demonstrated data sets are matched against the data needs delineated in the general research design. In general, sites with multiple key data sets are identified as significant and are recommended as NRHP eligible, while sites lacking these key data sets are identified as not significant and are recommended as not NRHP eligible.

For each site, the final assessment of significance was reached only at the conclusion of all laboratory work, including the analyses of radiocarbon assays (see Chapters 4.0 and 7.0). Nonetheless, as excavations progressed on each site, it oftentimes became clear whether or not the weight of (field) evidence was leaning towards significance. Some sites quickly were demonstrated to be intact and to contain data-rich deposits, while others were revealed to be no longer in primary context or to contain only sparse data sets. Because contractual delivery orders required that testing cease when site significance could be confidently demonstrated, a mechanism was therefore required which would permit (at least, initially) eligibility determinations while in the field. This mechanism was the concept of "red flag" data sets. Explored to a preliminary degree in the Fort Hood research design (Ellis et al. 1994b:11-12), the concept was refined during the current testing phase to denote those directly observable data sets which immediately and unequivocally demonstrate NRHP eligibility while still in the field, and prior to full analysis. As such, they are sufficient data sets in and of themselves, and further testing would be redundant and destructive. A distillation of the research design's data needs identified four distinct criteria which would denote significant research potential: (1) macroscopically visible organic remains (charcoal, bone, seeds, shell) in a primary, thin-bedded, and stratigraphically discrete context; (2) multiple and stratigraphically discrete cultural occupations with high chronometric potential as evidenced by abundant charcoal or hearths with fired substrates or in situ burned rocks; (3) human bone in undisturbed contexts; and (4) buried Paleoindian or Early Archaic components in primary and nondisturbed contexts. While the relevance of the first two items to the key data sets outlined above is immediately obvious, some discussion is warranted for the latter two items. First, human bone is a key data set which can bear on questions of prehistoric subsistence strategies (via paleopathology and/or isotope analysis, for example). However, for nonscientific reasons (chiefly related to the Native American Graves Protection and Repatriation Act of 1990 [NAGPRA]), the policy of Fort Hood was to assume that any context with human remains denoted site significance. Secondly, because the research design identified that major data gaps broadly existed for the Paleoindian and Early Archaic periods, any data from these periods was assumed to be exceptionally valuable.

4.0 METHODS

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In this chapter we discuss the archeological methods we used to collect and analyze data from the 56 prehistoric sites. By and large, the methods we employed on the sites in this report are virtually identical with those we used during our earlier season of testing (see Mehalchick and Trierweiler 1995:39-71). Nonetheless, all methods are again presented in the current chapter in order to present the reader with a self contained report.

The approaches discussed below were the default procedures used on all sites. Occasionally, changes were warranted because of conditions on specific sites (e.g., trenching restrictions due to endangered species habitat, or discarding and not screening backdirt from looter pits). Such changes are addressed in the general sense below and in detail in the individual site discussions in Chapter 5.0.

The primary objective of testing was to collect limited and closely targeted data sets on each site with which to assess overall research potential and consequent NRHP eligibility. In this regard, each site could conceivably be treated individually, without much consideration for other sites, and without much thought for the long-range potential to the regional database. Indeed, on smaller projects, on proximate but unconnected projects, and on sporadically funded projects, testing more often than not proceeds without regard to overall data comparability. This is perhaps one of the chief failings of CRM archeology as it is currently implemented in the United States - although it has created much opportunity for lively debate and re-interpretation of previously published data. However, we recognized the testing program at Fort Hood to be a rare opportunity in which the immediate, short-range CRM compliance needs (i.e., significance assessments of individual sites) could be satisfied together with the broader, long-term potential of significantly developing the regional data base. Accordingly, a very strong emphasis was put on ensuring rigor, consistency, and comparability of methods, between different excavators and analysts, between different sites, between separately funded delivery orders, and between the successive field seasons.

This chapter is organized into four primary sections. First, methods used in the field are discussed, including backhoe trenching, manual excavation, site mapping, and preparation of preliminary letter reports. Next, laboratory methods are reviewed, including initial processing and cataloging, flotation, attribute recordation, and preparation for curation. The third section discusses methods of analysis, including those conducted on artifacts, on chronometric samples, and on biotic materials. Lastly, a final discussion summarizes the measures taken to ensure replicability and comparability of all primary data and the conclusions based thereon. This section discusses the program of quality control, including the development of the field manual, the control checkpoints, and the appointment of the independent quality control officer.

4.1 FIELD METHODS

As has been discussed in the previous chapter, the immediate goal of testing was to evaluate the eligibility of each of the 56 prehistoric archeological sites for inclusion in the NRHP. Eligibility was evaluated under the current research design for Fort Hood (Ellis et al. 1994b). In general, sites having data sets which could be used to address gaps in the regional knowledge were determined to be significant and eligible for inclusion in the NRHP. These sites were recommended for immediate protection and avoidance, or for mitigative data recovery if protection and avoidance was not possible. Sites without such data sets were determined to be not significant and ineligible for NRHP inclusion. No further management was recommended for such sites.

By and large, testing was focused on specific, and spatially delimited, areas of the site which our earlier investigations had delineated as separate "management units" (see Trierweiler 1994). All testing was subsurface in nature; in no case was any testing conducted on surface assemblages within areas previously designated as Lithic Resource Procurement (LRP) areas.

4.1.1 Level of Effort

The 56 sites included in the current study are derived from those for which previous investigations could not reach a clear determination of either "eligible" or "ineligible." This set of sites included 59 sites in the "heavy" impact areas and 117 sites in the "moderate" impact areas (Jackson 1990). The 56 sites were selected for testing by Fort Hood and were issued in four individual delivery orders of 14 sites each. These delivery orders suggested a predetermined number of backhoe trenches and test pits for each site, but allowed for reallocation of total effort between sites. We had previously shovel tested 54 of the sites and for nearly all of these, the level of suggested testing effort matched that which had been recommended at the conclusion of the shovel testing phase (Trierweiler 1994: Appendix A).[1] In aggregate, 169 test pits and 126 backhoe trenches were recommended for the 56 sites. Delivery orders assumed that test pits would be, on average, 1 m deep. As a result, 169 m^3 of manual excavations were projected.

The overall level of field effort is summarized in Table 4.1. On all sites, excavation ceased when NRHP eligibility was clearly demonstrated, or when the targeted level of effort had been achieved. All 56 sites received hand dug test pits. A total of 158 test pits was manually excavated, for an average of 2.8 test pits per site. Two sites received seven test pits each (41BL844 and 41VCV240) while nine sites had a single test pit each. Most of the latter sites were sinkholes or rockshelters with spatially constricted deposits. A total of 185.05 m^3 was hand dug, for an average of 3.30 m^3 per site, and ranging from 11.4 m^3 on site 41CV317 (an open site with deep alluvial deposits) to a minimum of 0.2 m^3 on site 41CV901 (a rockshelter in which an intact and shallow human burial was discovered in the first test pit). While 11 fewer test pits (7%) were dug than expected, total manually excavated volume exceeded the projections by 16 m^3 (9%).

Of the 56 sites, only 37 received backhoe trenches (see Table 4.1). The remaining 19 sites included rockshelters where trenches were impractical and open sites in threatened and endangered species preserves where trenching was prohibited. Whereas only 129 trenches had been recommended by Fort Hood, a total of 187 trenches was actually dug, for an average of 5.1 per site. This effort exceeded that projected in the delivery orders by 48%. The number of trenches ranged from a maximum of 16 trenches on two sites (41CV117 and 41CV378) to a single trench each on three sites (41CV184, 41CV380, and 41CV493). Using trench length, width and depth, the total mechanically excavated volume is roughly estimated as approximately 3,517 m^3. Volume averaged 95 m^3 per site and ranged from 360 m^3 on site 41CV117 (16 trenches up to 3.7 m deep) to a minimum of 8 m^3 on site 41CV380 (one shallow trench).

4.1.2 Endangered Species Coordination

Portions of the Fort Hood military reservation contain endangered species habitat or are in protected areas with ongoing environmental studies. Before undertaking excavations on any

[1] The final two sites (41CV1471 and 41CV1472) were originally recorded by Texas A&M University in 1990 and had been recommended for testing, but no level of effort had been suggested (Carlson, Dockall, and Olive 1994:70-71). For these two sites, an arbitrary number of test units was suggested by Fort Hood, but after inspection of the two sites by the Geomorphologist and Field Supervisor, we suggested a more appropriate level of testing effort and was this was accepted by Fort Hood.

site, a representative from the Fort Hood Environmental Management Office, Natural Resources Branch was apprised of all site locations. Approval to proceed with trenching was sought to avoid adverse impacts to sensitive wildlife areas. In most cases, approval was granted on the basis of location maps and aerial photo sheets. However, in some cases (particularly those sites on colluvial slopes and benches in or near the protected habitats) a field check by a Natural Resources Branch representative was needed. At site 41CV47, permission to trench was denied due to the site's location on a mid-slope bench within a Black-capped Vireo habitat. In addition, trench placement was restricted to previously cleared areas on five sites (41CV44, 41CV378, 41CV379, 41CV380, and 41CV481). In all cases, approval was given for the manual excavations. Excavation crews were made aware of these sensitive habitats and acted accordingly to minimize disturbance to trees and brush.

4.1.3 Mechanical Trenching

Thirty-seven of the 56 sites were tested with a total of 187 mechanically excavated trenches. Rockshelters and sites which contained shallow deposits (usually less than 80 cm) had not been recommended for trenching. The purpose of mechanical trenching was to:

1. assess site stratigraphy and depositional history;
2. investigate the depth and extent of cultural deposits; and
3. facilitate access to deeper deposits for manual excavation.

Trenching was conducted by personnel of the Fort Hood Maintenance Division, Pavement Section, under the direction and supervision of our archeologist and/or geomorphologist. Duties of this team included determining trench locations and dimensions, monitoring the backhoe while in operation, and examining profiles. The geomorphologist profiled and described trench exposures on a standardized field exposure description form (see Appendix B), and at times

Table 4.1 Summary of Overall Level of Effort for 56 Sites.

	Targeted		Excavated		Volume	
Site	TP	BT	TP	BT	TP (m^3)	BT (m^3)
41BL431	2	0	2	0	1.4	-
41BL504	2	0	1	0	0.7	-
41BL531	2	0	2	0	1.1	-
41BL560	4	0	5	0	3.6	-
41BL773	2	0	5	0	2.6	-
41BL844	2	0	7	0	5.0	-
41BL850	3	2	2	4	2.5	18
41CV44	4	1	3	2	2.3	63
41CV45	0	6	2	11	2.4	68
41CV46	6	4	4	6	4.4	126
41CV47	2	2	2	0	1.8	-
41CV48	3	2	3	7	4.2	237
41CV71	0	3	1	0	0.3	-
41CV88	4	1	2	4	3.5	84
41CV90	6	6	4	10	7.7	213
41CV98	2	1	2	2	2.9	41
41CV99	2	1	2	0	3.2	-
41CV115	2	0	2	0	1.3	-
41CV117	6	10	4	16	3.3	360
41CV125	2	3	2	0	0.7	-
41CV184	5	2	2	1	5.4	150
41CV201	4	4	2	6	2.0	24
41CV240	10	2	7	5	5.5	102
41CV271	3	3	1	2	2.0	35
41CV317	8	0	6	6	11.4	130
41CV332	2	1	3	2	3.0	30
41CV378	3	2	4	16	5.4	241
41CV379	0	3	4	2	3.5	37
41CV380	2	1	1	1	0.5	8
41CV389	2	3	2	5	4.9	210
41CV397	3	2	4	4	6.3	37
41CV403	6	6	3	8	3.7	107
41CV478	2	0	4	0	2.7	-
41CV481	4	4	4	3	6.4	128
41CV484	2	3	2	5	2.5	69
41CV493	2	1	2	1	1.0	11
41CV495	2	3	5	7	5.8	96
41CV582	2	3	2	3	6.5	134
41CV849	2	2	2	2	2.5	13
41CV900	8	8	4	9	5.5	184
41CV901	2	0	1	0	0.2	-
41CV905	4	0	5	0	6.6	-
41CV913	2	1	2	2	2.5	26
41CV918	2	2	2	2	4.5	51
41CV927	2	2	1	3	2.0	89
41CV935	2	0	2	0	0.4	-
41CV936	2	0	2	0	0.9	-
41CV1033	2	4	4	6	5.4	82
41CV1080	2	0	1	0	0.9	-
41CV1129	6	2	5	8	7.5	168
41CV1165	2	0	2	0	1.3	-
41CV1166	1	0	1	0	0.4	-
41CV1378	0	3	1	3	0.8	25
41CV1403	2	2	2	4	0.8	28
41CV1471	4	0	3	6	6.1	80
41CV1472	6	15	3	3	3.6	13
Total	**169**	**126**	**158**	**187**	**185.1**	**3,517**

sketched a generalized cross-section of a site based on the exposed profiles.

As warranted, diagnostic artifacts and special samples (e.g., charcoal) were collected from trench profiles. These collections were point provenienced and assigned an appropriate provenience number (P#) on the field catalog form (Appendix B, Form 10). In addition to any recovered material, each trench was assigned a separate P#. The archeologist numbered each trench sequentially beginning with 1 (BT 1, BT 2, etc.), sketched trench locations on the site map, and placed a wooden stake, marked with the trench number, adjacent to the corresponding trench. A master list of treatment units (Appendix B, Form 19) noting all trenches, with their locations, dimensions, and any general observations, was also recorded by the archeologist.

The target level of effort (i.e., the number, and occasionally the placement, of trenches) had been developed on the basis of previous investigations. Thirty-nine sites had been recommended for trenching. However, the level of effort was often revised based on recent exposures of cultural deposits or revised assessments of adequate coverage. One of the more significant modifications resulted from the fact that the level of trenching effort recommended in the shovel testing phase reports was typically based on a projection of trenches needed to clarify site stratigraphy, as opposed to those necessary to adequately prospect for buried archeological components. As a result, on 24 of the 39 sites we dug more than the recommended number of trenches. On six sites the number dug equaled the number recommended, and on nine sites, determination of NRHP eligibility was accomplished with fewer than the recommended number of trenches. Of these, one site was physically inaccessible another was much smaller than had been previously recorded, and permission to trench was denied or areally restricted on the remaining seven sites.[2] On these sites, we consulted with the Fort Hood Staff Archaeologist and were directed to reallocate the level of effort towards more manual excavations as partial compensation for the lack of trench exposures. Finally, trenching was conducted on two sites (41CV317 and 41CV1471) which had not been previously recommended for trenching.

4.1.4 Manual Excavation

The 56 sites were also investigated with a total of 158 manually excavated test pits. The primary objectives of this task were to:

1. examine and document subsurface stratigraphy;
2. investigate subsurface features;
3. recover a representative assemblage of subsurface artifacts for detailed analysis; and
4. recover samples for dating and other assays.

As with trenches, a targeted level of effort (i.e., number of test pits) had been projected on the basis of the shovel testing recommendation. However, our delivery orders mandated that "when it can be confidently determined that the site is eligible for the National Register, excavation at that site shall cease." In practice, this meant that under certain well defined conditions, excavation was stopped before the suggested number of test pits was attained. However, because many sites were deeper than 1 m (the standard unit of measure for a test pit level of effort), the total excavated volume actually exceeded that originally suggested by the four delivery orders.

[2] Trenching was recommended but could not be conducted on sites 41CV47, 41CV71, 41CV99, and 41CV125. While permission to trench on 41CV99 was granted by the Natural Resources Branch, the site proved to be physically inaccessible for the backhoe. The only potential route to this site would have necessitated bulldozing a road cut across a major drainage. This was considered to be a greater adverse impact to the environment that was warranted by the potential information return from trenching.

4.1.4.1 Open Sites

For methodological purposes, we defined "open sites" to include all types except for rockshelters and sinkholes/caves. In general, the following excavation methods were standard on open sites. Test pit locations were determined by the Crew Chief, after consultation with the Geomorphologist and Field Supervisor. The units were plotted on the site maps and listed on Form 19 (Appendix B). Often, test pits were offset from backhoe trenches above apparent features and/or possible buried cultural components which had been exposed in the trench profiles. On sites with no trenches, and where portions of the site were inaccessible to the backhoe, isolated test pits were placed in areas appearing to have the greatest archeological potential. Such isolated pits were usually oriented to magnetic north. These locales were based on previous investigations, shovel testing recommendations, and further inspection of the site.

Most often, test pits measured 100 x 100 cm (1 m^2), but under special circumstances, dimensions varied. For instance, a unit might measure 130 x 100 cm so as to fully encompass a feature exposed in a trench wall. Test pits (TP) were numbered consecutively beginning with 1 (TP 1, TP 2, etc.) or with the next available number if test pits had been dug on the site during the shovel testing phase. The highest corner of each test pit was designated the unit's datum for elevation control. This corner was marked with a wooden stake labeled with the test pit number. All units were excavated in arbitrary 10 cm levels below ground surface. Obviously disturbed sediments and recent flood deposits were removed unscreened (but, diagnostics were collected if observed). Otherwise, all matrix was dry screened through quarter-inch mesh hardware cloth and all cultural items were collected except for burned rocks and non-hinge mussel shell fragments. Burned rocks were counted, weighed, and then discarded. Recent artifacts (often military) were counted and noted, but were not collected. Charcoal (for radiocarbon assay) and a sample of land snails (for epimerization assay) were collected whenever present.

Whenever possible, we excavated units to bedrock or to sediments which were clearly not of culturally relevant age. However, many sites contained Holocene deposits greater than 3.5 m thick, and very deep test pits were dug for specific purposes on sites, such as a feature exposed at 400 centimeters below surface (cmbs) in a trench profile. Occasionally, such very deep units were begun below the modern ground surface on a safety bench within a trench.

Depending on type of feature, we used various excavation techniques. Units placed on burned rock mounds and midden deposits were excavated in arbitrary 10 cm levels below the modern ground surface, with a flotation sample (typically 5 liters) recovered from each 10 cm level excavated within the feature. Discrete features, such as hearths or burned rock concentrations, were removed as cultural units. Hence, a basin-shaped hearth encountered 95 to 107 cmbs would be removed as a single, separate entity from the remainder of the test pit comprising the non-feature fill. The area not encompassed by the feature would continue to be excavated in arbitrary 10-cm levels below surface. When possible, separate charcoal, snail, and flotation samples were removed from the feature fill. The amount of matrix removed for flotation was usually contingent on feature size and internal morphology; however, a 5-liter sample was the standard. Features were photographed, a standard feature form (Appendix B, Form 20) was completed, and planviews and were profiles drawn. In addition, a videotape recording of the feature was made whenever possible.

For each 10 cm level, we completed an excavation level record (Appendix B, Form 8). These are on acid-free, archivally stable paper and the originals are on file at Fort Hood. Each separately treated provenience received an appropriate reference number (the P#) on the field catalog (Appendix B, Form 10). This included any 10 cm level, or portion thereof, that was removed unscreened, in

addition to so-called "air levels."[3] Each 10-cm level of a test pit received one unique P#; however, if any level was subdivided or if some section of the provenience was somehow treated differently, then each distinct portion of the level received separate P#s. For example, if a 10-cm level contained a hearth and a ceramic sherd not in the hearth, then the general 10-cm level fill might be assigned P# 123, while the feature fill and the point-plotted artifact might be assigned P# 124 and P# 125, respectively.

For each test pit, we completed an artifact frequency distribution form (Appendix B, Form 26) on the basis of rough field counts. This form consisted of a table listing all observed items (collected or not) and their frequencies for each 10-cm level. Any features were also noted on Form 26. As appropriate, other records were completed including planviews and profiles of test pits and descriptions of unexcavated features. In addition, each site was photographed using panchromatic negative and color positive still-films and was taped using VHS-C cassette videotape.

Backfilling of all trenches and test pits was done by the backhoe after all manual excavations on a site were completed. An archeologist monitored backfilling and ensured that the ground surface was leveled and returned as near as possible to its pre-excavation conditions. Occasionally, isolated test pits were backfilled manually. Generally, the wooden stakes marking trench and test pit locations were left in place.

4.1.4.2 Rockshelters

The excavation techniques we employed in rockshelters were generally comparable to methods used on open sites except for the following differences. Test pits were located in areas of greatest potential and least disturbance based on previous work, present observations, and pin flag probes. Test pits were designed to be most conducive to excavation and usually measured 100 cm square; orientation of pits varied widely, depending on the shelter size and configuration. On two sites (41BL844 and 41CV905) with multiple shelters we also tested an additional, previously unknown, shelter because these were thought to contain potentially intact deposits.

Occasionally, test pits were excavated in accordance to natural topography rather than arbitrary 10 cm levels. From each 10 cm level, a 25 cm x 25 cm area from one quadrant was typically removed en masse as a flotation sample, and a 50 cm x 50 cm quadrant was dry screened in the field through 1/8-inch mesh hardware cloth. The remaining matrix was dry screened through 1/4-inch mesh. Thus, at least three separate P#S could be assigned for each level (i.e., the float sample, artifacts from the 1/8-inch screen, artifacts from the 1/4-inch screen). Artifacts noted in the 1/4-inch and 1/8-inch screens were recorded separately on the excavation level record. Those units placed outside the protected portions of the shelter (beyond the dripline) were excavated according to the standardized open site procedures. Whenever possible, excavation was terminated only upon encountering bedrock across the entire unit. For the majority of rockshelters, the geomorphologist made at least one inspection to interpret stratigraphy and complete appropriate data forms. In a few cases, a geomorphologist's visit to the shelter was not feasible because human remains were encountered, recorded, immediately reinterred, and no further work was undertaken. After completing all appropriate work in each shelter, the excavations were manually backfilled.

4.1.4.3 Sinkholes and Caves

Sinkholes and caves at Fort Hood are under the jurisdiction of the Environmental Management Office, Natural Resources Branch in cooperation

[3] An example of an air level would be a test pit placed on the safety bench of a trench in which the actual excavation began at 90 cmbs (level 10). In this case, levels 1-9 (air levels) would each receive a unique P#, but the total excavated volume *did not include* these levels.

with other agencies. At the time of our fieldwork, the Natural Resources Branch was conducting ongoing surveys of sink holes and caves. The surveys were intended to develop an inventory of sinkholes and to study their associated biological resources. As with sites in the endangered species habitats, we coordinated with the Natural Resources Branch for the two cave and sinkhole sites ("Bat Cave" at site 41CV71, and "Fern Cave" and "Western Cave" at site 41CV1165).

4.1.4.4 Human Remains

At the request of Fort Hood, the discovery of human remains was treated as a special circumstance which bypassed normal excavation procedures. Upon the confirmation of human remains, we stopped excavation and completed any recordation, including sketch mapping, photography, identification of skeletal elements, and videotaping. The human skeletal material was reinterred together with associated cultural material and we backfilled the unit. Finally, we notified the Fort Hood Staff Archeologist as soon as possible (generally, the same work day). In some cases, we were directed to resume excavation in other (uninvestigated) portions of the site, especially if the human remains were not thought to be an in situ burial. In other cases, intact burials were considered to contain sufficient research potential to demonstrate site significance (see Section 4.1.5 below) and no further excavation was conducted on the site.

4.1.5 Assessment of Site Significance

Borrowing the judicial notion of "innocent until proven guilty," we generally considered each site to be significant and worthy of avoidance and protection until it was demonstrated otherwise. This approach would tend to suggest that we should keep digging until some "fatal flaw" was discovered. However, for each site, a targeted level of effort (in terms of TPs and BTs) had been projected by Fort Hood prior to excavation. We were further directed to cease excavation when the research significance of a site could be confidently established, even if the targeted level of effort had not yet been attained. On each site then, excavation proceeded until the specified target number of test pits (or an equivalent volume) had been excavated, or the site had been clearly and unequivocally shown to be significant and NRHP eligible under the Fort Hood research design. The latter situations were referred to as demonstrating "red flag" data sets.

Red flag data sets were defined as those which immediately and unequivocally demonstrated research significance and NRHP eligibility, while still in the field, and *without the need for formal lab analysis* (Mariah Associates 1993). As such, they were sufficient data sets in and of themselves, and further testing would be redundant and destructive. Based on the research design for Fort Hood (Ellis et al. 1994) the following four field observations were defined as red flags: (1) organic remains such as charcoal, bone, or macrobotanicals in a primary, thin-bedded, and stratigraphically discrete context; (2) multiple and stratigraphically discrete cultural occupations with high chronometric potential as evidenced by abundant charcoal, hearths with fired substrates, or similar data sets; (3) buried Paleoindian or Early Archaic components in primary and non-disturbed contexts; and (4) human bone in a primary and non-disturbed context. If any of these conditions were observed in the field, the Crew Chief, the Field Supervisor, and the PI met on site and discussed whether significance was clearly and unambiguously demonstrated for the site. Typically, field testing was shifted to other sites while the issue was unresolved. If all agreed that significance had been demonstrated, then fieldwork was terminated for the site. In other cases, field crews were directed to return to the site and conduct further excavations.

For each site, the assessment of significance was developed in a preliminary letter report. These reports were presented to Fort Hood within about 30 to 60 days following completion of fieldwork, in advance of detailed laboratory analysis or sample assays. On the basis of fieldwork, sites were judged to be either significant and

recommended as eligible for inclusion to the NRHP, or were judged not significant and recommended as not eligible for inclusion. All eligibility recommendations were according to criterion "d" (36 CFR 60). On occasion, these preliminary assessments were later reversed on the basis of the detailed artifact analyses and sample assays. For example, on the basis of field observations, we thought that rockshelter site 41BL531 might retain some intact deposits beneath 60 cm of clearly vandalized spoils. Although no red flag was present, and the site was considered to have borderline research potential, it was evaluated as NRHP eligible in our preliminary letter report (Abbott, Kleinbach, Peck, and Trierweiler, 1995), pending further analysis. Subsequently, a radiocarbon assay on charcoal from 60 to 70 cm returned a date of modern (see Section 5.3), demonstrating that even the deeper deposits were mixed as well. As a result, we changed the recommendation for this site from eligible in the preliminary letter report to not eligible in this final report.

4.1.6 Site Mapping

All open sites were mapped using an electronic total station mapping system. This task was performed by a subcontractor, accompanied by our staff archeologist. A site sketch map was provided and the archeologist assisted the mapping team in identifying the site area and key points (test pits, trenches, drainages, etc.) to be mapped. Where certain portions of very large sites had been previously evaluated as not eligible, these portions were not further mapped or were partially mapped. On each site, a 5/8-inch iron rod was established as a permanent datum and topography was delineated relative to this arbitrary elevation. At rockshelters and sinkholes/caves, electronic maps were not prepared, but the existing plans and profiles were manually amended (or new sketches were drawn) by an archeologist and/or geomorphologist. Using AutoCAD 12, we edited the maps prepared by our subcontractor for accuracy and consistency. All final site maps included natural topography, site and/or subarea boundaries, archeological excavations, cultural features when appropriate, and natural or manmade landmarks.

4.2 LABORATORY METHODS

Our laboratory methods for this work phase were nearly identical to those used in the previous NRHP testing (Abbott and Trierweiler 1995:47-56). Laboratory work occurred in two phases: preliminary processing in the field laboratory in Killeen, and subsequent final processing, detailed recording and analysis, and preparation for curation in our main archeological laboratory in Austin. We began the preliminary processing as soon as artifacts were recovered. The objective was to ensure that information accompanying the artifacts contained the proper field information and that this information would not be lost during transport to the main laboratory. Once NRHP testing was completed at a site, the artifacts were sent to our main laboratory where they were cleaned, cataloged, and analyzed. Laboratory processing and analysis for the 56 sites began in September 1994 and was completed in September 1995.

4.2.1 Initial Processing

While in the field, all artifacts and samples were assigned an arbitrary Provenience Tracking Number (P#) based on their horizontal and stratigraphic provenience. Different classes of material (e.g., bone, lithic debitage, projectile points, charcoal) found within a single provenience, while receiving the same P#, were bagged separately and were placed within a larger plastic bag with an acid-free, archivally stable tag containing the full provenience data, P#, excavator's name, and date. Soil samples were doubled bagged to ensure against damage and/or contamination. P#s generally represented 10-cm levels within a testing unit, however, unique numbers were assigned to point-plotted artifacts and to samples taken from specific portions of a unit. All artifacts and samples were tracked using the bag label and the field inventory (Appendix B, Form 10). On rainy days, when field work was not possible, artifacts were cleaned (but not

cataloged) in the field laboratory. Further processing was conducted in the Austin laboratory after testing was complete at any given site. This stage consisted of cleaning, stabilization, and cataloging.

Following the guidelines specified in contract Technical Exhibit #1, artifacts and samples were assigned an accession number based on their horizontal and stratigraphic context. Each accession number consisted of three parts. The first part was a single-digit code for the county in which artifacts were recovered (1=Coryell County; 2=Bell County). This digit was followed by the Smithsonian site number (without the state and county designators). The third part was a unique specimen number assigned to a specific provenience and artifact class. Specimen numbers were assigned sequentially for each site beginning with 1 (or with the next available number if the shovel testing phase had recovered artifacts). Because artifacts collected by previous investigators at Fort Hood had not been assigned catalog numbers, these were not included in the newly assigned numbering system at the instructions of Fort Hood (Kimball Smith, Fort Hood, personal communication, 1993). For example, if our previous work on (fictitious) site 41BL9999 collected three projectile points from the surface and debitage from 12 subsurface proveniences, then the next specimen recovered would have been assigned the accession number 2-9999-16. Once assigned, this number was used for all artifact tracking and analysis purposes. Where multiple specimens of a given artifact class were recovered from the same provenience, all were assigned to the same accession number with the exception of projectile points and lithic tools which were given individual accession numbers.

4.2.1.1 Artifacts

All artifacts and discrete specimens were cleaned and stabilized using the procedures specified in contract Technical Exhibit #1: Treatment, Marking, and Delivery of Artifacts and Documentation. Cleaning involved removing adhering dirt by either washing the artifacts in warm tap water or by dry brushing. Flaked stone, groundstone, ceramics, mussel shell, as well as historic ceramics and glass were cleaned using water. Depending on its condition, bone was either dry brushed or quickly immersed in water, gently brushed, and then quickly rinsed. All artifacts from a single P# were cleaned or stabilized at the same time. Once dry, individual artifacts from each P# were placed in clean polyethylene bags along with identification tags produced on archivally stable, cardstock-weight paper.

Physical labeling of artifacts was restricted to projectile points, flaked stone tools, and other unique artifacts which underwent specialized analysis and/or illustration. The procedure placed a layer of PVA (polyvinyl acetate with acetone) on the artifact and allowing this to dry, writing the accession number on top of the PVA with black (or white) ink and then top-coating it with PVA. Pursuant to Fort Hood Archeological Laboratory standard procedures, labeling of individual pieces of debitage, bone, and shell was not done (Kimball Smith, Fort Hood, personal communication, 1992).

4.2.1.2 Flotation Samples

Flotation samples were left in the original field bags until they were processed. Flotation processing was done using a Flote-Tech® flotation system. This device is designed to quickly process soil for the purpose of recovering floral, faunal, and artifactual materials. Its dual water reservoirs house approximately 50 gallons of water that are filtered and recycled through the system so that multiple samples can be run using the same water, thus conserving water. Soil samples up to 20 liters in size are placed in a metal box with a "window mesh" (1/16-inch) bottom. The box is placed within the first reservoir where the sample is agitated by water jets forced upward under pressure through the soil sample. This forces lighter materials to float to the surface where they are carried over the top of the metal box and collected in a fine-mesh (1/48-inch) fabric filter.

The water is then housed in the second reservoir until the process repeats itself. The heavy fraction remains on the 1/16-inch mesh, where it is collected by inverting, and the fine mesh containing the light fraction is removed. The entire process takes approximately 5 to 15 minutes, depending on the clay content of the soil. After processing, both the heavy fraction and the light fraction were allowed to dry for at least 24 hours. Once dry, both fractions were collected in clean plastic zip bags to await sorting and analysis.

To emulate field recovery, the heavy fraction was further dry screened through nested 1/4-inch and 1/8-inch mesh screens. Artifacts, culturally affected materials, and other organics were removed from the 1/4-inch and 1/8-inch screens and assigned separate catalog numbers. This screening of the heavy fraction served two purposes: it facilitated separation of artifacts from the bulk heavy matrix, and it replicated the screening that was done in the field. The heavy fractions from features and other selected proveniences were later manually sorted to retrieve ethnobotanical materials, radiocarbon samples, and land snails. Macrobotanical remains were submitted for outside species identification and analysis (see Appendix B).

4.2.1.3 Charcoal Samples

In the field, when a concentration of charcoal was encountered, it was collected as a discrete sample to be used for dating. Charcoal samples were placed in aluminum foil pouches which were then placed in polyethylene zip bags with a provenience tag. Other charcoal samples were obtained in the lab from the heavy and light fractions of flotation samples. The flotation residues from promising contexts (i.e., features) were inspected, and individual pieces of charcoal were collected using metal forceps. In the lab, all charcoal samples were individually sorted under an illuminating magnifier to remove rootlets and inorganic matter. The macroscopically clean charcoal samples were then weighed on a digital balance to the nearest 0.1 g and stored in glass vials for assay or curation.

4.2.2 Recording Attributes

For each class of material, recording artifacts proceeded one P# at a time. After identification and classification of all artifacts in a given P#, each minimally identified analytical grouping of artifacts was separately bagged in a plastic zip bag, along with individual data tags. Later, the information recorded on the data tags was entered into a Data Base Management System (DBMS) developed by Wind-2 Software. Developed using Microsoft FoxPro® and operating on 486-66 PC computers, the DBMS is designed to provide a comprehensive and integrated framework for the design, collection, management, and analysis of archeological data from the research design phase through final curation. Artifact data was entered directly from the data tags and site and feature data were entered from primary field data sheets. Data was managed wholly within the DBMS and was manipulated and analyzed both within the program as well as via exports to Microsoft Excel® and Microsoft Access®.

The DBMS program allows for the custom design and error-trapped collection of both provenience data and formal attribute data for a nested series of three levels of information. For each level, attributes and their range of value states were custom designed for this project. The "macro-level" records data about sites or other supra-feature phenomena; the "meso-level" records information about features, localities, strata, or other supra-artifact phenomena; the "micro-level" records data about artifacts and samples.

The individual analysis tags ensured that quality control on the artifacts could be maintained and artifacts traced if any sorting or identification problems were later diagnosed. After artifact data was entered into the computer, a printout was checked directly against the artifacts and analysis tags. This ensured that the computer database was an accurate reflection of the data recovered. For this project, artifact provenience information, accession number, and detailed attributes were entered into the DBMS program and were linked

with the provenience and attribute data from the site and (if present) feature. Thus, data manipulation was possible on both inter-site and intra-site bases. After the provenience information was entered, artifacts were recorded by artifact class and individual artifact attributes were recorded for each artifact. For this project, classes included bone, shell, charcoal sample, ceramic, lithic core, lithic debitage, lithic tool, lithic point, ground/pecked stone, historic/recent, and others. Some classes were linked by a "superclass" to allow analysis of larger groupings (e.g., lithic tools and lithic cores and projectile points but not lithic debitage). Artifact classes and superclasses used during analysis are presented in Figure 4.1.

4.2.2.1 Chert Sourcing

During our earlier shovel testing phase, 17 chert types were identified and distinguished by differences in color, texture, structure, luster, and relative degree of opacity or translucency (see Trierweiler 1994:Appendix C). Some of the chert types had pre-existing folk names (e.g., Owl Creek Black, Fort Hood Gray). Names were given to the remaining types, and all types were arbitrarily designated as Types 1 through 17. The type numbers are suggestive of a spectrum of colors and chert textures beginning with the lighter cherts and extending into the darker gray and black cherts; the majority of the chert types fall within the tan, gray, brown, and gray-brown color range. During analysis, it became apparent that types 12 and 14 were not distinguishable, and these were consequently lumped together into Type 14, thus causing 16 final types. During our first season of NRHP testing, this chert typology was expanded to include 10 more types from the Cowhouse Creek area and one type from the Table Rock Creek area (Abbott and Trierweiler 1995: 52). Hence, our lithic analysis used a total of 27 distinct chert types.

Despite this extended typology, not all chert artifacts could be reliably assigned to one of the types and it was necessary to create several "indeterminate" categories for unidentifiable pieces, especially very small flakes. One major deterrent to accurate chert identification was the high degree of overlap in diagnostic characteristics among the chert specimens which fall at the far ends of the color/texture/luster spectrum for each respective type class. In addition, the presence of burning or patination on a chert piece often obscured the necessary diagnostic criteria. Rather than force a dubious specimen into one of the 27 chert types, use of the "indeterminate" types allowed some descriptive utility while ensuring maximum analytical replicability.

The visual identification of the different chert types among the Fort Hood lithics was oftentimes subtle; between some types, there are only subtle differences of color, texture, luster, or structure. The chert type for each individual lithic was determined by matching it with key specimens on the master chert typology board created for the project. This board contained the dominant specimen as well as the full known range of variation of each basic chert type. Pieces with an identifiable material type were assigned a number corresponding to one of the basic types and unidentifiable pieces were matched with the eight indeterminate chert types. To minimize subjectivity in material classification, source typing was performed as "blind" as possible by a single analyst who was largely unaware of site locations and chert sources, and thus was not tempted to weight identification of questionable artifacts—whether consciously or not—toward types that occur in the site area.

4.2.2.2 Lithic Debitage

In addition to raw material type, debitage from each provenience was classified according to debitage size, presence or absence of cortex, and presence or absence of burning. Size sorting for proveniences with abundant debitage was done with U.S.A. Standard Testing Sieves. After the chert pieces were typed and sorted, pieces with identical sets of attributes were counted and placed in bags along with analysis tags containing all pertinent data. This step was completed prior to

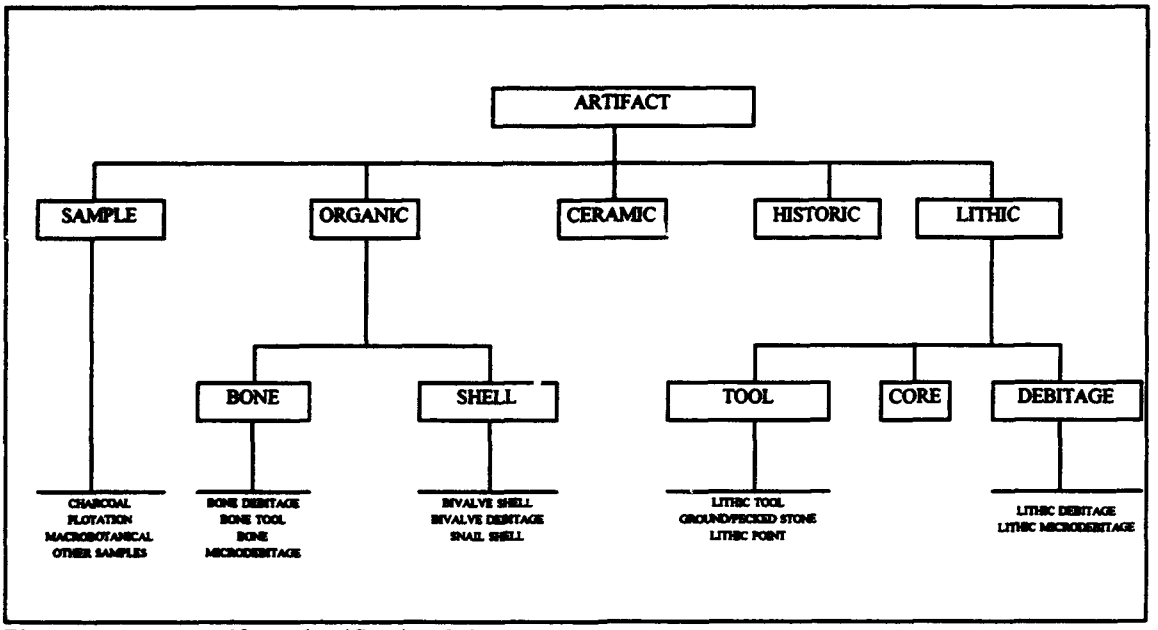


Figure 4.1 Artifact Classification Scheme.

data entry into the DBMS to facilitate quality control and troubleshooting in the lithic database. The analysis tags allowed us to check a questionable data entry by pulling the exact bag of lithics that corresponded with a given data record.

4.2.2.3 Lithic Cores and Tools

Recording of non-projectile point tools and cores followed the same procedures as for debitage, except that additional attributes that were observed and recorded. Attributes recorded for tools included the specific tool type (e.g., biface, drill, end scraper) and metric attributes (e.g., length, width). Tables 4.2 and 4.3 present the descriptive and metric characteristics used to record tools and cores, respectively. Three categories of cores and 20 categories of stone tools (chipped, ground, and hammer/abrader) are represented in the stone tool assemblage. In keeping with the "back to basics" approach specified in the Fort Hood research design (Ellis et al. 1994), previously defined and named Texas tool types were used only to provide a Lemmer ground. Where appropriate, implied functional morphological or technologically descriptive terms were used to supplement the typology and/or provide points at departure limit. These types are defined below.

Cores are defined as a mass of target material from which flakes have been removed. Cores are subdivided into *tested cobble*, *multiple platform*, and *single platform* pieces. The term tested cobble applied to cores that exhibited one to three flake scar removals. Multiple platform cores are best described as a multidirectional core with a variety of platforms and directions of removals. Single platform cores have flakes removed from one platform in only one direction.

The lithic tool class includes both formal and informal tools which exhibit unifacial or bifacial reduction or finishing and stereotypical *hammerstones*. The *biface* category is subdivided into a continuum of early, middle, late, and finished production stages. *Early stage bifaces* are usually distinguished by incomplete removal of cortex on both surfaces and minimal shaping. When viewed on end, the edges are very irregularly shaped; that is, having no clear center

plane. This stage approximates Collins' (1975) initial trimming, Callahan's (1979) Stage 2, and Sharrock's (1966) Stage 1. It can also be likened to Bradley's (1975) blank term.

The *middle stage biface* has some cortex remaining, although the tool may still retain a significant amount of cortex in isolated areas on the surfaces. The edges vary around a central plane that is becoming more distinguishable. The surface of the artifact and the edge may have isolated knots caused by repeated attempts to remove flakes that resulted in undercutting and isolation of a stepped area. This stage approximates Collins' primary trimming (1975), Callahan's Stage 3 (1979) and Sharrock's Stage 2 (1966).

The *late stage biface* may still have small remnants of cortex, but has sinuous edges clearly centered on a plane through the cross-section of the thinned artifact, and by a well-defined outline shape. The stage of manufacture is comparable to Collins' (1975) primary trimming, Callahan's (1979) Stage 4, and Sharrock's Stage 3 (1966).

The *finished biface* has no cortex, straight edges, defined outline and is completely thinned. Most specimens are thin, have little or no knots, a straight to slight sinuous edge and clearly ovate or triangular in outline shape. The finished biface definition is comparable to what Collins calls secondary trimming (1975), Callahan's (1979) Stage 5 (referred to as rough preforms), and Sharrock's (1966) Stage 4.

A *drill* is sometimes also termed a perforator in the literature; it is characterized by a long narrow blade that has been bifacially worked. The hafted (proximal) end, when present, may be significantly modified or left relatively untouched; no definite hafted tools were identified.

Choppers are large unifacially or bifacially modified edged specimens formed to produce a sharp working edge as opposed to a natural formed edge and distinguished from crushing/abrading

Table 4.2 Lithic Tool Attributes.

Attribute	Value
Lithic Material	27 named varieties
Tool Type	edge modified, utilized flake, end scraper, side scraper, complex scraper, spokeshave, graver, early stage biface, middle stage biface, drill, other tool, late stage biface, Chopper (Form A & B), Denticulate, Clear Fork Form A, Clear Fork Form B, Crushing/battering Tool
Fragment Type	complete, proximal, medial, distal, intermediate, wedge section, longitudinal segment
Breakage Type	burinated, burned, end-shock, impact, indeterminate, none, other, outrepas, perverse
Lithic Weight (g)	Numeric
Cortex Present	all cortex, partial cortex, no cortex, indeterminate, rejuvenation
Length (mm)	Numeric
Thickness (mm)	Numeric
Width (mm)	Numeric
Working Edge #1	Numeric
Working Edge #2	Numeric
Working Edge #3	Numeric

Table 4.3 Lithic Core Attributes.

Attribute	Value
Lithic Material	27 named varieties
Core Type	multiple platform, single platform, tested cobble
Weight (g)	Numeric
Length (mm)	Numeric
Width (mm)	Numeric
Thickness(mm)	Numeric

tools (Form A). A smaller form of chopper has a similar appearance forming a wedge type shape (Form B).

A *denticulate* is an implement bifacially or bifacially modified which has been retouched to produce a scalloped edge(s). *Gravers* are small beaked protrusions on implements that may have been unifacially or bifacially outline trimmed and cross-sectionally modified.

The *other tool* category was applied to specimens which have clear evidence of modification, but are striking enough to differentiate them from the minimally retouched and catch-all category of unifaces or bifaces. A *spokeshave* is distinguished by a relatively small notch-like indentation along one of its lateral edges. This notch may or may not have been produced bifacially.

A *utilized flake* is an implement that has been fortuitous produced through use, and is characterized by use scars less than 2 mm in size along its edges as contrasted to intentional retouch which is characterized by deep larger flake scars. The rule of thumb applied to differentiate edge modification (edge modified tool category) and utilization was the size of the flake scars, implements with 1 to 2 mm long and wide or longer scars were classified as retouched. Utilized flakes are considered the stereotypical expedient tools. No specific function was assigned to these two categories with many tasks undoubtedly represented.

An *end-scraper* is a unifacially or bifacially modified implement that has been significantly retouched along its distal end. A *side scraper* has one or more lateral edges retouched to produce working surfaces. A *complex scraper* has characteristics or both an end- and side-scraper. In a number of cases scrapers had been significantly shaped and retouched to produce a classic side and end-scraper morphology with the contraction of the implement just behind (proximal) to the working edge, and appear to have been hafted. Evidence of hafting is characterized by scarring and polishing along the proximal lateral edges. The complex scraper was used for tools exhibiting characteristics of both end and side scrapers.

The *crushing/battering* term was applied to stone implements that exhibit unifacial or bifacial shaping to produce an edge which has been subsequently crushed and dulled through use. These tools are similar to choppers, but have more rounded and/or stepped edges indicative of the edge impacting against a hard surface. This is in opposition to the Form A and B choppers which exhibit unifacial or bifacial edges without the crushing and rounding observed in the previous type. It is assumed that the Form A chopper was used with impact force to break objects (e.g., to extract bone marrow), whereas the smaller and more wedge shaped Form B, with more intentional shaping, may have been used with leverage or torque force to split apart objects (i.e., more of a wedge function).

A particular tool class commonly referred to as *Clear Fork gouges* and occasionally *Clear Fork tools* were identified. Turner and Hester clearly state (1993:246) "it is likely they were utilized in woodworking tasks, as scrapers or adzes, rather than 'gouges'." Use polish may or may not be present along the dorsal surface of the distal end and haft wear may also be present on the proximal end. These tools are morphologically similar to scrapers but may have more edge damage (stepped flake scars) resulting from use and the more acute lateral and distal edges. Two subsets of the Clear Fork Tool were identified here: Type A (gouges) and Type B (adzes). The stereotypical form of the Clear Fork tool is the Form A definition. While, the Form B usage is applied to what may function as adzes. A chipped stone adze, Clear Fork Tool Form B is distinguished by its unifacial or bifacial shaping reminiscent of that which is seen in scrapers; however, the relatively flat plane of the ventral surface shows use scarring and the dorsal surface is partially domed and in some cases has evidence of both scarring and polish at the high points of the steeply sloping surface.

4.2.2.4 Projectile Points

Of all artifact classes, we subjected projectile points to the most detailed and in depth analysis. A total of 28 attributes were recorded for each projectile point. These attributes focused on typology, morphology, and metrics.

All point typing was done by a single individual (Quigg). The collected points were compared to published descriptions and illustrations (Suhm and Jelks 1962; Jelks 1962; Sorrow et al. 1967; Weir 1976; Prewitt 1981a, 1981b; Turner and Hester 1985, 1993) and classified into currently existing types. Only the broadest type categories were used without any attempt to place points into proposed subdivisions, such as the three subdivisions (Eddy, Coryell, Sattler) of Scallorn points referred to by Jelks (1962). In instances where the distal end was the only remaining portion, this fragmented section was considered untyped, but was classified as either a dart or arrow point. In a few instances where points could not be confidently assigned to a particular existing type, they were labeled as untyped. In some instances, large unclassifiable stemmed or notched specimens were classified as "hafted bifaces" because of their overall size and or asymmetrical shape; some of the specimens classified as finished bifaces may actually be parts of projectile points. In instances where an insufficient amount of point was present to classify the point as dart or arrow, "other" point was used.

Morphology included identification of observable traits such as material type, flaking, breakage, notching, and general shape characteristics. Metric measurements were taken on all aspects of the points so that reconstructive measurements could be made. Table 4.4 presents the descriptive and metric characteristics recorded for lithic projectile points. These data were entered into the DBMS.

4.2.2.5 Ceramics

Attributes recorded for prehistoric ceramics included the sherd form (e.g., base, rim) and ware, if possible. Petrographic analysis was conducted on two sherds, from two visually different vessels. This matrix analysis was undertaken to facilitate identification of locally and non-locally produced vessels and identify preferences between the two vessels. Data were entered into the DBMS. Table 4.5 presents the descriptive and metric characteristics recorded.

4.2.2.6 Ground Stone

Recorded attributes included lithic material, tool type (e.g., *mano*) and weight.

4.2.2.7 Bone

Identification of bone was completed using the comparative skeletal collections at the Vertebrate Paleontology Laboratory at the J. J. Pickle Research Campus of the University of Texas at Austin. For each bone specimen, the minimum possible confidant taxon, and the skeletal element and laterality (symmetry), were identified. Observations were also made on the degree of completeness (or fragmentation), evidence of butchering or intentional modification, evidence of use as a tool (e.g., edge polish), and evidence of burning. The tabulated bone and shell data was entered into the DBMS. After identification, a few bone specimens were submitted for radiocarbon and/or isotope assays (see Section 4.3).

In accordance with standing policy at Fort Hood, no human bone was knowingly recovered in the field. When human bone was encountered, further work on the site ceased and recognized human bones and associated objects were reinterred (see Section 4.1, above). In a very few cases, small collected fragments were determined to be human during the laboratory identification. These specimens were immediately returned to the Fort Hood staff archeologist and no further analysis was performed.

4.2.2.8 Mussel Shell

Collection of mussel shell in the field was limited to those specimens which included an umbo

Table 4.4 Projectile Point Attributes.

Attribute	Acceptable Values
Lithic Material	27 named varieties
Type	Other Dart, Other Arrow, Andice, Bulverde, Castroville, Darl, Early Stemmed, Edgewood, Ensor, Ellis, Fairland, Frio, Godley, Hoxie, Lange, Marcos, Marshall, Martindale, Nolan, Palmer, Pedernales, Plainview, Travis, Wilson, Yarbrough, Wells, Bonham, Bulbar Stemmed, Perdiz, Scallorn, Cliffton, Sabinal
Fragment Type	Complete, Blade only, Stem only, Longitudinal segment, Barb, Blade and stem, Medial fragment, Part of blade and stem, Other, Proximal
Breakage Type	None, Perverse, End-shock, Impact, Other, Burinated, Indeterminate, Burned, End-shock/impact, Notched, Outrepas
Lithic Symmetry	Yes, No
Port. Reworked	Blade, Stem, Blade and barbs, Barbs, Blade and stem, none
Flaking	Minimal, Parallel, Random, Alternately Beveled, Other, Indeterminate
Serration	Yes, No
Cross-section	Diamond, Beveled, Plano-convex, Indeterminate, Wedge-shaped, Bi-convex
Basal thinning	Yes, No
Basal grinding	Yes, No
Notching	Basal, Basal/side, Basal/corner, Side, Corner, None, Indeterminate
Shape	Triangular, Expanding, Straight, Contracting, None, Indeterminate, Bulbar
Base Shape	Straight, Convex, Concave, Pointed, Indented, Notched, Other, Indeterminate
Shoulder Shape	Sloping, Rounded, Abrupt, Barbed, Extremely Barbed, Indeterminate, Not applicable
Tang Shape	Rounded, Pointed, Square, Indeterminate, Unknown
Max. Length (mm)	Numeric
Max. Width (mm)	Numeric
Max. Thickness (mm)	Numeric
Blade Length (mm)	Numeric
Blade Width (mm)	Numeric
Stem Length (mm)	Numeric
Stem Width (mm)	Numeric
Stem Thickness (mm)	Numeric
Neck Width (mm)	Numeric
Lithic Weight (g)	Numeric

(hinge); shells or fragment of shells lacking this diagnostic portion were noted on the level records but were not collected. Specimens with residual matrix attached were lightly brushed only when cleaning by hand was not sufficient to permit identification. No preservatives or glues were used.

Identifications were determined by keying out specimens (Burch 1973; Murray and Leonard 1962; Parmalee 1967; Starrett 1971) and then comparing them to our type collection collected from Fort Hood and from the O. H. Ivie Reservoir in West-central Texas (see Lintz, et al. 1993:253-255). Identifications were made on the basis of structural features, and then assigned to the lowest taxonomic level possible (Table 4.6). A 10x hand lens was employed to examine beak sculpture and to examine modified or potentially modified specimens. During recordation, specimens from each provenience were sorted by taxon into whole shell, umbo fragments, and non-umbo fragments.[4] Each specimen was coded for the following information: catalog number, field specimen number, quantity, taxon, side (symmetry), and burning or other modifications (i.e., drilled), and these data were entered into the DBMS

Table 4.5 Ceramic Attributes.

Attribute	Variable
Vessel form	Jar-Olla, Bowl, Indeterminate
Ceramic Class	Incised, Plain
Sherd Form	Body, Rim, Indeterminate
Firing Atmosphere	Oxidized, Reduced, Incompletely Oxidized, Incompletely Reduced, Zoned, Indeterminate
Sherd Thickness (mm)	numeric
Color-Interior	Munsell
Color-Exterior	Munsell
Color-Core	Munsell
Surface Treatment Interior Exterior	Polished, Polished/eroded, Indeterminate

4.2.2.9 Flotation Residues

Heavy fraction flotation residues were first gently sieved through 1/4-inch mesh to simulate recovery from field screens. Items larger than 1/4-inch were removed and included with the similar materials recovered from the field screens from the same level. The rest of the fraction was sorted into general material categories including lithic microdebitage, bone microdebitage, wood charcoal, and macrobotanical items. These classes were tabulated and bagged separately and data were entered into the DBMS. The remaining matrix from the heavy fractions was discarded.

Flotation light fractions from interesting contexts (i.e., features) were visually inspected, and individual pieces of charcoal were collected using metal forceps and weighed. Residue rich macrobotanical samples from selected proveniences were submitted for identification, and some of the charcoal from flotation samples were submitted for radiometric assay. In addition, every charcoal sample submitted for radiometric assay was also submitted for wood identification.

4.2.2.10 Pollen

Recent investigation into pollen and phytoliths from recent alluvial deposits across Texas (Bryant 1993; Dering 1993; Dering 1995:G-1) documented limited pollen diversity and concentrations and thus continue to support the overall notion that these

[1] Because only specimens having umbos were collected in the field, any non-umbo fragments were the result of damage in transit, and were therefore disregarded.

Table 4.6 Bivalve Taxa Identified from the 57 Sites.

Taxon	Common Name	Habitat
Amblema plicata	Threeridge	Still to rapidly flowing waters in streams and rivers; will tolerate most bottom conditions except deep sand
Amblema sp.	Threeridge family	same as *Amblema plicata*
Ambleminae	Threeridge family	same as *Amblema plicata*
Cyrtonaias sp.	Pearlymussel family	Rivers and streams; standing or flowing water; common on mud, sand, and gravel substrates
Lampsilis hydiana	Louisiana Fatmucket	Tolerates wide variety of substrates and flow conditions
Lampsilis teres	Yellow Sandshell	Still to moderately flowing water in rivers; muddy to gravelly substrates
Lampsilinae	Fatmucket/Pocketbook/ Sandshell family	same as *Lampsilis teres*
Lampsilis sp.	Fatmucket/Pocketbook/ Sandshell family	same as *Lampsilis teres*
Leptodea fragilis	Fragile Papershell	Tolerates a wide variety of substrates and flow regimes; prefers still to slow currents in relatively deep water
Megalonais nervosa	Washboard	Primarily large rivers with deep (2 m+) water; typical of relatively slow currents and silty to gravelly bottoms
Potamilus purpuratus	Bleufer	Associated with gravelly to muddy substrates
Quadrula apiculata	Southern Mapleleaf	Still to rapidly currents; shallow to relatively deep; muddy to sandy substrates
Quadrula houstonensis	Smooth Pimpleback	Occurs in sand, mud, and fine gravel; relatively shallow water
Quadrula sp.	Pimpleback/Mapleleaf/ Monkeyface family	same as *Quadrula houstonensis*
Toxolasma texasensis	Texas Lilliput	Typical of still, protected waters on sand or mud substrate
Toxolasma sp.	Lilliput family	same as *Toxolasma texasensis*
Tritigonia verrucosa	Pistolgrip	Still to rapid currents; silt to boulder substrate; most abundant under moderate to swift current
Unionacea	unidentified freshwater mussels	generalized

Common names and habitats after Howells 1992; 1993; personal communication, 1995.

materials in Texas are poorly preserved, aside from exceptional contexts. Therefore, no systematic pollen sampling or analyses were slated for this testing program. The only pollen analysis was conducted on a single ground stone metate fragment which was washed with sterile water in our laboratory and the obtained residue was submitted for pollen identification.

4.2.2.11 Land snails

Because a grab sample of land snails had been recovered in the field wherever possible from each level (see 4.1.4), the total number of snails was irrelevant. However, so as to facilitate identification of proveniences with promise for amino acid epimerization assays ,the total weight of the collected shells was recorded into the DBMS. Some of these samples were later submitted for assay (see Section 4.3.2).

4.2.2.12 Historic and Recent Artifacts

As standard procedure, the surveys which had originally documented the 56 sites recorded any historic components as separate sites, regardless of spatial overlap with prehistoric sites. As a result, our 56 sites were defined a priori as prehistoric; historic/recent artifacts were not of interest except as indicating subsurface disturbances. This meant that historic and recent artifacts were not routinely collected in the field, even when present. Nonetheless, some historic artifacts which were collected were recorded into the DBMS, with the only attributes being the type of material (e.g., glass, metal, plastic), and any possible functional identifying characteristics (e.g., crown cap). No analysis was conducted on these data.

4.2.2.13 Other Materials

Finally, a very few artifacts did not fit into the above classes. These included some lumps of hematite and a few nonlocal minerals such as schist which may or may not be cultural manuports. They were entered into the database under the "Other" class. For these items, only the count and material were recorded. Occasionally, some items were determined after washing to be non-cultural and were discarded.

Burned rock was not collected nor analyzed. However, the data collected in the field for count and weight of burned rock per level was entered into DBMS from the original level sheets.

Finally, the class of "no recovery" was created as a database "tag" for excavated proveniences from which no material was recovered. This strategy proved to be extremely useful in volumetric calculations.

4.2.3 Curation

All artifacts and samples recovered from archeological sites located on the Fort Hood Military Reservation remain the property of the U.S Government and permanent curation has been provided at Fort Hood. Originals of all paper field records were produced on acid-free paper and were submitted to Fort Hood upon completion of the project. Photocopies of all paper field records were made on acid free paper and were retained in project archives. Photographic negatives and diapositives were indexed, labeled, and stored in inert sleeves with acid-free copies of field logs. Copies of videotapes were made and retained in project archives.

All of the packing materials used in artifact curation were of archival quality. Artifacts and specimens are contained in polyethylene zip bags or glass or polyethylene vials and paper laboratory forms (artifact identification tags, accession catalogs, carton inventories, etc.) were produced on acid-free, cotton-based paper. For each site, artifacts are stored together, sorted by class. External packing cartons contain multiple classes from a single site or all artifacts from several sites. In several cases, very large collections from a single site are housed in multiple cartons. By contrast, very small collections are sometimes packed with similar collections from other sites in a single external carton, the items from each site

being separated by internal boxes. Following all laboratory analysis and preparation for curation, an accession catalog was produced, listing key provenience and attribute data for each artifact lot, and its storage carton. The accession catalog is cross indexed by site, by carton, and by catalog number.

4.3 METHODS OF ANALYSIS

Our preliminary NRHP eligibility determinations were made on the basis of fieldwork and were submitted to Fort Hood in a series of letter reports throughout the course of fieldwork. Following these letter reports, we conducted further analyses of the recovered materials to test or add support to these preliminary determinations.

4.3.1 Binomial Test of Lithic Raw Material Selection

Using Excel®, the lithic debitage for each site was summarized in tabular form to show the frequency of specimens by chert raw material and size class. As was done for the first season's sites (Abbott and Trierweiler 1995:56-58), we performed two binomial hypothesis tests (see Thomas 1986) on these lithic data to determine whether each chert type present was equally represented. In the first test, all flakes in the several indeterminate categories were collapsed into a single indeterminate class. The null hypothesis for this test was:

$$p(type_i) = p(type_j) = \ldots = p(type_n) = p(type_{indeterminate}).$$

The number of trials for the first test equals the number of flakes of all types, including indeterminates. Here, n equals the number of chert types identified in the flake assemblage, and p equals $1/(n + 1)$ to accommodate the indeterminate class. The null hypothesis is false for any chert with an observed value that falls outside the range predicted by the binomial distribution. Cherts occurring in numbers larger than the upper limit of the predicted range occur in higher than expected frequencies, whereas cherts in numbers smaller than the lower limit of the predicted range occur in less than expected frequencies. The second statistical test was conducted to exclude indeterminate flakes. The null hypothesis for the second test is:

$$p(type_i) = p(type_j) = \ldots = p(type_n).$$

Here, the number of trials equals the number of flakes (excluding indeterminates), n equals the number of chert types identified in the flake assemblage, and p equals $1/n$. A type overrepresented in the first test will also be overrepresented in the second test. However, types with expected (or less than expected) values in the first test may show a higher level of statistical representation. Thus, the second test provides a basis for making a judgment that differences in the frequencies of identified chert types correspond to patterns of chert selection.

4.3.2 Chronometric Assays

Wherever possible, we selected samples for chronometric assays from well defined features and from specific locations on occupation surfaces; with rare exception, samples for assay were not combined from multiple proveniences. Sample selection was governed by a desire to establish the ages for the (possibly several) analytical unit(s) represented at each site, tempered by the constraints imposed by quantity and quality of the sample. Context of samples was critical and a primary factor in selecting the specific samples for assay.

Two principal avenues of age determination of components were pursued. First, radiocarbon analyses of recovered charcoal samples were conducted whenever possible in order to obtain absolute ages. Radiocarbon assays yielded dates for 31 of the 36 sites recommended as eligible for inclusion to the National Register. In addition, the relative age and integrity of several sites was pursued through supplemental amino-acid epimerization (AI) of land snails. AI assays were obtained for eight sites, including four of the five sites for which no charcoal assays were possible.

Using these two techniques, chronometric assays were thus possible for 35 of the 36 sites determined to be NRHP eligible, regardless of amount of charcoal.[5] Supplemental indicators of relative age, including stratigraphic context and associations of temporally diagnostic artifacts (principally projectile points), were also employed in the overall interpretive effort.

4.3.2.1 Radiocarbon

Seventy-four radiocarbon assays were submitted, including 26 conventional assays on wood charcoal, and 48 accelerator-mass spectrometer (AMS) samples. Of the AMS assays, 39 were run on wood charcoal, one was run on bone, and eight were run on land snails. Radiocarbon samples were pretreated by the consultant laboratories with mechanical washings to remove rootlets and the sediment matrix, followed by acid/alkali/acid washes to remove carbonates and organic acids. Standard ages were obtained by synthesizing sample carbon to benzene (93% C), measuring ^{14}C content, and calculating radiocarbon age using the Libby ^{14}C half-life (5,568 years). The samples were also measured for $^{13}C/^{12}C$ ratio. AMS analysis consisted of reduction of the sample to graphite (100% C), along with standards and backgrounds, and measured for ^{14}C content at the Lawrence Livermore National Laboratory (CAMS) in Berkeley, California.

4.3.2.2 Amino Acid Epimerization

Amino acid studies of land snail assemblages were pursued at eight sites to (1) continue investigation of the utility and limitations of epimerization analysis to sites on Fort Hood, (2) contribute chronometric data for individual sites or important proveniences lacking available carbon for dating, and (3) permit assessment of the stratigraphic integrity of the associated archeological assemblages. The major focus of the current investigation was on samples collected from stacked proveniences at four sites: 41CV115, 41CV184, 41CV481, and 41CV1478. This strategy was designed to address questions developed during the last phase of investigation (Abbott, Ellis, and Goodfriend 1995:801-814), and therefore represents a continuation of the utility assessment that has progressed throughout our work on Fort Hood (Quigg and Ellis 1994; Abbott, Ellis, and Goodfriend 1995:801-814). Additional epimerization assays were conducted from discrete proveniences at 41CV88, 41CV378, 41CV1378, and 41CV1403 to provide some chronometric data from otherwise undated Analytic Units. In most cases, eight snail shells were analyzed from each provenience; however, snail recovery from 41CV184 was relatively sparse and individual proveniences were characterized with four to six shells each.

Amino acid epimerization results from each provenience were examined for clustering, and the shells judged to best represent the putative age of deposition were used to calculate approximate radiocarbon-equivalent ages. Because, as in the previous study (Abbott et al. 1994), virtually every provenience exhibited a considerable spread of epimerization values, the "youngest" (i.e., lowest value) shells were considered most likely to approximate the age of deposition and were only dismissed when an obvious, slightly "older" cluster was apparent. Clustering was determined by a simple, non-rigorous method that favored inclusion of a number of shells. This method, termed "loose clustering" in this report, consisted of examination of the overlap of measured values at ±5% beginning with the smallest two values, and proceeding back through successively higher values in the sample. If the two values overlapped at ±5%, they were considered to cluster. The ratios of the second and third lowest value shells were then compared; if they overlapped at ±5% then the third shell was added to the cluster, and the process was repeated. Note that only adjacent shells in the cluster needed to overlap at ±5%;

[5] The 36th eligible site, 41CV901, was an intact human burial from which no organic samples were recovered.

consequently, in samples that produced large loose clusters, the "youngest" and "oldest" shells could differ by as much as 30%. Although this process is admittedly imperfect, it does tend to increase the chances that all shell that may actually represent the time of deposition be included in the cluster.

Once a cluster was determined, its mean value was computed and used to determine an approximate radiocarbon-equivalent age for the stratum by regression with radiocarbon-dated shells. Two different determinations are reported in Chapters 5.0 and 6.0 for each provenience. The first determination uses a regression equation developed by Ellis and Goodfriend (1994:183-201) which is applicable only to shells less than about 5,000 years old. The second equation is the same one used in our previous report (Abbott, Ellis, and Goodfriend 1995:801-814), and is applicable to all of the Holocene. The results of these analyses are summarized in Chapter 8.0.

4.3.3 Carbon Isotope Assays

To investigate the possibility of changing vegetation and climate patterns, stable carbon isotope analyses were conducted on 11 bone fragments of large mammals believed to be bison.[6] The 11 samples were selected from three general time periods - Paleoindian (BL154), Late Archaic (CV46, CV117, CV137, and CV1038) and Late Prehistoric II (CV97, CV164, CV174, CV587, CV1011, and CV1038). Samples were analyzed by Beta Analytic. All 11 samples yielded C13/C12 ratios; two of the samples were also assayed for AMS dating.

4.3.4 Analytical Units

In order to refine the analytical universe at each site, we created post hoc a series of site subdivisions termed Analytical Units (AU) to provide for the temporal subdivision of archeological components occurring at stratigraphically complex sites. Previously (Abbott and Trierweiler 1995), we defined AUs on the basis of stratigraphy and depositional unit, without regard (at least, explicitly) to a time dimension. In this report, we have refined the definition of an AU to be *a horizontal and/or vertical grouping of excavated proveniences which have been dated to the same time period.*

Thus, the results of the radiocarbon assays were essential in defining the AUs. These chronometric results were supplemented with any temporally diagnostic artifacts (mostly projectile points), with stratigraphic field data, and with the results of amino acid A/I assays. In this manner, we delineated AUs dating to the Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Late Prehistoric I, and Late Prehistoric II (see Chapter 3.0 for period definitions). The two Late Prehistoric periods are roughly equivalent to the Austin and Toyah phases of Prewitt (1985) but do not impute any cultural affiliation. Our use of these modifiers is strictly descriptive and is not meant to suggest new phase names. In general, proveniences radiocarbon dating between 1250 and 650 BP (A.D. 700-1300) and/or those with Scallorn points were placed in the Late Prehistoric I, whereas proveniences radiocarbon dating between 650 and 350 BP (A.D. 1300-1600) and/or those with Perdiz or Bonham points were placed in the Late Prehistoric II.

Those proveniences which lacked reliable chronology information and which could not reliably be assigned to a time period were treated together in a residual group, designated "unspecified." Proveniences with conflicting dating information and the possibility of post-depositional mixing were treated together in a second residual group, designated "mixed." Occasionally, even though some of the dating information conflicted strongly, clearly intact depositional stratigraphy allowed us to use the preponderance of evidence to assign a temporal

[1] All of these 11 bone samples were too small and fragmentary to permit absolute taxon identification. However, based on robusticity they are assumed to be *Bison bison.*

period and dismiss the conflicting evidence with a reasonable explanation (e.g., old wood in a radiocarbon date, curation of older projectile points, etc.). If no chronological information was available for any part of the site, then all proveniences were treated together as an unspecified AU.

The proveniences composing each individual AU are defined within the individual site discussions in Chapter 5.0. Of the 56 sites, 22 lacked any reliable chronometric data. For these sites, a single unspecified AU subsumed all proveniences. Of the 34 remaining sites, four were classified as a single AU, ten were subdivided into two AUs, 12 were subdivided into three AUs, six were subdivided into four AUs, and two sites were subdivided into five AUs. This process resulted in a total of 46 temporally defined AUs, plus 47 unclassifiable and 23 mixed AUs. The 46 temporally defined AUs include three Early Archaic, 17 Middle Archaic, 10 Late Archaic, 12 Late Prehistoric I, and four Late Prehistoric II AUs.

4.3.5 Augmentation of Site Sample

The field, laboratory, and analytical methods described above were applied to all of the 56 sites reported herein and the resulting observations and conclusions are fully documented in Chapter 5.0 and 6.0. However, we were reluctant to conduct any intra-sites analyses on the basis of this arbitrary sample when additional and comparable data were available from our earlier season of testing (Abbott and Trierweiler 1995).

Consequently, for purposes of the synthetic analyses in Part III, we expanded our sample of sites from the 56 reported herein to include all sites we have test excavated since 1993. This includes the 57 tested sites reported previously by Abbott and Trierweiler (1995), as well as eight burned rock mound sites reported by Quigg and Ellis (1994). Because two of the burned rock mound sites also appeared in the sample of 57 NRHP sites, we ended up with a sample of 119 sites for which comparable data are available. This sample of 119 sites is used in the substantive analyses of Part III. For the 63 previously published sites, we defined AUs anew in the manner described above, thus creating an additional 148 AUs. As a result, the 264 AUs discussed in Part III are based strictly on chronology.

4.4 QUALITY CONTROL

As has been discussed in our earlier testing report (Abbott and Trierweiler 1995:68-69), we clearly saw this testing program to be an unparalleled opportunity in Central Texas archeology. Combined with the first seasons testing sample (see Abbott and Trierweiler 1995), we eventually applied our research design to 119 prehistoric sites, excavating more than 750 test pits and backhoe trenches. The opportunity demanded a program characterized by rigor in methods, replicability of observations, and consistency of conclusions. Accordingly, we continued the program of Total Quality Management (TQM) begun in our survey and shovel testing work phase (Trierweiler 1994:92-95) and continued in the first testing season (Abbott and Trierweiler 1995:68-71), modifying the program as appropriate for the current phase. The TQM program consisted of several closely related operations, including (1) development of a procedures manual and custom data recording sheets, (2) close review of 100% of all data sheets and multiple cross-checks of all data bases, and (3) appointment of a quality officer.

Importantly, our TQM philosophy was designed to filter into all aspects of the program. All members of the project team took pride in the quality of their work and our field staff were empowered to make key decisions. As a result, crew turnover during the 10 month fieldwork was minimal, with the Field Supervisor, both crew chiefs, and several of the field technicians participating from start to finish. Similarly, all of the lithic analysis was conducted by a single analyst during the eight month laboratory phase. This sense of craftsmanship and pride of ownership was

responsible in no small part for the ultimate high quality of the primary data, the integrity of the resulting scientific conclusions, and the accountability of the cultural resource management decisions.

4.4.1 Procedures Manual and Custom Data Forms

The standard operating procedures manual developed for our earlier testing phase was reviewed, modified and distributed to all field personnel (Mariah Associates, Inc. 1993). This manual was closely based on our contractual scope of work; it summarized the purpose of the project, discussed broad strategies, specified the data collection tactics, and defined key terms. It was provided to all crew members before beginning field work, and was discussed in workshop fashion to ensure understanding.

The manual included examples of the standardized data recording sheets (see Appendix B). These included the excavated level data sheet (Form 8), the geomorphic profile record, the field inventory (Form 10), the Quality Control Checklist (Form 13), the artifact frequency distribution (Form 18), the list of treatment units (Form 19), the excavated feature record (Form 20), and the summary of observations (Forms 25 and 26). Several forms were revised and improved during fieldwork to correct problems or to allow for new observations, but the data collected on each new version was backwardly compatible. The version number was printed at the lower left to easily identify outdated versions.

4.4.2 Data Checkpoints

Despite the system set up to encourage built-in quality, it was recognized that errors would nonetheless occur. Because false data is nearly impossible to separate after the fact from true "outlier" data and sampling error, we relied (as do all projects) on the professionalism of our field team to collect reliable data. Other errors arise by way of incomplete, contradictory, or missing data sheets; these errors are often (but not always) correctable, especially if they are detected soon after commission (or omission). Accordingly, every page of field data was systematically reviewed for completeness and consistency by an archeological technician, generally within 5 to 7 days of completion of field work. Data sheets with incomplete information (e.g., missing north arrows on sketch maps), unclear information (e.g., smudged writing) or conflicting information (e.g., labels on artifact bags not matching the field catalog) were returned to the crew chief and/or original excavator for correction. This process was facilitated by a Quality Control checklist (Form 13). Upon satisfactory condition of all site records, the checklist was approved and attached to the packet of site records.

All original field forms and the draft site write-up were reviewed by the PI for concurrence on site interpretation. If the PI had any questions regarding the primary data or their interpretation, these were discussed with the crew chief and/or geomorphologist. Once satisfied that the site had been adequately investigated according to the scope-of-work, the PI developed the conclusions and management recommendations and submitted the site report to Fort Hood. An especially valuable aspect the TQM program was the videotaping of every site. Although not required as a deliverable under our contract, we VHS videotaped each site to provide Fort Hood (and future researchers) with a narrated documentary of the excavations. Videotapes were reviewed by the PI during analysis and the formulation of eligibility determinations and were submitted to Fort Hood on a monthly basis along with the preliminary site reports. Copies of tapes were retained in project archives.

Tracking the progress of field work on the 56 sites was facilitated by means of a bulletin board in the field office which physically represented every site by a colored tag, according to its status and recommended level of testing effort. As work tasks were completed for each site (e.g., trenching, mapping), the crew chief dated the tag

appropriately and moved it into the queue for the next work task.

During laboratory recordation of artifact attributes, quality control was greatly facilitated by the automatic error trapping routines of the DBMS. For each attribute, a specific value type and format was assigned prior to beginning artifact recordation. Value types were numeric, logical, value list, and alphanumeric. For numeric values (e.g., artifact weight), upper and lower limits were set along with a decimal format. Logical values recorded yes/no data (e.g., basal grinding present or absent). For those attributes with value lists (e.g., lithic material), a predefined list of acceptable entries was created from which to select. Values not on the list or outside the accepted numeric range could still be entered into the DBMS, but these were flagged as "out of condition." The laboratory supervisor would periodically print a list of "out of condition" artifacts for double checking. Finally, after all data had been tabulated in the DBMS, exhaustive cross checks were run.

4.4.3 Quality Control Officer

Lastly, the program of TQM included appointment of a formal Quality Control Officer (QCO) not directly associated with the project and with independent authority. The QCO made periodic field inspections and compared the ongoing work against the contract, the scope of work, and the procedures manuals. Because the QCO was a PI on other archeological projects, he was able to spot potential problems before they became serious and offer suggestions and solutions based on similar project experience. On occasion, the QCO delegated limited inspection responsibilities to project staff. The findings of each inspection were reported first to TRC Mariah upper management, then to the project PI. On occasion, the QCO also reported his findings to the Fort Hood Staff Archeologist. If problems were diagnosed, the PI and project team were directed to solve the problem.

5.0 RESULTS OF TESTING, BELL COUNTY SITES

...few readers will take the time to wade through the pages of insignificant detail to uncover the kernals of importance.
Bruseth and Perttula (1995:1)

In this chapter we present the results of archeological testing on each of the fifty six prehistoric archeological sites. Sites are presented in ascending number order. For each site, we develop four major discussions. First, an introductory section briefly describes the site including its setting and location (precise coordinates are on file with Fort Hood and with the Texas SHPO). Membership among the 12 site groupings is defined. This section also reviews previous work at the site, and summarizes the new work conducted during the current testing phase. The reader should note that methods and tactics common to all sites have been presented in detail in Chapter 4.0.

In the second major discussion we present substantive testing results. Each test pit (TP) and backhoe trench (BT) are individually described and field observations are presented for each stratigraphic zone and cultural feature. Detailed laboratory analyses on major artifact classes (e.g., lithic debitage, lithic tools, projectile points, bone, and shell) are presented as are the results of sample assays (e.g., radiocarbon, amino acid epimerization, and macrobotanical). If broad subdivisions could be identified within the site (e.g., different terraces, rockshelters, burned rock mounds) then the results are presented sequentially for each site subdivision.

In the third section, we analyze these results (especially dating) in order to define one or more Analytic Units (AU) on the site. As has been explained more fully above (see Section 4.4), we previously defined Analytic Units (see Abbott and Trierweiler 1995) solely on the basis of observable stratigraphy and depositional unit, without regard (at least, explicitly) to a time dimension. Here, we refine the definition of Analytic Unit to be *a grouping of excavated proveniences (horizontal and/or vertical) which have been dated to the same time period.* Proveniences which can not reliably be assigned to a time period are treated together in a residual group, designated "unspecified", and proveniences with conflicting dating information, or with clear post depositional mixing, are treated together in a second residual group, designated "mixed." For each site, the artifact assemblage of each temporally discrete Analytic Unit is described in detail, including discussions of lithic debitage, lithic tools, and faunal remains. In the fourth and last major discussion for each site, we develop conclusions and offer explicit recommendations for further management of the site.

5.1 SITE 41BL431

In February 1995 we conducted formal test excavations at prehistoric archeological site 41BL431. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 1.4 m^3 were manually excavated. These tests demonstrate that no significant cultural deposits are present. As a result, this site is evaluated as not eligible for inclusion to the NRHP and no further work is recommended.

5.1.1 Introduction

5.1.1.1 Site Location and Description

Site 41BL431 lies in Fort Hood Training Area 8. The northern site boundary abuts the Belton Reservoir (Cowhouse Creek) shoreline, with heavily bulldozed/scraped areas on the east and west site margins (Figure 5.1). Maximum site dimensions, as defined in 1993, measure approximately 150 m in diameter covering 2.8 hectares (6.9 acres). This site is considered a member of the East Cowhouse site group.

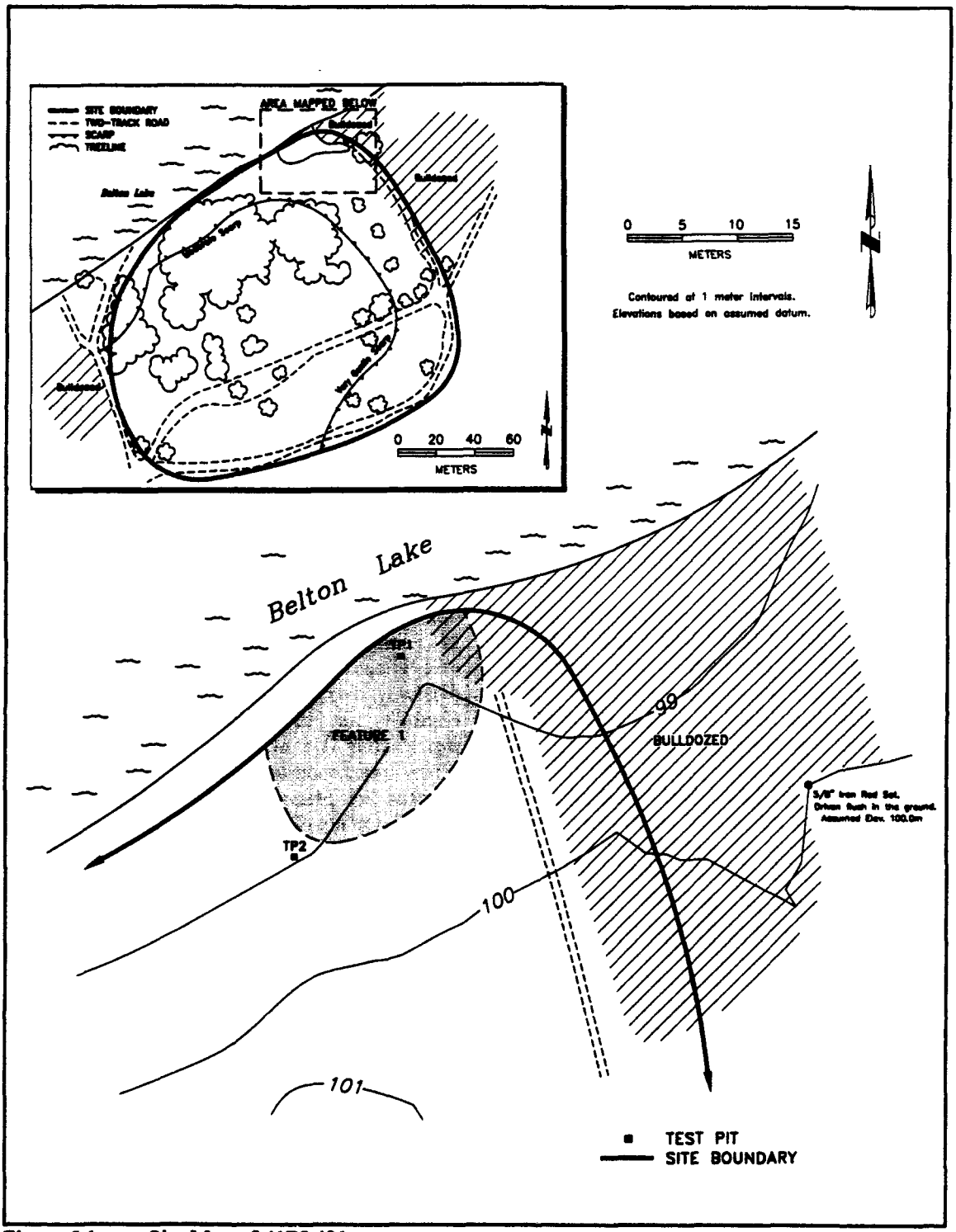


Figure 5.1 Site Map of 41BL431.

5.1.1.2 Previous Work

This site was initially recorded by Moore on 25 October 1983 as a lithic scatter and shell midden (Carlson et al. 1986). Three dart points were collected, while flakes, cores, bifaces, burned rock, mussel shell, and possible turtle bones were noted. The site was estimated to be 24% disturbed by bulldozing, erosion, roads, and vandalism. On 11 June 1993, Kleinbach and Abbott revisited and reevaluated the site based on archeological potential and geomorphic context. This relatively large open campsite consists of a thin scater of flakes, bifaces, and burned rock on a high, strongly beveled Pleistocene terrace overlooking the Cowhouse Creek valley (now Lake Belton) and includes Feature 1 (the previously noted "shell midden"). Feature 1 is estimated to be 30 m long x 10 to 15 m wide burned rock midden deposit at the northeast corner, adjacent to the lake shore. The overall midden shape, size, and thickness are in question because the feature is only exposed on the surface through numerous looters potholes, bulldozing, and shoreline erosion. Burned rock, mussel shell, and several flakes were exposed by the various disturbances.

The terrace surface is erosionally bevelled and only exhibits a trace of a soil (C and thin A-C being typical). In contrast, a very strongly developed soil exhibiting an A-Bt-K profile is on an equivalent surface to the southwest. The cultural material present is exposed at the surface except at the base of the slope leading down to Belton Lake, where a thin (about 30 cm) wedge of colluvium is preserved. The area has been heavily impacted by vehicle traffic, sheet erosion, and bulldozing.

Only the part of the site delimited by Feature 1 had the potential to contain intact cultural deposits and was initially recommended for shovel testing. Subsequently, a crew excavated three shovel tests in the midden on 16 June 1993. These three shovel tests yielded 18 pieces of lithic debitage and five mussel shells. Based on those positive results, potentially intact cultural deposits were suspected and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include two square meters of manual excavation (Trierweiler 1994:A179-181).

5.1.1.3 New Work

Formal testing, which consisted of the excavation of two isolated test pits in the northeastern corner of the site, was conducted in February 1995. Unit sizes and depths are presented in Table 5.1.

5.1.2 Results

Test pit 1 was dug on a small wedge of terrace that appeared relatively intact (most of the area being hummocky) and inside the projected midden boundary. The unit was 2 to 3 m south of the extant margin of Belton Reservoir and excavated to 80 cmbs immediately west of a recent vandal pit (Figure 5.2). Test pit 1 revealed an A-2C profile developed in black (10YR 2/1) clay loam slopewash over beveled Pleistocene alluvium. Cultural material was recovered from 0 to 70 cmbs. Feature 1 (the burned rock midden) was encountered from 33 to 60 cmbs in the lower slopewash mantle and covered the entire unit. Overall, the midden deposit contained dense burned rocks (n=168; 59 kg), unburned rocks (n=145, 55.5 kg), 190 pieces of lithic debitage, 17 mussel shell umbos, two cores, and 11 stone tools (Table 5.2). Level 1 contained high lithic debitage counts, low burned rock counts, two utilized flakes and a chopper, one bone fragment, and no mussel shell. The next two levels (10 to 30 cmbs) revealed a decrease in lithic debitage and burned rock and only a single utilized flake. The 40 to 60 cmbs levels yielded the greatest density of burned rocks, lithic debitage, mussel shell and stone tools. The tools included; five utilized flakes, three late stage bifaces, two finished bifaces, and a complete early stage biface. Most burned rocks were medium sized and tabular, with no apparent internal patterning. A floated matrix sample from the lower part of the midden yielded 0.1 g of charcoal with most of the 16 tiny pieces identified as unidentifiable hardwood. No diagnostic projectile points recovered. Below the midden

cultural materials dropped off drastically. No cultural material was recovered from level 8 and the water table was encountered at 80 cmbs.

Test pit 2 was upslope, about 20 m southwest of TP 1 and near the margin of Feature 1. The unit was excavated to dense gravels at 60 cmbs and revealed a similar A-2C profile as TP 1. However, it lacked the cultural midden deposit. No burned rocks or mussel shells were recovered from any of the levels. Only levels 2 and 3 contained lithic debitage, and a complete, partially patinated Pedernales projectile point came from 20 to 30 cmbs.

Very recent (within 3-6 months) vandalism of the midden deposit was noted upon arriving at the site on 22 February 1995. Three to four vandalized areas, none greater than 2 m in diameter, had been dug 40 to 50 cm deep. Additionally, wave action from Lake Belton and the rise and fall of the reservoir's water level continues to erode Feature 1. This was evidenced on 24 March 1995, only four weeks after testing, when the water table in TP 1 had risen from 80 cmbs to about 40 cmbs and a line of flotsam, deposited by the receding water level, was visible approximately 3.5 m above where the shoreline had been four weeks earlier.

Table 5.1 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.80	Pleistocene terrace
TP 2	1.00	1.00	0.60	Pleistocene terrace

5.1.3 Analysis and Interpretation

Because of overall similarity in depositional context, both excavation proveniences (TPs 1 and 2) are grouped together as a single analytical unit. The two test pits yielded 289 pieces of lithic debitage, 168 burned rocks (64.3 kg), 17 mussel



Figure 5.2 Overview of Site 41BL431, Looking Southwest, Test Pit 1 in Burned Rock Midden Feature 1.

Table 5.2 Artifact Recovery by Test Pit, 41BL431.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	6	2.0	0	1	0	0	71	0	3	-	unspec.
	2	-	1	0.3	0	0	0	0	16	0	0	-	unspec.
	3	-	5	2.0	0	0	0	0	9	0	1	-	unspec.
	4	F1	48	14.0	4	0	0	0	83	0	2	-	unspec.
	5	F1	96	36.0	7	0	0	2	96	0	8	-	unspec.
	6	F1	24	9.0	6	0	0	0	11	0	1	-	unspec.
	7	-	3	1.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		183	64.3	17	1	0	2	287	0	15		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	3	-	0	0.0	0	0	0	0	1	1	0	Pedernales	unspec.
	4-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	2	1	1		

shells, two cores, 15 stone tools, and one Pedernales point. A burned rock midden feature was encountered in TP 1 between 30 to 60 cmbs with quantities of burned rocks, lots of debitage and 11 stone tools. No age could be assigned to this feature as it lacked diagnostic tools and no absolute date was obtained. However, the occupation zone represented in TP 2 at 20 to 30 cmbs at the southwestern margin of the midden may be the occupation which created the burned rock midden recognized in TP 1. If this association is real, it would place this midden at about 2500 to 3500 BP during Round Rock phase of the Middle Archaic period based on the Pedernales point from that occupation (Prewitt 1981; 1985). The midden has been severally disturbed by wave action, bulldozing, and vandalism and very little of this feature remains.

The 289 specimens of lithic debitage represent into 12 identified and eight unidentified chert types with 36% identifiable (Table H-1). The Southeast Range materials dominate the identified assemblage with six types and 74% of the debitage. All four of the chert provinces are represented, albeit in small numbers. The identified chert types are dominated by Heiner Lake Translucent Brown. Only indeterminate light brown chert approaches the quantity of Heiner Lake Translucent Brown. Heiner Lake Translucent Brown and the indeterminate cherts occur higher than expected quantities, Heiner Lake Tan occurs in expected frequencies and the rest of the materials occur in less than expected frequencies (Table H-2). Excluding the indeterminate cherts in higher than expected frequencies for Heiner Lake Tan and Heiner Lake Translucent Brown chert, expected frequencies of Anderson Mountain Gray, Heiner Lake Blue, the North Fort cherts (Fort Hood Gray, Gray Brown/Green, Owl Creek Black), and Cowhouse Mottled; Heiner Lake Blue, Cowhouse

White, Fossiliferous Pale Brown, and Cowhouse Shell Hash occur in less than expected amounts.

All the size ranges except for the smallest debitage category is represented with the highest frequency in the 1.2 to 1.8 cm size category; the quantity drops off more slowly to the smaller end of the spectrum. Coupling the size data with that of the cortex data suggests that late stage tool reduction was performed as 77% of the debitage is tertiary (Table H-3).

This interpretation is supported by the various stages of bifaces recovered from the midden including at least one finished biface (Table H-4). Two bifaces are of the same Heiner Lake Translucent Brown as was the dominant identifiable chert debitage. Six stone tools were of an indeterminate mottle chert and reflect the high incidents of the unidentifiable lithic debris. Also recovered were a multiple and single platform core made from Cowhouse Mottled and Fossiliferous Pale Brown chert, respectively.

The 17 mussel shells represent at least four different species dominated by six umbos of *Amblema* sp. followed by four umbos of *Unionacea* and lower numbers of the other three species (Table H-5). A single bone was identified as a large mammal rib with an angular break and no cultural modification. The three float samples from TP 1, levels 4 through 6 within Feature 1, yielded 3.8, 3.9 and 1.4 g of microdebitage respectively, while only the lowest level yielded 0.2 g of unidentifiable bones fragments.

5.1.4 Conclusions

This burned rock midden was created in a thin, colluvial veneer that overlies a beveled Pleistocene terrace surface. Based on formal testing results and numerous exposures afforded by the extensive vandalism, bulldozing activity, and wave action, Feature 1 has maximum dimensions of about 30 m east to west and 15 to 20 m north to south. Abundant cultural materials are present in the midden. However, at least 80% of the feature is severely impacted such that very little remaining context may be assumed. In fact, assessment of the feature context as either primary or colluvially reworked was impossible due to the extreme disturbance.

On this basis, we conclude that site 41BL431 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

5.2 SITE 41BL504

In mid-October 1994 we conducted formal test excavations at prehistoric archeological site 41BL504. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. One test pit measuring 0.7 m^3 was hand excavated. This single test demonstrates the presence of intact, buried cultural material assigned to the Late Prehistoric I period. These cultural deposits have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.2.1 Introduction

5.2.1.1 Site Location and Description

Site 41BL504 is in northeastern Fort Hood, in Training Area 5. This site is composed of a diffuse lithic scatter on a deflated upland surface and a southwesterly facing rockshelter that contains buried prehistoric cultural material. The shelter measures 15 m long x 3 m wide x 1.3 m high and is just below an escarpment edge (Figure 5.3). Maximum site dimensions, as defined in 1993, measures 100 m long and 50 m wide with a north-south long axis covering an area of about 0.5

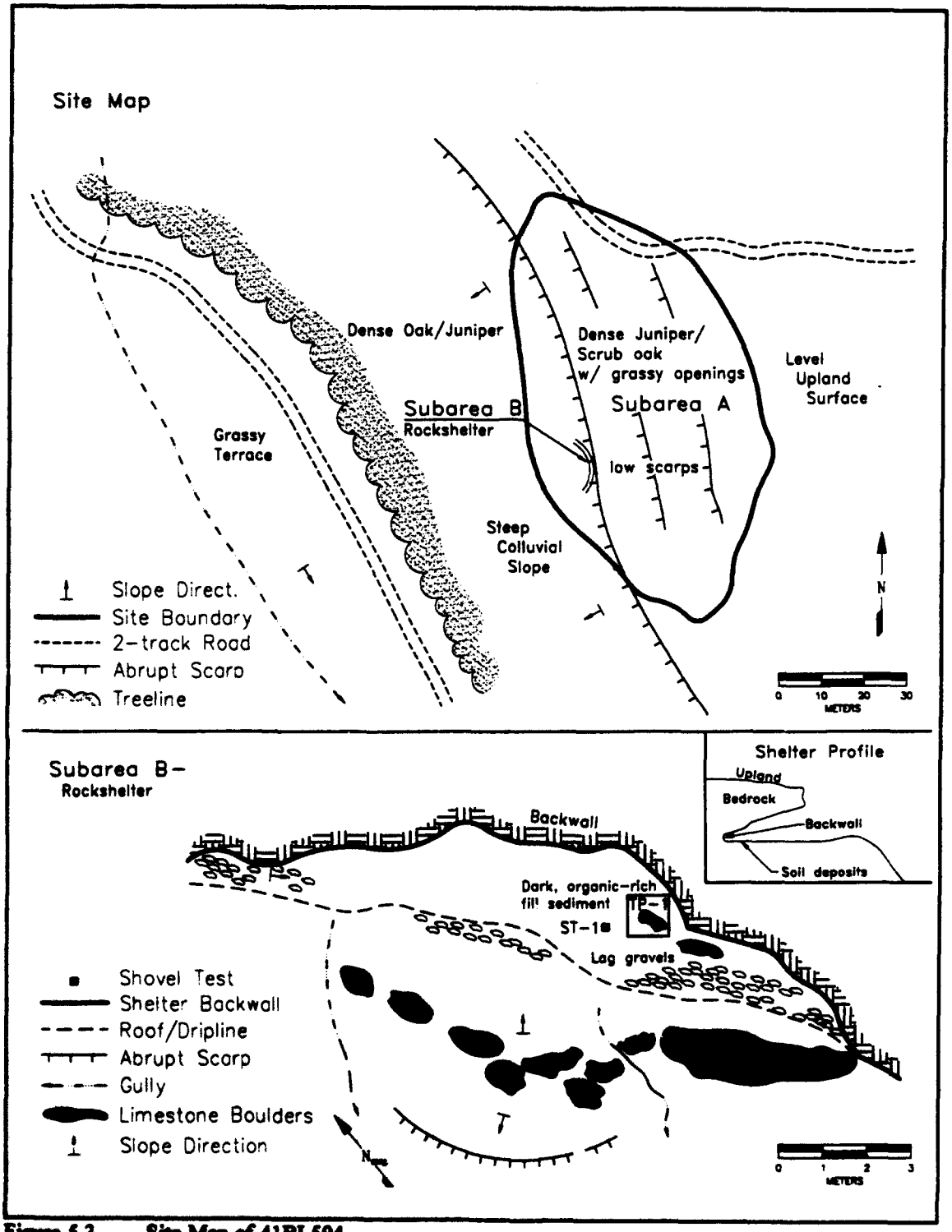


Figure 5.3 Site Map of 41BL504.

hectare (1.2 acres). Site elevation is 250 m above sea level. For purposes of analysis, this site is considered a member of the Cowhouse/Taylor/Bear site group.

5.2.1.2 Previous Work

Turpin and Bradle originally recorded the site on 12 January 1984 as a lithic scatter on an upland surface and an associated rockshelter (Carlson et al. 1986). The rockshelter was believed to be in good condition, having suffered only minimal impact from animal burrowing. Flakes were observed in the rockshelter and a low density of debitage, bifaces, and an Ensor point were noted on the upland surface.

Oglesby and Doering visited the site on 24 March 1992 and reassessed the site based on geomorphic context and the potential for intact cultural deposits. The site was divided into two subareas. The upland surface, designated Subarea A, consisted of a flat to gently sloping surface with considerable bedrock exposures and limited areas of thin (less than 10 cm) soil development. This area contained a diffuse scatter of lithic debitage. Because of the shallow eroded sediments and the lack of potential for intact buried deposits, no further work was recommended for Subarea A.

The rockshelter was designated Subarea B. Limited fragments of bone, mussel shell, and flakes were observed on a dark fill in the shelter and a 50 x 50 cm shovel test was excavated to a sterile reddish brown clay at 50 cmbs. This shovel test yielded 13 pieces of lithic debitage, a Cuney arrow point, two burned rocks, and mussel shell fragments. Based on these positive results, the shelter was thought to contain in situ cultural deposits and was recommended for protection (Trierweiler 1994:A233-235). However, further testing was subsequently recommended by the TSHPO.

5.2.1.3 New Work

Formal testing of the rockshelter was conducted in October 1994 (Figure 5.4). One test pit was dug adjacent to the 1992 shovel test.

5.2.2 Results

The test pit revealed a strongly horizonated A-Bt-R profile very similar to, albeit somewhat thicker than, the better developed soils present on the surrounding uplands. The A horizon was composed of a 40 cm thick, somewhat stony, granular dark brown to black clay loam, and contained an abundance of cultural material.

Although lithic debitage was the prevailing artifact type recovered, four arrow and a dart point, animal bone fragments, mussel shell, burned rocks, and charcoal were also recovered from 0 to 40 cmbs (Table 5.3). About 370 lithics were recovered from these four levels, for a density of more than 900 items per cubic meter. A 2.2 g charcoal sample from level 4 was identified as White Oak and provided a $\delta^{13}C$ (-26.0‰) corrected assay of 1267 ± 70 BP (TX-8424). Below 40 cmbs, the matrix graded gradually into the Bt horizon, which consisted of weakly blocky, reddish brown to yellowish red stony clay loam. The upper part of this deposit (40 to 45 cmbs) contained 10 flakes and a few chunks of charcoal. Below this, the Bt horizon was sterile and continued to bedrock.

5.2.3 Analysis and Interpretation

5.2.3.1 Definition of Analytical Units

The single test pit yielded 505 pieces of lithic debitage, five projectile points, 10 stone tools, two cores, 11 bone fragments, three mussel shell umbos, 12 burned rocks, and a charcoal sample. Based on a charcoal assay of 1267 BP, three Scallorn, one Fresno, and a distal dart point, the material from 10 to 40 cmbs represents a single time period - Late Prehistoric I. The dart point fragment is believed to have been a collected and reused item and not representative of the timing of



Figure 5.4 Test Pit 1 Inside Rockshelter, 41BL504.

this event. The top 10 cmbs appears disturbed and is considered mixed. Just below the Late Prehistoric I data, from 40 to 68 cmbs, sparse cultural material was recovered. This could not be confirmed as part of the overlying Late Prehistoric I component, and thus no temporal assignment was made.

5.2.3.2 Late Prehistoric I Materials

The materials assigned to this time period include 460 pieces of lithic debitage, five projectile points, 10 stone tools, two cores, 12 burned rocks (2.5 kg), two mussel shell umbos, 10 bone fragments, charcoal flecks, and snail shells.

The 460 specimens of lithic debitage represent six identified and eight unidentified chert types (Table H-6) only 11% of the cherts were identifiable. Of the indeterminates the miscellaneous category is over 50% of the indeterminates and 50% of the total assemblage. Fort Hood Yellow stands out among the identified cherts at 44%. Taken together the North Fort materials are twice as prevalent as the Southeast Range. The combined indeterminate cherts occur in greater than expected frequencies (Table H-7), while all others occurred in less than expected frequency. When the indeterminates types are excluded Fort Hood Yellow occurs in higher than expected frequencies, Heiner Lake Tan and Gray/Brown/Green occur in the expected frequencies and all other types occur in less than expected amounts.

The modal peak for size falls between 0.5 to 1.2 cm in size (Table H-6). Seventy-four percent of the debitage is less than 1.2 cm in size and 82% is less than 1.8 cm in size. The size data in conjunction with 87% of all debitage occurring as tertiary materials (Table H-8) indicates mostly late stage biface manufacture, and probably tool resharpening.

The five points include three Scallorn, one of Owl Creek Black, two others of various colors of indeterminate cherts, an indeterminate light brown

Table 5.3 Artifact Recovery by Test Pit, 41BL504.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	1	0	0	0	9	0	0	-	mixed
	2	-	3	0.7	0	2	0	0	95	2	2	Scallorn	LP-I
	3	-	8	1.3	1	5	0	0	139	3	2	Scallorn, Fresno, ?dart	LP-I
	4	-	5	1.3	1	3	0	2	226	0	6	1270±70	LP-I
	5	-	0	0.0	0	1	0	0	5	0	0	-	unspec.
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		16	3.3	3	11	0	2	474	5	10		

distal Fresno, and an indeterminate dark brown tip of a untyped dart point (Table H-9). As stated before, the dart point is out of context and may have been collected and brought in by later occupants. The five other stone tools include six utilized flakes, two late stage bifaces, an edge modified flake and a hammerstone (Table H-10). These were manufactured from five indeterminate chert types, four Fort Hood cherts, and a quartzite. The former include a Fort Hood Yellow, Heiner Lake Tan (n=2), and Cowhouse White. Two multiplatform cores of indeterminate mottled chert were present (Table H-10). The 12 burned rocks (2.5 kg) were concentrated (83%) in the lower 20 cm but did not appear to represent a feature.

The 10 bone fragments are long bone pieces of medium to large mammals such as deer, the one exception being a burned fragment of a small mammal such as a rabbit (Table H-11). Six of the larger fragments were burned and six display marked weathering. The two umbos were identified as right hinges of *Toxolasma* sp. and show no cultural modification. It is unclear if the umbo was part of the cultural food base but the larger burned bones imply that deer-sized animals were culturally manipulated.

The presence of three Scallorn points plus the 1267 BP charcoal date indicates this material is part of the Austin phase (Prewitt 1981; 1985). The Fresno point is of an indeterminate chert type. The restricted tool assemblage may indicate a task oriented group occupied this shelter on a short term basis.

5.2.3.3 Mixed Materials

These materials include nine pieces of lithic debitage and one *Unionacea* mussel shell. It is possible that these few items were part of the Late Prehistoric I component but at present it is difficult to state with certainty. Recent military activity and rodent burrows were identified in this level.

The nine lithic debitage specimens consist of only two identifiable specimens representing North Fort chert and seven specimens representing two unidentifiable chert types (Table H-12). The binomial statistic results in both identified and unidentified types occurring in expected amounts (Table H-13). Seventy-four percent of the debitage is tertiary (Table H-14).

5.2.3.4 Temporally Unspecified Materials

These materials include five pieces of lithic debitage and one burned, medium to large mammal long bone fragment. These specimen are very similar to the Late Prehistoric I materials just above. Here again, these cultural materials may have been displaced by turbation from the Late Prehistoric I component above.

Five specimens of indeterminate light brown chert are the lithic assemblage with four specimens between 0.5 and 0.9 cm and the fifth specimen 0.9-1.2 cm in size. All debitage is tertiary.

5.2.4 Conclusions

Rockshelter A in Subarea B contains fill that is very unusual in comparison to most shelters at Fort Hood. While deposits of reddish clay loam have been detected in a number of other shelters (shelter sediment Type 4 of Abbott 1994), in all cases this material appeared to be upland sediments introduced by wash on the margins of the shelter and/or pipes and fissures in the roof or back wall. In fact, sediments predating the Late Holocene are apparently very rare in Fort Hood shelters, implying that either most shelters developed during the Late Holocene or, more likely, were completely flushed of sediments during the Middle Holocene. The character and structure of the Bt horizon, however, suggests that it probably developed in situ. This implies that the shelter is either considerably older than the majority of shelters on the base, or was not flushed of sediment at the same time that the other shelters were. Although the lack of a clear boundary between the A and Bt horizons resembles in situ development, the presence of cultural material throughout suggests that the A horizon is actually an introduced sediment that has welded to the underlying rubified clay. The recovery of Late Prehistoric I materials associated with the Austin phase, and a charcoal date of 1267 BP identifies the age of the upper fill (A horizon). These age deposits are quite common in the Fort Hood rockshelters an in some open sites. The age of the rubified Bt horizon beneath this is unknown.

We conclude that Subarea B of site 41BL504 contains intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surface disturbances by military personnel during training exercises.

5.3 SITE 41BL531

In mid-October 1994, we conducted formal archeological test excavations at prehistoric site 41BL531. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 1.1 m^3 were manually excavated. These tests demonstrate that no intact cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.3.1 Introduction

5.3.1.1 Site Location and Description

Site 41BL531 is in eastern Fort Hood in Training Area 4. This is a southerly facing, sub-horizontal solution cavern that contains buried prehistoric cultural materials. The cave has been weathered into the limestone scarp of the Manning surface and measures 9 m deep by 4.5 m wide at the entrance, with a 50 to 200 cm high ceiling (Figure 5.5). The cavern is on the west side of an unnamed tributary of Cowhouse Creek. For purposes of analysis, the site is considered a member of the Cowhouse/Taylor/Bear site group.

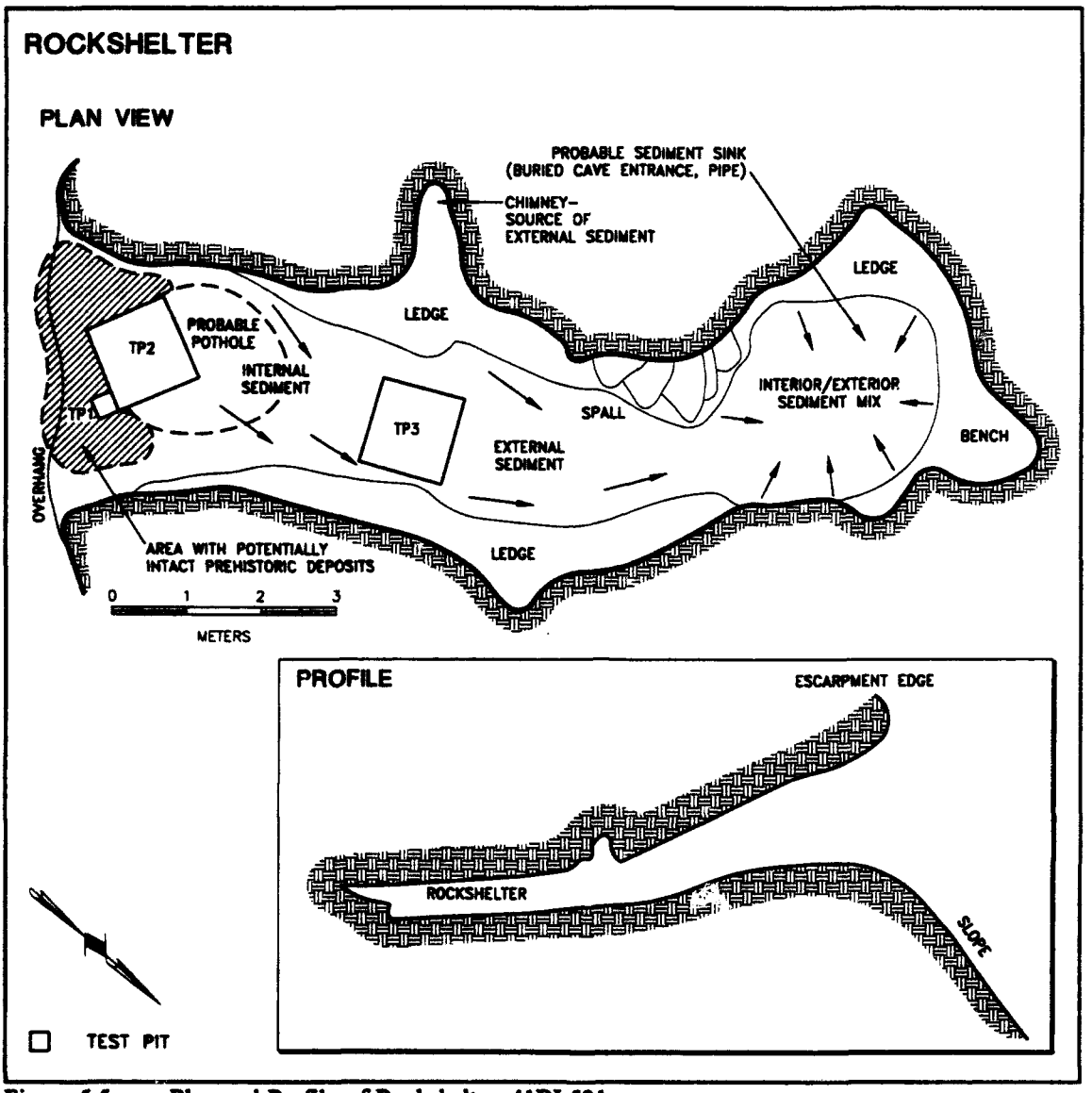


Figure 5.5 Plan and Profile of Rockshelter, 41BL531.

5.3.1.2 Previous Work

Turpin and Gray originally recorded this site in February 1984 as a long linear cave. A few flakes, bone and mussel shell fragments, charcoal, and a possible backdirt spoil mound were observed at the entrance to the shelter (Carlson et al. 1986).

Mires and Doering visited the site in March 1992 and reassessed the site based on geomorphic context and the potential for intact cultural deposits. At that time, a 50 x 50 cm test quad (TP 1) was excavated to bedrock at 60 cmbs just inside of the entrance. Test pit 1 yielded 47 pieces of debitage, 17 bone fragments from both large and small animals, a fragment of groundstone, a biface,

charcoal, mussel shell, and numerous burned rocks (n=158). Most of the material was recovered between 30 to 50 cmbs. Based on these positive results the site was thought to contain in situ cultural deposits. Therefore, formal testing was recommended to determine the context of the deposits and the site's NRHP eligibility (Trierweiler 1994:A263-266). A minimum testing effort of two square meters of manually excavated test pits was recommended.

5.3.1.3 New Work

Formal shelter testing was completed in October 1994 (Figure 5.6). Two test pits (TPs 2 and 3) were excavated. Test Pit 2 was dug just behind the initial test (TP 1) excavated in 1993. Test Pit 3 was 2.5 m from TP 2, near the approximate center of the shelter. Unit sizes and depths are presented in Table 5.4.

5.3.2 Results

The cavern is formed in a subhorizontal solution cavity in the Edwards Limestone on the margin of the Manning upland. The cave slopes gently down from the entrance to the rear to the solution cavity. At the front, the sediment appears to represent internally derived limestone flour and eboulis (Type 1 sediments of Abbott 1994). However, about 4 m back from the entrance, a fracture in the ceiling appears to admit water and external sediment; therefore, the majority of the sediments in the rear consist of massive, reddish brown clay loams that represent reworked upland soil (Type 4 sediments of Abbott 1994). The sloping surface and flow lines on the fill surface imply that a sediment sink is present at the rear of the cave; in other words, the rear of the cave appears to have infilled completely.

Test Pit 2 contained a steeply dipping, stratified loose gravelly tan silt that represents spoil from vandal excavations, in the top six levels (Figure 5.7). Nearly 100 small bone fragments, mussel shell fragments, and four flakes were in these levels (Table 5.5). From 60 cmbs to bedrock at 80 cmbs, a compact dark brown silt loam was encountered at the front of the unit. This lower fill contained an abundance of cultural material including 85 flakes, seven burned rocks (3.5 kg), 12 bone fragments, one mussel shell umbo, a military cartridge, and charcoal flecks. The limits of the vandal activity are clearly indicated in the profile, and penetrate to bedrock near the rear of the unit. No diagnostic artifacts were recovered. A 1.3 g charcoal sample from 50 to 60 cmbs was identified as juniper and yielded a $\delta^{13}C$ corrected (-25.2‰) "modern" date (Beta-83252). This age indicates a clearly intrusive sample to the prehistoric occupation. The bedrock encountered at the base of TP 2 indicates that the floor of the shelter near the entrance forms a bench that is higher than the inner part of the cave. Limited parts of the lower two levels (60-80 cmbs) may be undisturbed.

Test Pit 3 fill consisted of a loose reddish brown clay loam that has filtered down from the upland surface through a crack in the ceiling near the center of the cave. All levels excavated yielded dozens of pieces of metal, other military debris, and charcoal chunks indicating that the entire fill is recent and disturbed. None of these items and no matrix samples were collected or fine screened.

5.3.3 Analysis and Interpretation

Because the deposits and materials from both test pits were heavily vandalized, and coupled with the modern date obtained from the charcoal in TP 2 level 7, all deposits are considered to be out of context and represent mixed assemblages.

These mixed deposits contained 88 pieces of lithic debitage, two stone tools, 105 fragments of bone, a tiny piece of unidentifiable mussel shell, seven burned rocks, and some charcoal and snail shells. Charcoal was present and collected from levels 5 and 6 in TP 2. Level 1 of TP 2 contained one piece of metal and all three levels in TP 3 contained metal staples, cartridges, and plastic.

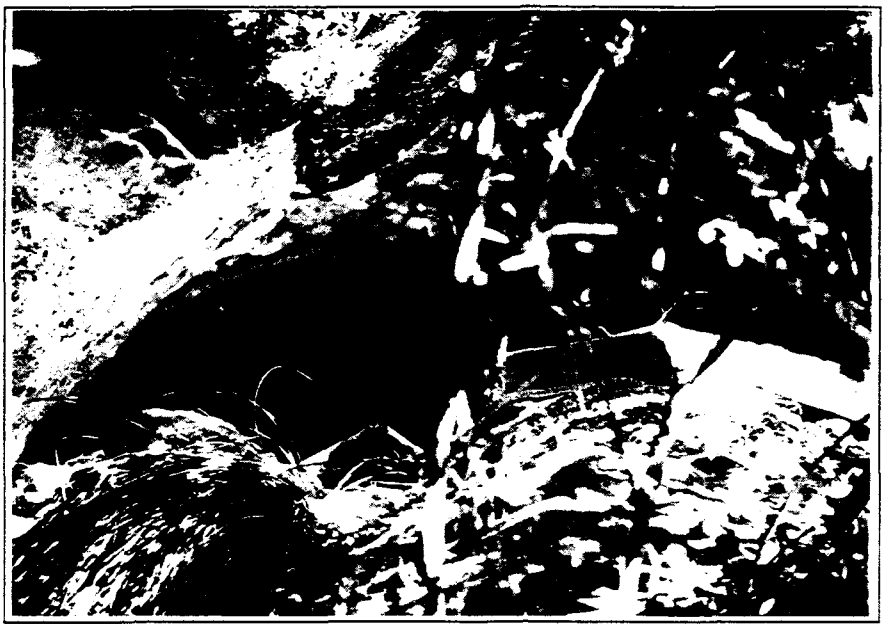


Figure 5.6 Overview of Rockshelter, 41BL531.

The 88 specimens of lithic debitage are from six identified and nine unidentified chert types (Table H-15). Only 24% were identified with light brown cherts dominating the total assemblage (32%) and the unidentifiable cherts (40%); only dark brown cherts (24%) are close to the quantities of light brown. Among the identified materials the Southeast Range cherts dominate with three types and 80%. The combined indeterminate cherts occur in higher than expected frequencies, Heiner Lake Translucent Brown and Heiner Lake Blue occur in expected amounts, while all others occur in less than expected amounts (Table H-16). The exclusion of indeterminates results in all cherts occurring in expected frequencies except for the Heiner Lake Blue which occurs in higher than expected amounts.

The modal peak for size is between 0.9 to 1.2 cm in size and drops off evenly to both sends of the size spectrum (Table H-15). Eighty-nine percent of the debitage falls below 1.8 cm in size indicating late biface reduction stages, platform preparation, and/or refurbishing of tools. In conjunction with the small sizes of debitage are the rates of tertiary materials at 92% (Table H-17).

The two utilized flakes were manufactured out of indeterminate mottled chert and Gray/Brown/Green chert. The latter chert is from North Fort chert province.

The 105 bone fragments represent mostly unidentifiable and long bone fragments (52%) of small to medium size animals with rabbits, (*Sylvilagus* sp.), skunks (*Mephitis mephiti*), opossum, (*Didelphis virgiania*), and a carnivore identified (Table H-18). Snakes and birds were

Table 5.4 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 2	1.00	1.00	0.76	rockshelter
TP 3	1.00	1.00	0.30	rockshelter

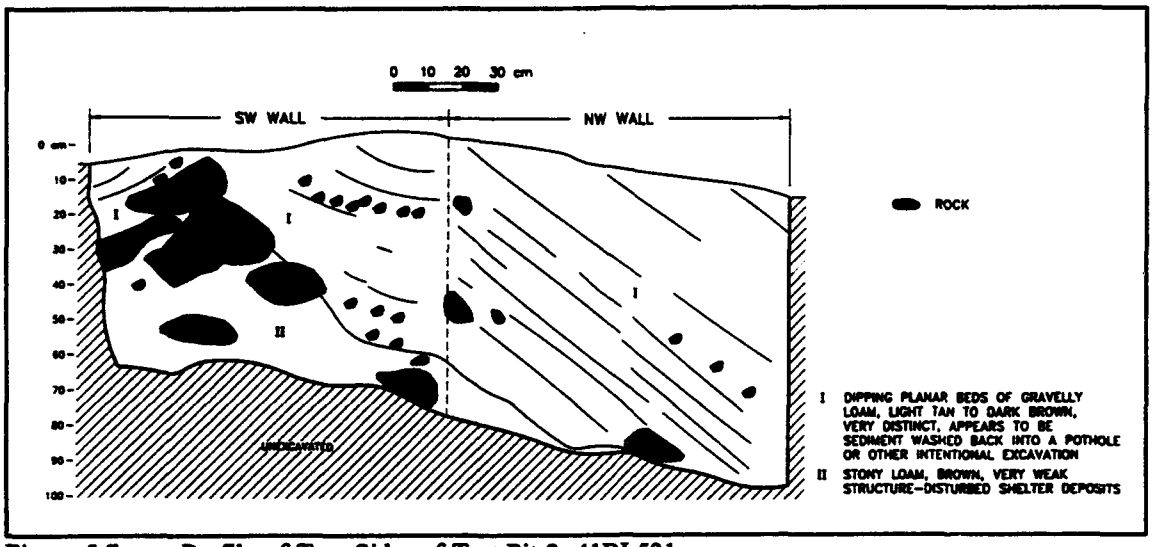


Figure 5.7 Profile of Two Sides of Test Pit 2, 41BL531.

also represented. A rabbit pelvis and calcanium, a long bone of a small mammal, and an armor plate of an nine-banded armadillo (*Dasypus novemcinctus.*) were burned. At least one deer element, a burned phalanx, was identified and bones of large to very large (bison size) also present. The one mussel shell fragment was unidentifiable with no indication of cultural modification. It is unclear if this specimen is intrusive or served as a food resource.

Extrapolating from other rockshelters in Fort Hood, it is expected that these deposits and cultural material from the lower levels are not older than the Late Archaic period. The Late Archaic deposits and the Late Prehistoric I materials appear more frequently represented in shelters than any other periods of use.

5.3.4 Conclusions

This cave exhibits a complex series of deposits and disturbances. The few meters near the mouth appear to be composed of internally-derived fill, while the sediments in the back of the cave are almost all external sediments of historic age. Examination of the profile of TP 1 at the cave mouth revealed a series of steeply dipping, thin stratified strata that clearly represent alternating beds of fine and coarse material created by screening of the shelter fill. This material dips toward the cave interior into an excavation with irregular boundaries, which penetrates to bedrock in the rear of the unit but only part way to bedrock at the front. This material clearly represents vandal spoil screened into an existing pothole. It is likely that older deposits in deeper parts of the cave were also vandalized, but any evidence of this disturbance was destroyed by subsequent infiltration of at least 30 cm of reddish brown clay derived from erosion of the upland soil and delivered into the cave by fractures and pipes in the ceiling.

Because the cave is so heavily vandalized and lacks intact deposits, it is evaluated as having no significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge site 41BL531 to be not eligible for inclusion to the NRHP and recommend no further management.

Table 5.5 Artifact Recovery by Test Pit, 41BL531.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1	-	0	0.0	0	28	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	21	0	0	1	0	0	-	mixed
	3	-	0	0.0	0	17	0	0	0	0	0	-	mixed
	4	-	0	0.0	0	21	0	0	0	0	0	-	mixed
	5	-	0	0.0	0	6	0	0	0	0	0	-	mixed
	6	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	7	-	9	4.7	1	10	0	0	73	0	1	-	mixed
	8	-	0	0.0	0	2	0	0	12	0	1	-	mixed
	Total		9	4.7	1	105	0	0	86	0	2		
3	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	2	0	0	-	mixed
	3	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	Total		0	0.0	0	0	0	0	2	0	0		

5.4 SITE 41BL560

In October 1994, we conducted formal test excavations at site 41BL560. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Five test pits totaling 3.5 m^3 were hand excavated in four different rockshelters (A, C, D, and G). These tests demonstrate that no significant in situ cultural deposits are present in Shelters C and D; as a result, these two shelters are evaluated as ineligible for inclusion to the NRHP. No further management is recommended for Rockshelters C and D. However, the test excavations also demonstrate the presence of intact, buried, and stratified cultural components in Shelters A and G, some dating to the Late Archaic period. These deposits have high potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, Rockshelters A and G are evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.4.1 Introduction

5.4.1.1 Site Location and Description

Site 41BL560 in the eastern end of Fort Hood, in Training Area 5. The site overlooks Bear Creek valley and is a large upland lithic procurement area that encompasses three unnamed tributaries of Bear Creek, deeply incised canyons containing seven rockshelters, and the upland surface surrounding the canyons (Figure 5.8). Maximum site dimensions, as defined in 1993, measure a globular 500 m in diameter, covering an area of about 25 hectares (61.8 acres). For purposes of analysis, the site is considered a member of the Cowhouse/Taylor/Bear site group.

5.4.1.2 Previous Work

The site was first recorded by Moore, Meiszner, and Gray on 16 February 1984 (Carlson et al. 1986). Seven rockshelters, designated A through G, were plotted on a quadrant map; however, the

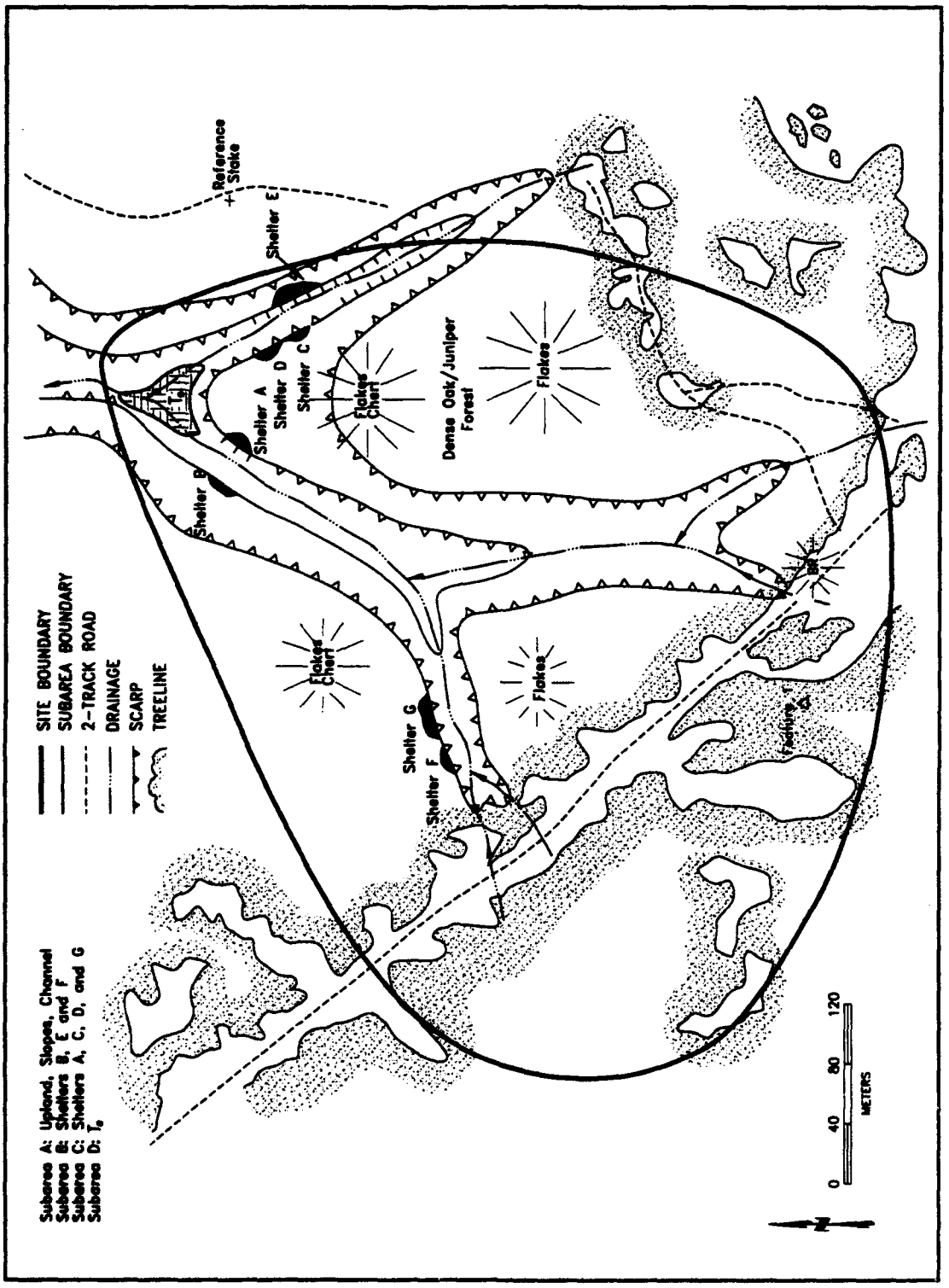


Figure 5.8 Site Map of 41BL560.

site form only describes one west facing (260°) rockshelter that measures 10 x 2 m. This is presumed to be Shelter E. A very light scatter of debitage was noted. The deposit was considered shallow, with erosion impacting 2% of the shelter. A sketch map was drawn of Shelters F and G, with a dart point collected from Shelter G. No other information was recorded by these investigators. Four Pedernales, two Castroville, a Lange, a Angostura, an Edgewood, an untyped dart point, and one Perdiz arrow point were collected. Site dimensions, as plotted on an aerial photobase dated 26 February 1984, were about 600 x 550 m. For management purposes, the site was later designated a lithic resource procurement area.

On 10 June 1993, Kleinbach and Abbott revisited and reevaluated the site based on archeological potential and geomorphic context. The site was described as consisting of the dendritic head of a deeply incised canyon on the margin of the Manning surface, the gently sloping upland surface surrounding the canyon, and a series of rockshelters in the canyon. Three unnamed tributaries enter the site from the southeast, south, and southwest, and join to flow out of the canyon to the north. The site was divided into four subareas.

Subarea A subsumed the upland and the coarse alluvial and colluvial deposits in the canyons. This subarea was predominantly stable to erosional with minimal potential to contain intact cultural deposits. The potential utility of this upland to address questions of lithic resource procurement and reduction was addressed; chert and impact zones were identified, mapped, and the subarea was resurveyed on 15 and 28 June 1993. Most of Subarea A had low potential to contribute to lithic procurement research and no further management was recommended. However, an area in the southwest part had a substantial number of positive observations and the material there was judged to have the integrity and ubiquity necessary to serve as a source of data relevant to questions of lithic procurement behavior. This area was recommended as potentially eligible for inclusion to the NRHP. It was also recommended that testing be postponed until a possible need for mitigation is imminent (Trierweiler 1994:A291-297).

Subarea B included three small rockshelters (designated B, E, and F) which had been flushed out by sheet flow from the uplands and/or stream flow in the canyons and were devoid of cultural material. Based on these observations, Subarea B had negligible archeological potential and required no further work.

Subarea C consisted of four additional rockshelters (designated A, C, D, G) situated on the valley wall a few meters above the channel. Cultural material was noted in Shelters A, C and G. Subarea D was a low alluvial surface in the canyon near the northern site boundary. No cultural material was observed on the surface, but the potential for buried archeological deposits existed (Trierweiler 1994:A291-297). Because Subarea D and the four shelters in Subarea C had the potential for buried deposits, nine shovel tests (STs 1 through 9) were excavated on 14 through 15 June 1993, including two shovel tests (STs 5 and 6) to 40 cmbs in Shelter A, one 50 x 50 cm quad (ST 9) to 60 cmbs in Shelter C, two shovel tests (STs 1 and 2) to bedrock at 30 cmbs in Shelter D, two shovel tests (STs 7 and 8) to bedrock at 20 cmbs in Shelter G, and two shovel tests (STs 3 and 4) to 40 cmbs in Subarea D. Rockshelter A yielded three pieces of lithic debitage in the top 20 cm; Rockshelter C yielded 27 pieces of lithic debitage six bone fragments, and three burned rocks throughout the 60 cm; Rockshelter D yielded two pieces of debitage in the top 20 cm; and Rockshelter G yielded two piece of debitage and two bone fragments from the top 10 cm. Based on these results, Rockshelters A, C, D, and G were deemed capable of yielding cultural materials in stratified depositional context and formal testing was recommended to determine NRHP eligibility. At least one square meter of manual excavations was recommended for each of these four shelters. No further work was recommended for the alluvial terrace of Subarea D (Trierweiler 1994:A291-297).

5.4.1.3 New Work

Formal NRHP testing of Rockshelters A, C, D, and G in Subarea C was conducted in October 1994. One test pit was excavated in each of Shelters A, C, and D, with two test pits in Shelter G. The unit sizes and depths are presented in Table 5.6. Units were in areas of greatest potential and least disturbance based on previous work, present observations, and pin flag probes. Rockshelter A is a northwest facing overhang with maximum dimensions of 10 x 1.5 x 1.6 m (Figure 5.9). Test Pit 3 was dug near the center (Figure 5.10). Rockshelter C is a small west facing shelter and has maximum dimensions of 10 x 2.5 x 0.6 m; TP 1 was dug near its center (Figure 5.11). Rockshelter D, adjacent and north of Shelter C, is a west facing shelter and has maximum dimensions of 11 x 1.1 x 0.8 m. Again, TP 2 was dug near the center (Figure 5.12). Rockshelter G faces southeast and has maximum dimensions of 20 x 2 x 1.4 m. The head of a minor drainage is present near the northern edge of the shelter. This part of the shelter also had less than 10 cm of deposit as demonstrated by pin flag probes. Test Pits 4 and 5 were at the southern edge and the middle of the shelter respectively (Figure 5.13).

Table 5.6 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.91	rockshelter
TP 2	1.00	1.00	0.82	rockshelter
TP 3	1.00	1.00	0.83	rockshelter
TP 4	1.00	1.00	0.52	rockshelter
TP 5	1.00	1.00	0.62*	rockshelter

*Note: Southwest corner only.

5.4.2 Results

In Rockshelter A, TP 3 revealed a relatively thin, unmodified deposit dominated by internally-derived sediments. It yielded two very small (0.1 kg) burned rocks in level 1 and 13 pieces of lithic debitage between 10 to 50 cmbs (Table 5.7). Bedrock, sloping east to west, was at 51 to 83 cmbs.



Figure 5.9 Opening into Rockshelter A, 41BL560.

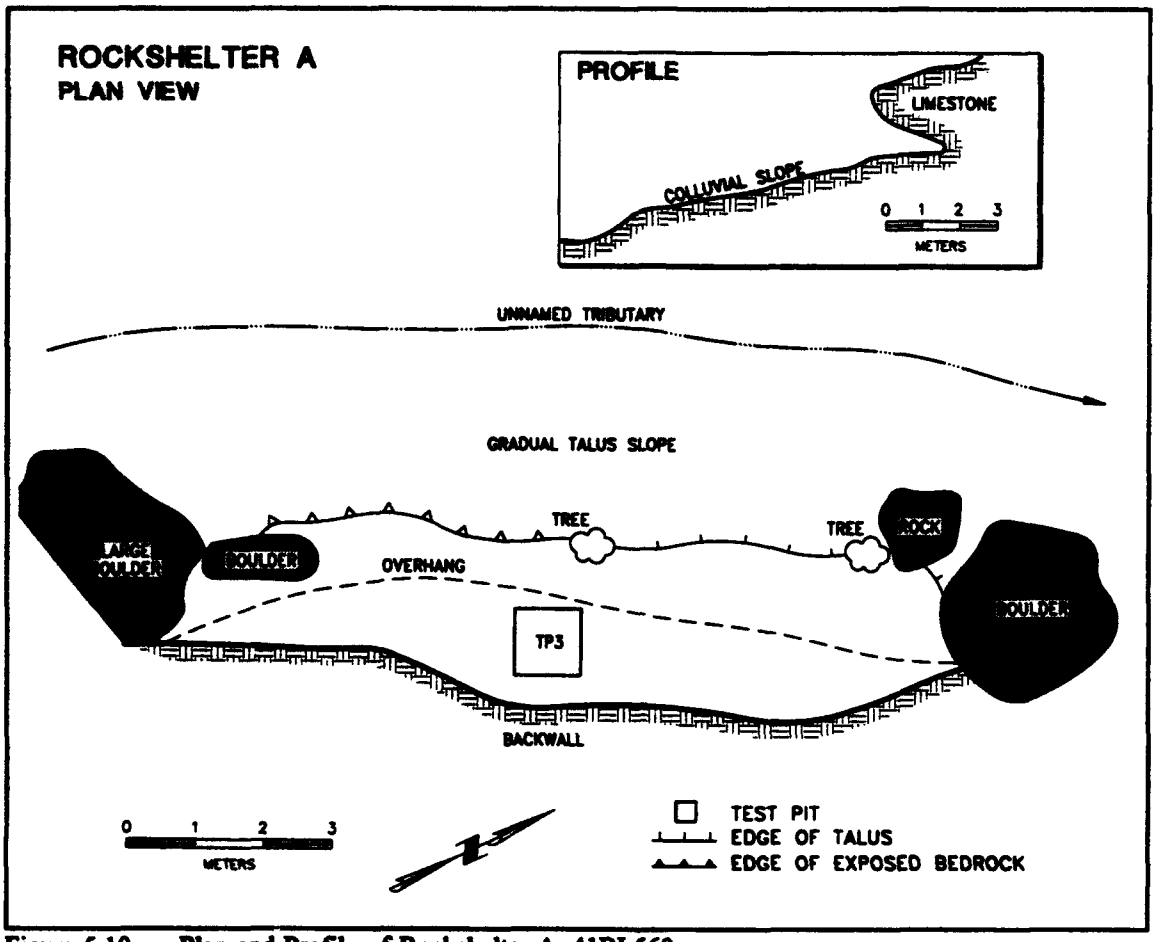


Figure 5.10 Plan and Profile of Rockshelter A, 41BL560.

In Shelter C, TP 1 revealed a heterogeneous fill composed of coarse spall, sandy to gravelly internally derived sediment, and dark grayish-brown clay of probable external origin. Of 42 lithic items recovered, 71% were in the upper 20 cm. Twenty-eight bone fragments were also found in levels 1 (n=18), 2 (n=9), and 6 (n=1). No burned rock was encountered. Bedrock, generally slopes east to west, as it varied from 73 to 91 cmbs.

In Shelter D, TP 2 revealed a mix of internal sediments and dark externally-derived clay similar to the fill exposed in Shelter A. Lithic debitage (n=29) was from 0 to 50 cmbs with 52% in the top 10 cmbs. No burned rock or bone fragments were recovered. An immovable piece of roof fall covered the southwest quadrant of this unit at 17 cmbs and a previously excavated shovel test was present to 32 cmbs along the east wall. Bedrock was at 72 to 82 cmbs.

In Shelter G, TPs 4 and 5 revealed profiles dominated by very dark grayish brown to black stony silt loam to clay loam. Because this shelter is only a couple of meters above the present channel, it is conceivable that some of the sediment in the shelter is alluvium; however, most

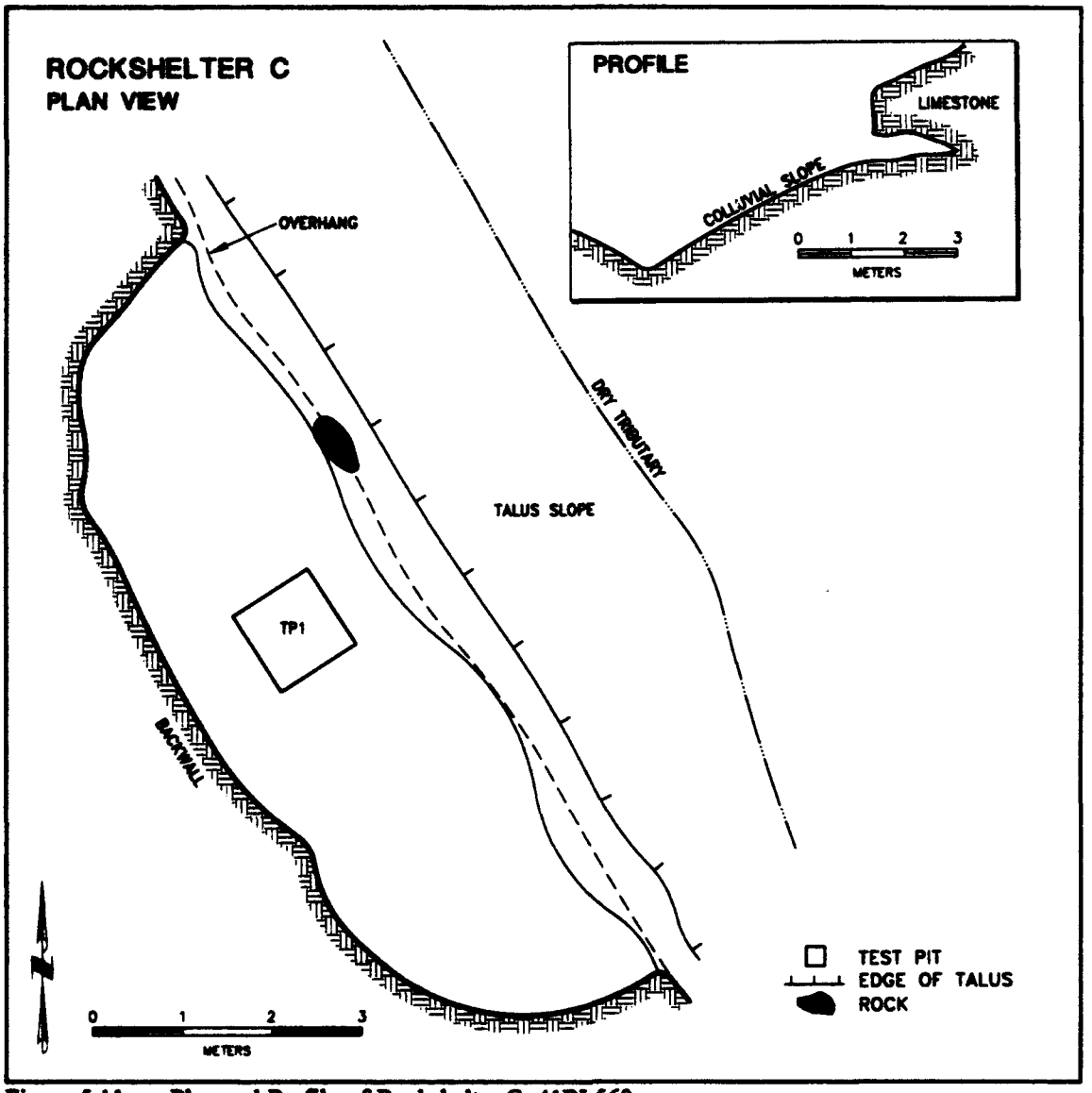


Figure 5.11 Plan and Profile of Rockshelter C, 41BL560.

of the material is probably either slopewash or material weathered in place. Test pit 4 was excavated to bedrock sloping from west (20 cmbs) to east (52 cmbs). Thirty-two pieces of debitage were recovered 0 to 50 cmbs with just over 30% in level 1 and another 34% in level 5. A single utilized flake and a core were between 30 to 40 cmbs.. No burned rock or bones were discovered. In TP 5, a total of 153 pieces of debitage was unevenly distributed vertically and five flake tools were between 30 to 60 cmbs. Ten lithic pieces were from 0 to 30 cmbs, along with 19 bone fragments (some very recent) from levels 1 and 2. A dramatic increase in lithic material occurred in

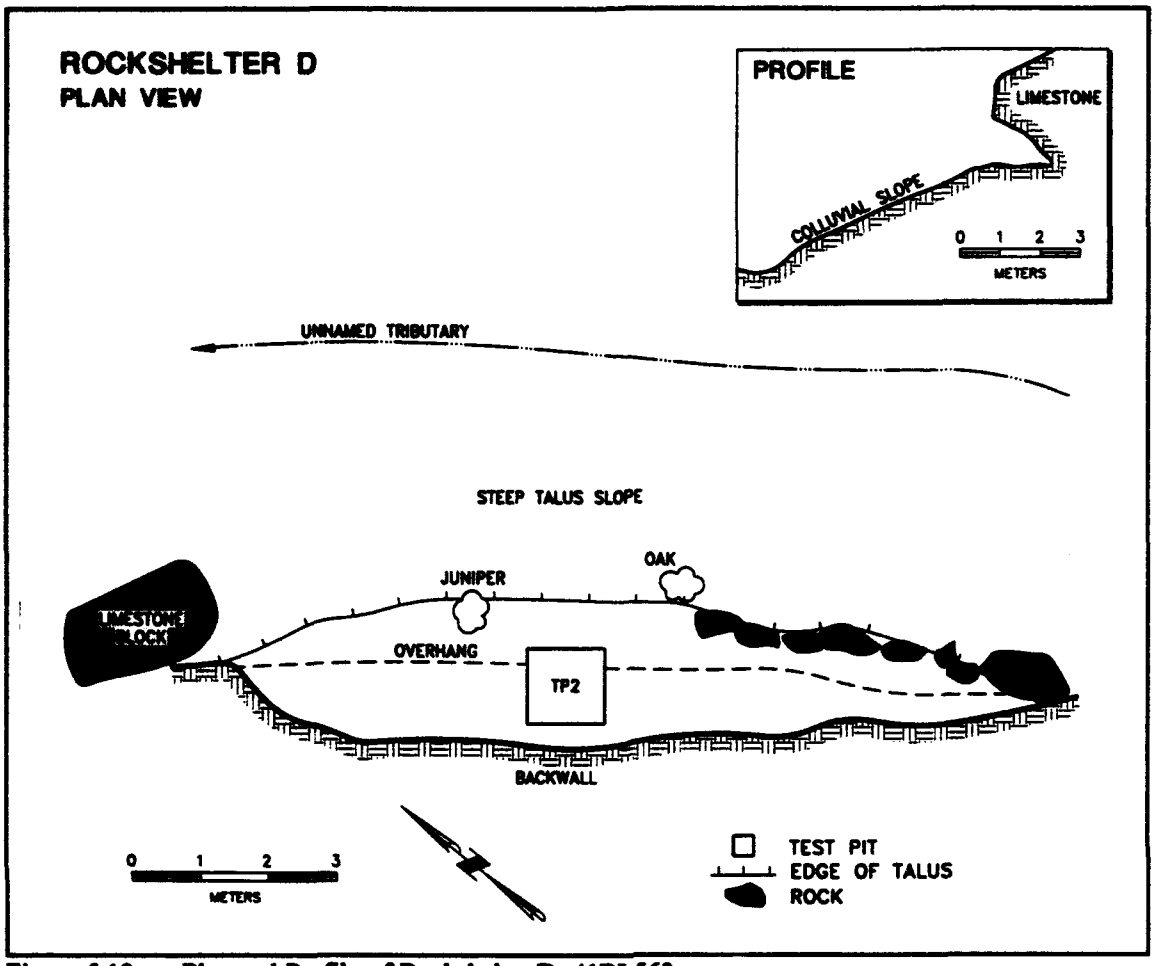


Figure 5.12 Plan and Profile of Rockshelter D, 41BL560.

levels 4 through 6 with 143 pieces in the three levels, although bone became quite sparse (n=6). A 4.4 g charcoal sample from 40 to 50 cmbs in TP 5 was identified as juniper wood and yielded a $\delta^{13}C$ (-24.4‰) corrected assay of 1770 ± 50 BP (TX-8416). Other tiny charcoal pieces (0.5 g) from this same provenience were identified as White Oak. Burned rock was absent. In addition, charcoal flecks and chunks were in the lower 30 cmbs and samples were collected from levels 5 and 6. At 40 cmbs, bedrock covered the entire northwest quadrant and half of the northeast quadrant. With depth, bedrock encroached further south and an immovable limestone slab (30 x 35 cm) covered the southwest corner at 45 cmbs. Thus, levels 5 and 6, with the highest artifact frequencies actually contained less than 0.1 m^3 of deposit.

5.4.3 Analysis and Interpretation

5.4.3.1 Definition of Analytical Units

These five test pit in four separate rockshelters yielded sparse cultural material which included 196 pieces of lithic debitage, seven stone tools, one

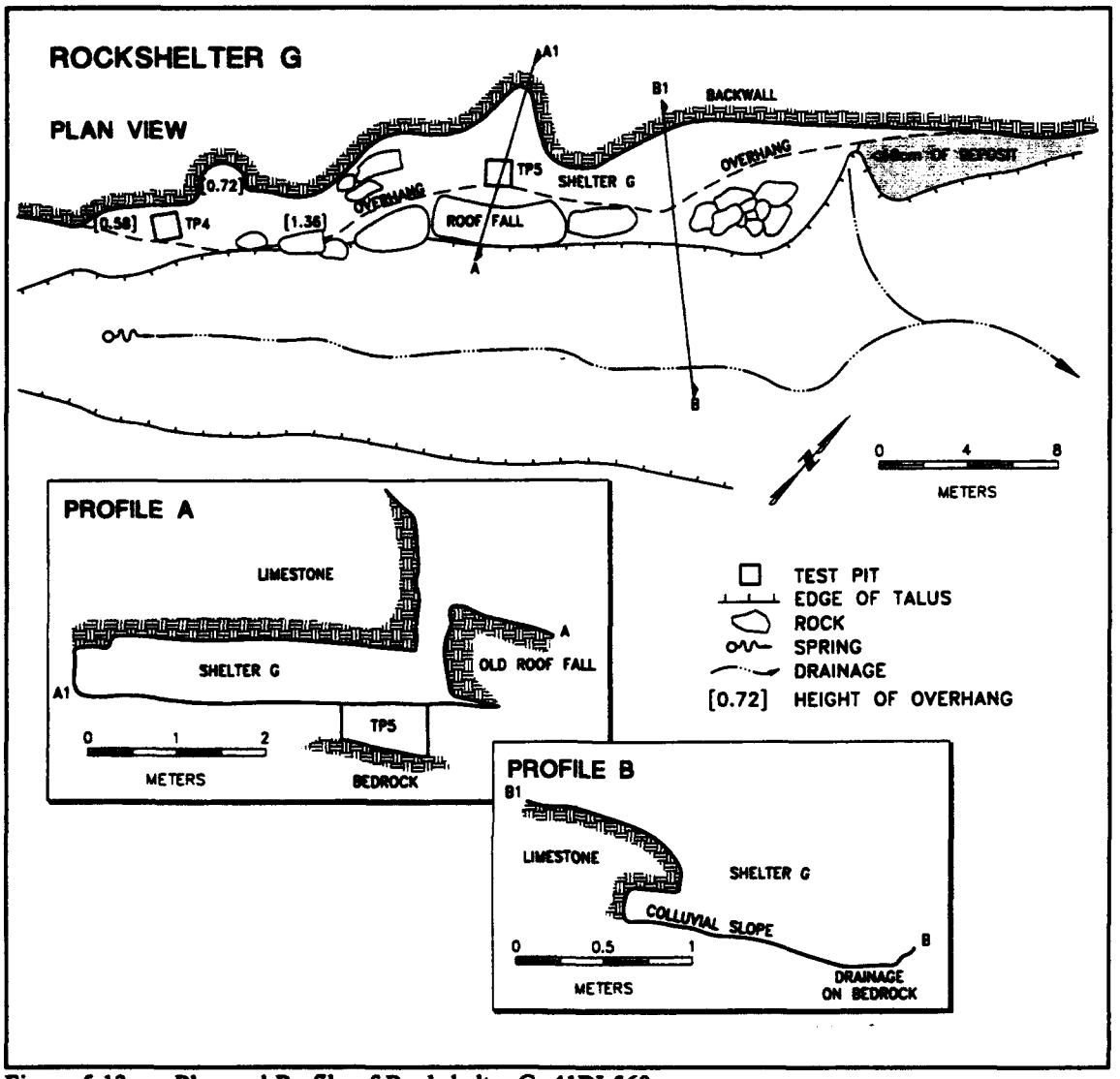


Figure 5.13 Plan and Profile of Rockshelter G, 41BL560.

mussel shell umbo, 55 bone fragments, sparse charcoal and some snail shells. No cultural features were recognized and only two burned rocks were recognized. Some items were assigned to the Late Archaic period while others could not be assigned to a time period. The Late Archaic period is based on the charcoal date of 1770 BP from 40 to 50 cmbs in TP 5; only materials from 30 to 50 cmbs in TP 4 and 30 to 60 cmbs in TP 6 are assigned to this period. Other materials from above the Late Archaic materials in TPs 4 and 5 (0 to 30 cmbs) plus the data from TPs 1, 2, and 3 could not be assigned to a period of use since they lacked diagnostic artifacts and absolute ages. Materials above the Late Archaic are so limited and may have been displaced upward from the lower occupation by turbation but it could not be determined with certainty and thus left unassigned.

Table 5.7 Artifact Recovery by Test Pit, 41BL560.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	18	0	0	21	0	0	-	unspec.
	2	-	0	0.0	0	9	0	0	8	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	6	-	0	0.0	0	1	0	0	5	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		0	0.0	0	28	0	0	41	0	0		
2	1	-	0	0.0	0	0	0	0	9	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unclass.
	Total		0	0.0	0	0	0	0	29	0	0		
3	1	-	2	0.1	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	3	0	1	-	unspec.
	6-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		2	0.1	0	0	0	0	14	0	1		
4	1	-	0	0.0	0	0	0	0	10	0	0	-	unspec.
	2	-	0	0.0	0	2	0	0	5	0	0	-	unspec.
	3	-	0	0.0	1	0	0	0	3	0	0	-	unspec.
	4	-	0	0.0	0	0	0	1	3	0	1	-	LA
	5	-	0	0.0	0	0	0	0	11	0	0	-	LA
	Total		0	0.0	1	2	0	1	32	0	1		
5	1	-	0	0.0	0	4	0	0	1	0	0	-	unspec.
	2	-	0	0.0	0	15	0	0	4	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	23	0	1	-	LA
	5	-	0	0.0	0	3	0	0	63	0	3	1770±50	LA
	6	-	0	0.0	0	3	0	0	56	0	1	-	LA
	Total		0	0.0	0	25	0	0	152	0	5		

5.4.3.2 Late Archaic Materials

These materials include 157 pieces of lithic debitage, six stone tools, a chert core, six bone fragments, and sparse charcoal and snail shells. No features were recognized.

The 157 pieces of lithic debitage represent eight identified and eight unidentified chert types with 21% of the materials identifiable and one obsidian flake (Table H-19). The quantities of identified chert types are fairly evenly distributed with one spike for Cowhouse White of the Southeast Range at 33.3% of the materials. However, North Fort materials with five types and 52% barely edges out Southeast Range with two types and 45% of the debitage. The combined indeterminates occur in greater than expected frequency, Cowhouse White occurs in expected frequency and all others occur in less than expected amounts (Table H-20). The exclusion of the indeterminates results in Cowhouse White occurring in higher than expected quantity and all others occurring in expected amounts.

The modal peak for size occurs at the 0.9-1.2 cm size category and 85% of the debitage is less than 1.8 cm in size. All size categories are present. Seventy-eight percent of the debitage is tertiary with a significant portion of the Cowhouse White debitage having partial cortex which has evidence of abrasion (Table H-21). The range of sizes and quantities of tertiary debitage indicate a normal biface reduction pattern.

The stone tools consist of four utilized flakes and two spokeshaves (Table H-22). These were manufactured out of indeterminate cherts of various colors such as light brown (n=2), mottled (n=2), and white (n=1), with one Gray/Brown/Green chert. The core has multiple platforms with no remaining cortex of indeterminate light brown (Table H-22). This frequency pattern is similar to the recovered debitage as 78% represented indeterminate chert types.

The six bone fragments are unidentifiable long bones of large to very large mammals with five burned and five with spiral fractures (Table H-23).

The radiocarbon age of 1770 BP would place these materials into the Twin Sisters phase (Prewitt 1981; 1985) which is usually reflected by Ensor type points. Although many of the small rockshelters in Fort Hood have this age material, they nearly all have limited assemblages. This is one of the deeper occupations in rockshelters and it has no clear evidence of latter occupations above to cloud potential misassociations of materials. Consequently, this buried occupation could provide data to address this particular phase.

5.4.3.3 Temporally Unspecified Materials

These materials include 113 pieces of debitage, one stone tool, one mussel shell umbo, 49 bone fragments, two burned rocks, some charcoal flecks, and snail shells scattered over five different test pits in four different rockshelters. About 30% of these were from the top 20 cmbs in TP 1.

The 113 pieces of lithic debitage represent five identified and eight unidentified chert types with 16% of the materials identifiable (Table H-24). Only light brown debitage (30%) is in high enough quantities to appear to dominate the indeterminates. Although North Fort materials have one more chert type than the Southeast Range, the latter has an advantage of quantity (61% versus 39%). Only the combined indeterminates occur in higher than expected frequency, while all others occur at less than expected quantities (Table H-25). Of the indeterminates, all types occur in the expected amounts. The modal peak for size is the 0.5-0.9 cm category; however, a plateau from 0.9 to 1.8 cm in size is evident. Eighty-nine percent of the debitage is less than 1.8 cm in size. The indeterminates have a higher tertiary rate than the identified materials averaging to s 78% tertiary rate for all materials (Table H-26). The range of sizes and quantities of tertiary debitage indicate a normal biface reduction pattern.

The single stone tool is a utilized flake made of indeterminate light brown chert from TP 3, 40 to 50 cmbs. This was directly associated with only three pieces of lithic debitage.

The single umbo from TP 4, 20 to 30 cmbs was unburned and unidentifiable (Table H-27). The 49 bone fragments were mostly large to very large mammals (45%) with some medium to large (8%), and small to medium (16%) size mammals represented. Deer, bison/cow, rabbit, snake, armadillo, cat, pig, and bird were all identified. The two pig elements and one cat element were from TP 1, 0 to 10 cmbs. The armadillo plate was from TP 5, 10 to 20 cmbs. The two tiny burned rocks weighed 0.1 kg and were from TP 3, 0 to 10 cmbs.

The erratic vertical distribution, their sparse nature, and the geomorphological interpretations indicate most of these materials are displaced from the upland and do not represent a single period of time.

5.4.4 Conclusions

The sediments infilling Rockshelters A, C, D, and G in Subarea C varied from stony, multicolored silty loam and clay loam representing coarse limestone spall and mixed internal and external fine sediments in Shelters C and D (TPs 1 and 2) to stony silty to loamy grayish brown sediments of primarily internal origin in Shelter A (TP 3), to dark, clayey fine-grained sediments of probable external origin mixed with coarse, internally-derived spall in Shelter G (TPs 4 and 5). Although the degree of weathering varied considerably among these fills, no fill evinced even incipient development of internal soil horizonation, indicating that none of the shelter fills examined are likely to be more than a few thousand years old. This is supported by the one charcoal age of 1770 BP near the bottom of Shelter G (TP 5).

Although Shelters C and D have sparse cultural material buried to 80 cm below the surface, it is most likely that this material had originally been in the upland surface above the shelter, thus not now in primary context. This conclusion is reinforced when the ceiling clearances of the two shelters are considered; at 55 and 75 cm clearance, respectively, it is unlikely that the cultural material in the upper 20 cm of each shelter was deposited by knapping within the shelter itself. By contrast, the cultural material in Shelters A and G are contained within internally derived sediments. The material in Shelter A is sparse but appears to be in primary context. The cultural material in Shelter G suggests a possible buried occupational surface between 30 and 40 cmbs that is of Late Archaic times. The central part of Shelter G (in the vicinity of TP 5 and where the larger pieces of roof fall are mapped on the planview) is most likely the area of greatest potential.

On the basis of the above, Shelters A and G at 41BL560 are evaluated as containing intact archeological deposits with potential to address issues outlined in the research design for Fort Hood. Accordingly, these parts of the site are judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in settings that are well known for their capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.5 SITE 41BL773

In October 1994, we conducted formal test excavations at prehistoric archeological site 41BL773. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Five test pits totaling 2.5 m^3 were hand excavated. The test excavations demonstrate the presence of buried cultural material in good context dating to the Late Prehistoric II period. These deposits have high potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape

processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.5.1 Introduction

5.5.1.1 Site Location and Description

Site 41BL773 is a rockshelter in southeastern Fort Hood, in Training Area 18. The shelter faces north and is formed beneath the Manning surface escarpment. Small chert nodules are embedded in the shelter's back wall. Maximum shelter dimensions, defined in 1993, measure 10 m long, 4.5 m wide, and 1.2 m high, with an east-west long axis (Figure 5.14). For purposes of analysis, the site is considered a member of the Nolan/Cowhouse site group.

5.5.1.2 Previous Work

Dureka and Mesrobian originally recorded this rockshelter on 6 November 1984. Debitage, burned rocks, and biface fragments were noted in the shelter and along the talus slope and two Ensor points were collected (Carlson et al. 1987). Fill consisted of a black silty loam, but depth of deposit was unknown. The shelter was vandalized, although not extensively nor recently. Overall, the shelter was judged to be impacted about 30% by vandalism and erosion.

On 3 March 1992, Mires and Doering revisited and reevaluated the shelter based on archeological potential and geomorphic context. Maximum shelter dimensions were measured as 10 x 4.5 x 1.2 m. Two surfaces were noted; one contained in the shelter overhang and a second consisting of a fairly level bench in front of the easternmost third of the shelter. The shelter interior consisted of internally and externally derived matrices, with at least 25 cm of deposit as evidenced by a pothole. The matrix on the bench was an accumulation of sediment eroding from the uplands. A quartzite hammerstone, debitage, and cores were observed, with most material noted on the bench. Since the site had potential for intact cultural deposits, a crew excavated a 50 x 50 x 50 cm deep shovel test (ST 1) in the rockshelter in March 1992. This small unit yielded 47 pieces of lithic debitage, nine bone fragments, charcoal flecks, and a few burned rocks between the surface and 50 cmbs, with the highest artifact recovery (about 60% of all cultural material) from 20 to 40 cmbs. Shovel Test 1 results indicate potentially intact cultural deposits and formal testing was recommended to determine NRHP eligibility (Trierweiler 1994:A493-495).

5.5.1.3 New Work

Formal shelter testing was conducted in October 1994. Five test pits were dug in areas of greatest suspected potential and least disturbance based on previous work, new observations, and pin flag probes. Two test pits (TPs 1 and 5) were dug inside the shelter (Figure 5.15) just west and east of the central pothole respectively. Bedrock was encountered at 100 and 50 cm respectively. Test Pit 2 and two 1 x 0.5 m units (TPs 3 and 4) were excavated on the bench outside the shelter. Test pits 3 and 4 were positioned end-to-end creating a 2 x 0.5 m trench. Unit sizes and depths are presented in Table 5.8.

5.5.2 Results

The surface topography of the shelter fill and character of exposed shelter sediments (on the surface and in the large central pothole) indicate that the shelter is infilled with relatively complex interdigitated and/or laterally opposed internal stony silts and external slopewash sediments. The external sediment appeared to primarily derived from a debris cone/alluvial fan at the shelter's western end. This sediment cone flows into the shelter from behind a large boulder calved from the overhang, and appeared to be a direct result of redirection of overland flow back into the shelter by the large fall block.

Test pit 1, at the base of the debris cone, was composed of highly organic, very stony black to dark grayish brown stony clay loam. Coarse clasts made up almost 50% of the matrix, and defined

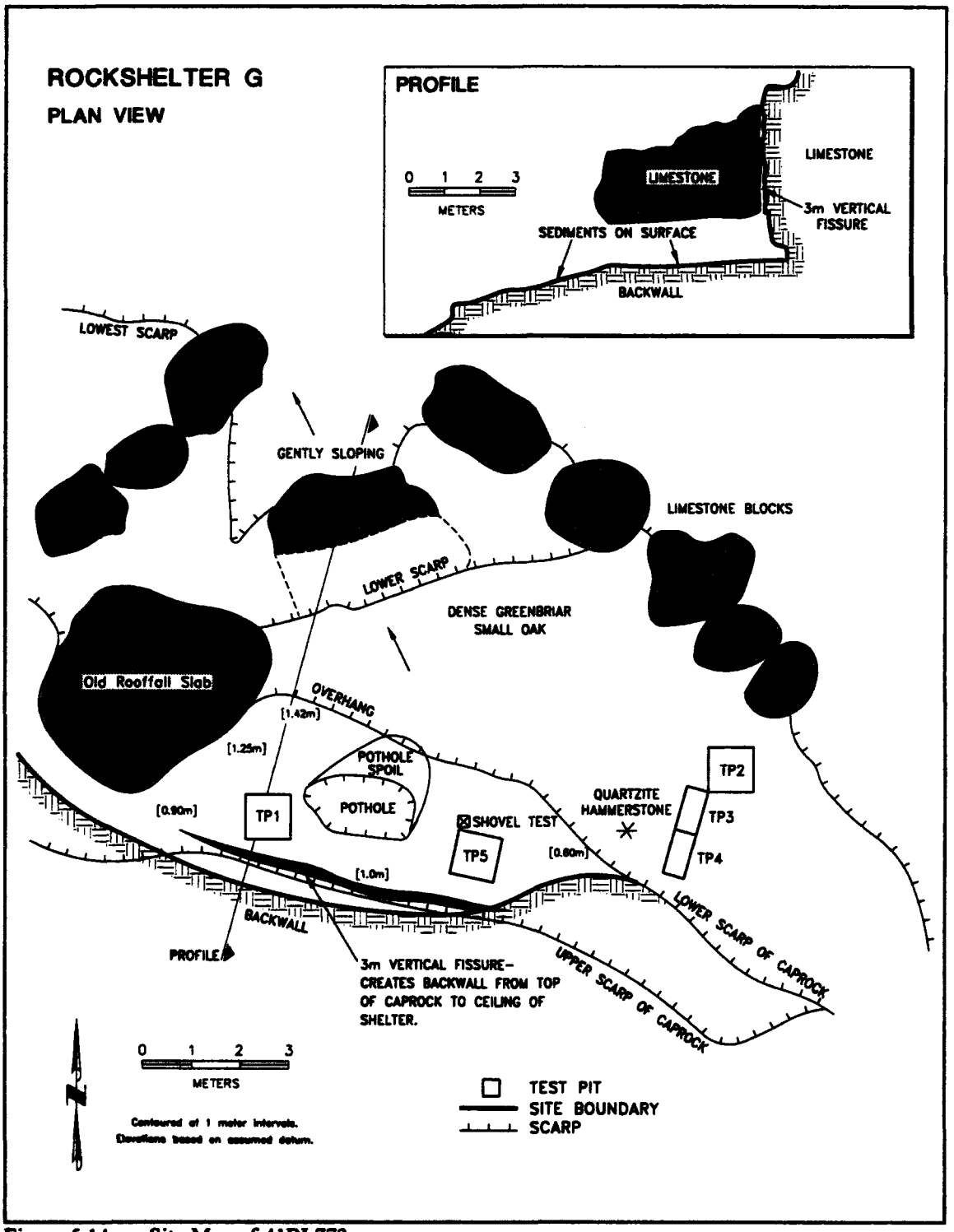


Figure 5.14 Site Map of 41BL773.



Figure 5.15 Opening of Rockshelter A, 41BL773.

several clear, dipping strata inclined into the shelter from the debris cone. The coarse clasts probably represent a mixture of external stones and internal eboulis; the fine matrix appeared to be externally-derived, although it is possible that some of the fine sediment is heavily weathered internal material resulting from the abnormal influx of moisture accompanying the external sediment. Cultural material was recovered from surface to 70 cmbs, and included 138 pieces of lithic debitage, as well as five burned rocks, five bone fragments, and charcoal flecks (Table 5.9). High artifact frequencies occurred 10 to 40 cmbs, with a Perdiz and an unclassifiable arrow point in level 4. From 50 to 70 cm the material decreased rapidly with only 28 lithic pieces, and an unclassifiable arrow point from level 6. Levels 8 through 10 were culturally sterile. Bedrock was encountered 60 to 65 cmbs along the southern edge of the unit, dipped to 96 cmbs at the center, and rose to 84 cmbs along the north wall. One of the sedimentary characteristics noted during the excavation of TP 1 was the stark contrast apparent between the sediments recovered from the test pit and the sediments in the backdirt of the adjacent pothole. These latter materials consisted of gray stony silts, and appeared to be internally derived. Because of this contrast, TP 5 was excavated to address the internal fill question (Figure 5.15).

The fill in TP 5 was similar to the pothole spoil; namely, very stony, gray to grayish tan stony silty loam. Weak horizontal zonation was apparent in the test pit profile, suggesting that the fill was minimally disturbed, but no clearly distinct strata

Table 5.8 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.96	rockshelter
TP 2	1.00	1.00	0.50	rockshelter
TP 3	1.00	0.50	0.30	rockshelter
TP 4	1.00	0.50	0.50	rockshelter
TP 5	1.00	1.00	0.72	rockshelter

Table 5.9 Artifact Recovery by Test Pit, 41BL773.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	28	0	0	-	mixed
	2	-	0	0.0	0	3	0	0	22	0	2	-	LP-II
	3	-	3	0.2	0	4	0	0	34	0	1	-	LP-II
	4	-	0	0.0	0	6	0	0	12	2	1	Perdiz	LP-II
	5	-	2	0.4	0	0	0	0	14	0	0	-	LP-II
	6	-	3	1.3	0	0	0	0	26	1	0	?arrow	unspec.
	7	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	8-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		8	1.9	0	13	0	0	138	3	4		
2	1	-	0	0.0	0	0	0	0	1	0	0	-	mixed
	2	-	1	0.5	0	0	0	0	16	0	1	-	LP-II
	3	-	2	0.5	0	2	0	0	43	1	0	Bonham	LP-II
	4	-	0	0.0	0	1	0	0	20	0	0	-	LP-II
	5	-	0	0.0	0	0	0	0	1	0	0	-	LP-II
	Total		3	1.0	0	3	0	0	81	1	1		
3	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	12	0	0	-	LP-II
	3	-	3	0.5	0	2	0	0	16	0	0	-	LP-II
	Total		3	0.5	0	2	0	0	28	0	0		
4	1	-	1	0.3	0	0	0	0	2	0	0	-	mixed
	2	-	1	0.3	0	12	0	0	0	0	0	-	LP-II
	3	-	1	0.3	0	0	0	0	0	0	0	-	LP-II
	4-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		3	0.9	0	12	0	0	2	0	0		
5	1	-	8	1.0	0	8	0	0	39	0	0	-	mixed
	2	-	9	2.4	0	8	0	0	94	1	0	Scallorn 1490±80;	mixed
	3	-	7	1.3	0	3	0	0	50	1	1	250±60	mixed
	4	-	4	0.7	0	0	0	0	25	0	0	-	mixed
	5	-	0	0.0	0	0	0	0	5	0	0	-	mixed
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		28	5.4	0	19	0	0	213	2	1		

were observable. Although there is no clear evidence for this, the sediments had an "ashy" feel that suggested that a considerable volume of cultural sediments are probably included in the overall column. The same artifact array noted in TP 1 was recovered from surface to 50 cmbs in TP 5. Most material (183 flakes) was recovered from the upper 30 cm, with a Scallorn and an untyped arrow point in levels 2 and 3 respectively. Also of note in levels 2 and 3 was the presence of nearly 40 burned rocks. Most were scattered across the northern half of the unit, but were small to very small pieces totaling only 2 to 3 kg per level. Nonetheless, this may be indicative of a buried occupation. Between 30 to 50 cmbs the cultural material decrease dramatically in frequency with only 30 flakes and three burned rocks. Bedrock slightly dipped from 60 cmbs along the south wall to a maximum depth of 72 cmbs in the northwest corner. No cultural material was recovered below 50 cmbs. A total of 9.9 g of charcoal were recovered from TP 5 with one relatively large (3.2 g) sample identified as White Oak and yielding a $\delta^{13}C$ (-26.9‰) corrected assay of 1487 ± 80 BP (TX-8425). A second, smaller (0.1 g) sample from the same provenience was identified as Willow and gave a $\delta^{13}C$ (-29.0‰) corrected assay of 250 ± 60 BP (Beta-83253).

Test Pit 2 was dug outside the dripline on a gently sloping surface in the front of the platform. Basal limestone was encountered along the southwest corner at 20 cmbs and covered 80% of TP 2 at 35 cmbs; maximum excavated depth in TP 2 was 50 cmbs. Test pit 2 exhibited an A-Bw profile developed in slightly stony black to dark grayish brown clay loam (Figure 5.16). A single pieces of debitage was in the upper 10 cm. Seventy-nine flakes, including some angular debris, were recovered from 10 to 40 cmbs. Of note was the recovery of three burned rocks, a burned bone fragment, and a Bonham point from level 3. A maximum depth of 50 cmbs was reached in about a 25 x 25 cm area located along the east wall. One flake was recovered from this area between 40 to 50 cmbs.

It was unclear whether the basal rock encountered in these test pits represented bedrock or roof fall, therefore a 2 x 0.5 m trench (TPs 3 and 4) was excavated to provide a greater cross-section. The trench was adjacent to the southwest corner of TP 2 and extended southwest to the shelter dripline. The north half (1 x 0.5 m; closest to TP 2) was designated TP 3 and the south half (1 x 0.5 m; closest to the dripline) was designated TP 4. The basal rock previously noted in TP 2 extended into TPs 3 and 4 and appeared to be bedrock.

Test Pit 3 revealed a matrix profile that consisted of the A horizon draped over a bedrock hump (Figure 5.17) that separated the Bw horizon in TP 2 from a saprolitic zone in TP 4. Due to the slope of TP 3 in reference to the unified elevation control datum, excavation "began" at level 2. Twenty-eight pieces of lithic debitage and two bone fragments came from 10 to 30 cmbs with impenetrable limestone encountered at 30 cmbs.

Test Pit 4 exhibited an A-2C-2R profile consisting of the same black stony clay loam over a layer of pinkish, saprolitic limestone resting on hard bedrock. Two flakes and a burned rock came from level 1, whereas no flakes, one burned and 12 bone fragments came from level 2. However, modern glass fragments were also noted in level 2, indicating disturbance. Levels 4 and 5 were culturally sterile saprolite, with hard bedrock encountered at 50 cmbs.

5.5.3 Analysis and Interpretation

5.5.3.1 Definition of Analytical Units

The five test pits yielded 462 pieces of lithic debitage, six stone tools, six arrow points, 49 bone fragments, 64 burned rocks (10.6 kg), small flecks of charcoal and snail shells. These cultural materials were divided into three analytical units based on two charcoal dates and the suite of six arrow points. The main occupation appears to represent the Late Prehistoric II period based on the presence of one Perdiz, one Bonham, and two

unclassifiable arrow points in TPs 1 through 4 and below 10 cmbs.

Test Pit 5 yielded a Scallorn and an unclassifiable arrow point from Levels 2 and 3 respectively, plus two charcoal dates of 250 and 1490 BP from Level 3. All TP 5 material plus the top 10 cm of TPs 1 through 4 appear mixed by vandals. The light scatter of material below the Late Prehistoric II period occupation is presently unclassifiable to a particular time period. It may reflect displaced materials from above or a Late Prehistoric I event as evidenced by the Scallorn and the 1490 BP date in mixed context in TP 5. Each analytical unit is discussed below.

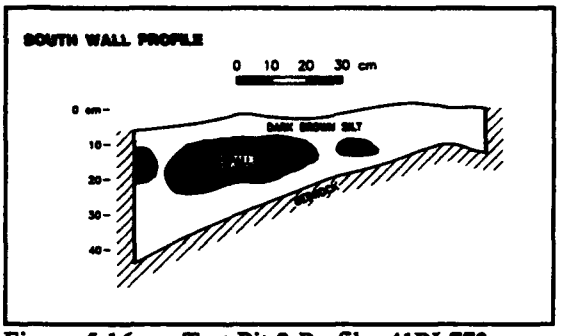


Figure 5.16 Test Pit 2 Profile, 41BL773.

5.5.3.2 Late Prehistoric II Materials

These materials include 190 pieces of lithic debitage, five stone tools, three projectile points, 30 pieces of bone, and 11 burned rocks (2.5 kg) but no recognizable features.

The 190 specimens of lithic debitage represent eight identified and nine unidentified chert types with 13% of the materials identifiable (Table H-28). Fossiliferous Pale Brown stands out among the identified materials at 46%; however, the sample size is rather small to make judgments. Southeast Range materials dominate the identified materials with five types at 83%. Among the unidentified materials light brown debitage is 34%. The combined indeterminates occur in higher than expected frequencies, while Fossiliferous Pale Brown occurs in expected quantities and all others occur at less than expected frequencies (Table H-29). The exclusion of the indeterminates results in Fossiliferous Pale Brown occurring in higher than expected frequency and all others in expected frequencies.

The modal peak for size is the 0.5 to 0.9 cm category (Table H-28). Only the smallest size category is not present in this assemblage. Sixty-two percent of the debitage is tertiary pieces with almost 30% having partial cortex with evidence of abrasion (Table H-30). The size data implies that biface reduction was a primary activity; however, the cortex data would indicate that core reduction also played an important role in creating this debitage assemblage.

The arrow points consist of the proximal end of a Bonham and a Perdiz, and a medial fragment of an untyped arrow point. These points were also made of indeterminate cherts (Table H-31). The five

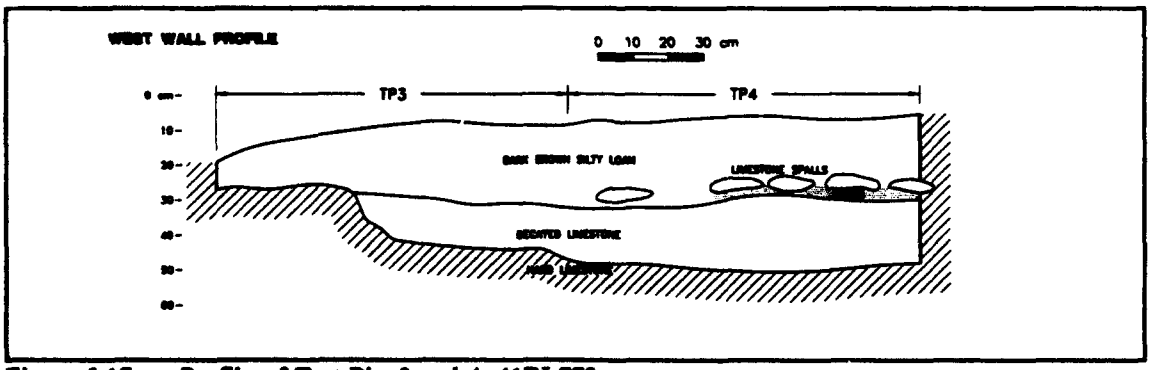


Figure 5.17 Profile of Test Pits 3 and 4, 41BL773.

stone tools consist of three utilized flakes and two edge modified flakes (Table H-32). These were manufactured from indeterminate chert types of mostly (n=3) light brown. Since the debitage reflects chert materials not represented by the recovered tools, removal of the tools from the discard location of the debitage is indicated.

The 30 bone fragments are mostly long bone pieces of medium to large mammals, deer size (n=24), with some (n=6) small to medium size mammals, rabbit size, represented as well (Table H-33). Thirteen pieces were burned with at least one having a spiral break to denote cultural modification. Fifty-seven percent were determined to have light weathering on their surfaces. In general the inhabitants appear to have eaten deer and rabbit size animals.

The burned rock was mostly in levels 2 and 3 and did not appear to represent any intact features. The low frequency is in contrast to other shelters which have revealed considerable burned rock and midden like deposits.

The presence of one Perdiz and one Bonham makes assignment to the Toyah phase questionable (Prewitt 1981; 1985). The age association for the Bonham point is uncertain and whether this represents a separate occupation is not clear. Thus assignment to a single phase may be premature. Some differences exist between the material from this shelter in comparison to most other shelters in Fort Hood which contain Austin phase materials.

5.5.3.3 Mixed Materials

These materials include 244 pieces of lithic debitage, one stone tool, two arrow points, 19 pieces of bone, and 51 burned rocks. The 244 specimens of lithic debitage represent six identified and nine unidentified chert types with 4% of the materials identifiable (Table H-34). The indeterminate light brown debitage stands out at 33% of that assemblage. The Southeast Range materials at three types (n=5) are slightly more numerous than the North Fort cherts with two types (n=2). The combined indeterminates occur in higher than expected frequencies as can be easily seen in the tabulations (Table H-35). The exclusion of the indeterminates results in each identified material occurring in expected amounts.

The modal peak in the size categories occurs at the 0.9 to 1.2 cm size with an almost equal drop off to both ends of the spectrum. Only the smallest size category is not represented. Eighty-four percent are less than 1.8 cm and 61% of them are less than 1.2 cm. The numbers of tertiary debitage are high accounting for 88% of the total (Table H-36). These data would seem to indicate that a combination of core and biface reduction took place.

Two untyped arrow points were made of indeterminate cherts, while the single tool is a complete limestone hammerstone.

The 19 bone fragments represented mostly by long bone fragments of small to medium, and medium to large mammals similar to the main occupation materials (Table H-37). Again just over 50 % were burned, but a higher percentage of marked weathering exists. The burned rocks were mostly from TP 5 with about 40% from level 2. The two conflicting radiocarbon dates from the same level indicate mixing has occurred. More than likely, the 3.2 g sample of White Oak indicates the true occupation age, whereas the 250 BP date on the tiny piece of Willow worked its way down the profile. The 1490 BP age is consistent with the Scallorn point from level 2.

5.5.3.4 Temporally Unspecified Materials

These sparse materials include 28 pieces of lithic debitage, one unclassifiable arrow point, and two burned rocks. No diagnostic points, bones, or charcoal were associated with these materials. It is unclear what these materials represent, possible turbated materials from the Late Prehistoric II or indication of the Late Prehistoric I indicated by the Scallorn points in TP 5.

The 28 specimens of lithic debitage represent one identified (Heiner Lake Blue) and seven unidentified chert types resulting in only 7% of the materials identifiable (Table H-38). Twenty-eight specimens is not a sizable sample but the size category with the highest frequency is 0.9 to 1.2 cm. Tertiary pieces represent 71% of the materials (Table H-39).

5.5.4 Conclusions

The shelter fill appears to represent both internal and external sediments. The shelter has clearly been disturbed to some degree, as evidenced by the looter's pit and the a couple of glass fragments. Therefore, the top 10 cm of TPs 1 through 5 are considered mixed deposits. The 250 and 1490 BP charcoal dates from TP 5, level 3 and a Scallorn point in level 2 of TP 5 clearly indicate mixing in TP 5. However, there is little to suggest that the integrity of deposits below the mixed first 10 cm in TPs 1 through 4 have been compromised. Based on the abundance of artifacts the presence of bone fragments, arrow points, snail shells, burned rock and charcoal, this shelter appears to contain some intact archeological deposits of the Late Prehistoric II period with potential to address issues outlined in the research design for Fort Hood Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surface disturbances by military personnel during training exercises.

5.6 SITE 41BL844

In late October and early November 1994, we conducted formal archeological test excavations at prehistoric cultural resource site 41BL844. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Seven test pits totaling 4.8 m^3 were hand excavated within five rockshelters and a rock alcove. Formal tests demonstrate the presence of intact, buried, and stratified cultural components, some dating to the Late Prehistoric I period. These deposits have high potential to inform on key research questions including prehistoric technological and economic systems. As a result, the tested shelters are evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.6.1 Introduction

5.6.1.1 Site Location and Description

Site 41BL844 is in southeastern Fort Hood, Training Area 16. This site is a very large lithic procurement site on a high upland overlooking a tributary of North Nolan Creek to the north, with five rockshelters and a small alcove area with rockshelters along the northern margins of the escarpment (Figure 5.18). Maximum site dimensions, as defined in 1993, measure roughly 1,000 m in diameter, and cover an area of 100 hectares (247 acres). For purposes of analysis, the site is considered a member of the Nolan/South site group.

5.6.1.2 Previous Work

This site was initially recorded on 16 March 1986 by Strychalski, Hoffman, Kooren, and Mehalchick and consisted of a large artifact scatter across the upland surface, with most tool concentrations noted along the escarpment edges and above the heads of drainages. Observed cultural material included bifaces, scrapers, debitage, burned rocks, cores, with collected artifacts including a "nutting" stone with a mano, two dart points, and a keeled end scraper (Kock and Mueller-Wille 1989a). The site also included four rockshelters, designated A, B, C, and D with Shelters A, B, and C partially vandalized, but no disturbance was drawn on the map for Shelter D. In addition, the maps noted cultural material in Shelters A and D. The site form noted the presence of mussel shell and bone on site, but locales for these ecofacts were not

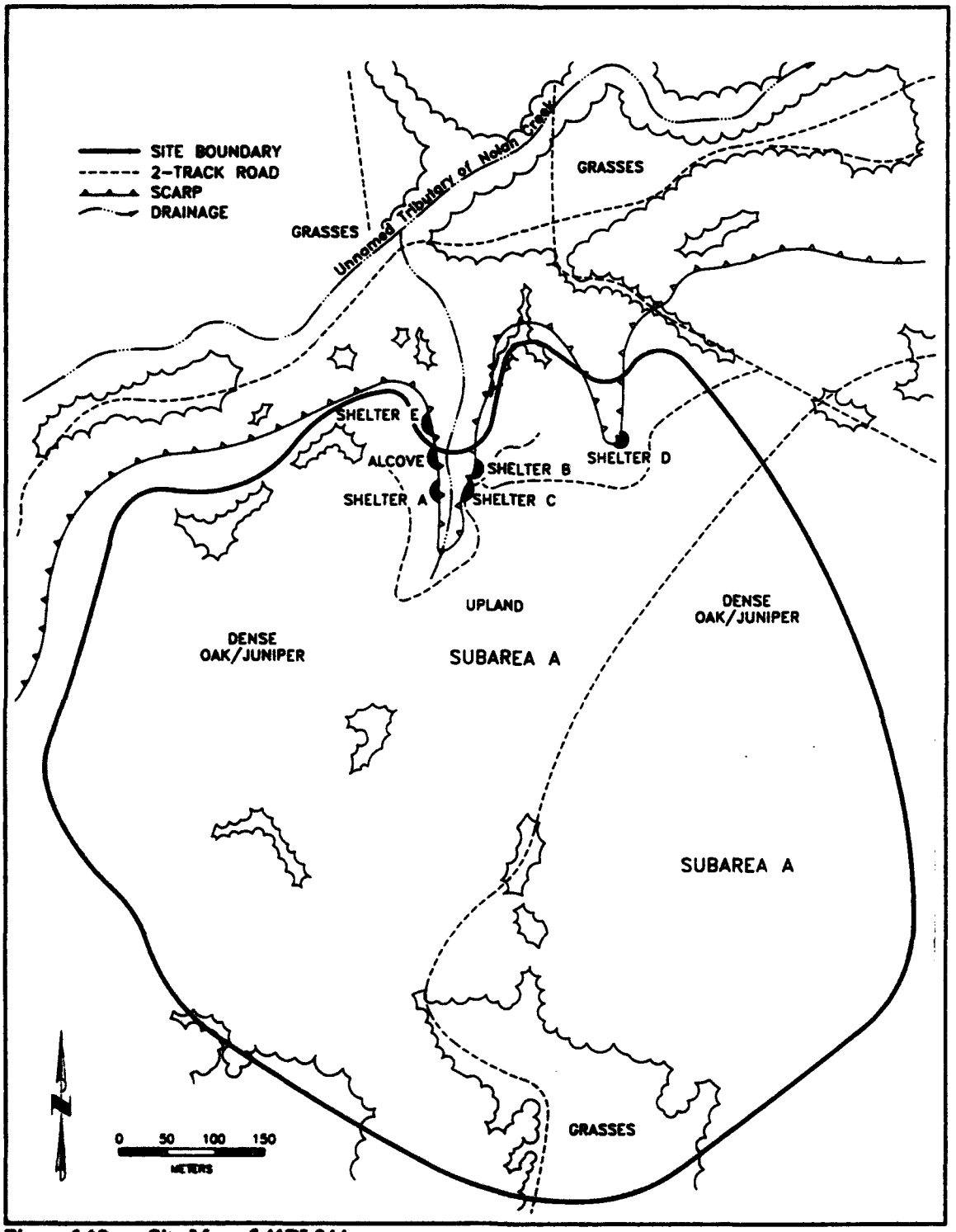


Figure 5.18 Site Map of 41BL844.

given. In general, the site had been impacted 55% by erosion, clearing, vehicular traffic, and vandalism.

On 22 December 1992, Turpin and Abbott revisited and reevaluated the site based on archeological potential and geomorphic context. The site was divided into Subarea A, the upland surface, and Subarea B, the four rockshelters. Within Subarea A, a large quantity of residual chert and an artifact assemblage consisting of tested cobbles, cores, crude bifaces, and primary flakes. The upland soil deposition varied from less than 10 cm to a maximum of 20 cm with little potential to contain buried archeological deposits in good context and thus not shovel tested. On 19 March 1993, Abbott and Kleinbach evaluated Subarea A for potential to address questions of lithic resource procurement and reduction. Chert and impact zones were identified, mapped, and characterized, and in April 1993 a crew conducted surface resurvey. Based on the frequencies and percentages of positive observations, much of Subarea A had low potential to contribute to lithic procurement research and no further management was recommended. However, two areas on the east and west margins of the site had a substantial number of positive observations and the material present was judged to have the integrity and ubiquity necessary to serve as a source of data relevant to questions of lithic procurement behavior. These parts of the site were recommended as potentially eligible for inclusion to the NRHP. It was also recommended that testing of these areas be postponed until a possible need for mitigation is imminent (Trierweiler 1994:A548-564).

Subarea B subsumed four rockshelters, with Shelters A, B, and C in one notch in the upland surface formed by an incising tributary, and Shelter D in a second, similar canyon. Based on the shelters high potential to contain buried archeological deposits, they were shovel tested on 28 December 1992. Shovel testing included one 50 x 50 cm unit in each shelter, supplemented by additional shovel tests in Shelters B and D. A human femur was on the surface in Shelter B. At this time, an alcove north of Shelter A was discovered; it was tested, but a sketch was not drawn. Based on shovel testing results, Shelter C was judged to lack contextual integrity, with very limited significance potential, and no further work was recommended for Shelter C. However, Shelters A, B, and D contained potentially intact cultural materials in stratified depositional context and formal testing was recommended to determine eligibility. Formal testing was recommended to include two square meters of manually excavated TPs in each shelter (Trierweiler 1994:A548-564).

5.6.1.3 New Work

In late October and early November 1994, formal testing was conducted in Rockshelters A, B, and D, plus the "alcove" north of Shelter A. The alcove, not previously fully described, was also recorded. In addition, an unrecorded and collapsed rockshelter (designated E) was discovered 50 to 60 m north of Shelter A. Because Shelter E appeared to have potential to contain buried cultural deposits, formal testing was undertaken to determine its NRHP eligibility.

Seven test pits (TPs 2, 5, 6, 8, 9, 10, and 11) were excavated; unit designations previously assigned to the 50 x 50 cm units (TPs 1, 3, 4, and 7) were not used during formal testing. Units were in areas of greatest potential and least disturbance based on previous work, present observations, and pin flag probes. Unit sizes and depths are listed in Table 5.10.

Table 5.10 List of Treatment Units.

Treatment Unit*	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 2	1.00	1.00	1.26	rockshelter
TP 5	1.00	1.00	0.69	rockshelter
TP 6	1.00	1.00	0.40	rockshelter
TP 8	1.00	0.80	0.63	rockshelter
TP 9	0.75	0.50	0.50	rockshelter
TP 10	1.00	1.00	0.90	rockshelter
TP 11	1.00	1.00	0.97	rockshelter

*Note: test pits 1, 3, 4, and 7 were previously excavated.

5.6.2 Results

5.6.2.1 Excavations in Shelter A and its Alcove

Shelter A measures about 13 x 3 x 1.75 m (Figure 5.19) with a sloping floor composed of light gray and light brown silt mixed with coarse rock spall. One pothole was noted, disturbing 10% of the surface, and a recent hearth was present near the shelter's center. A light scatter of cultural material was noted on the surface. Test Pit 5 was centrally located in Rockshelter A and the profile revealed interstratified lenses of organic-rich internal sediment and reddish brown clay loam of external origin, with the relative proportion of the latter sediment increasing toward the base of the unit. Cultural materials (about 1,500 pieces) were from the surface to 69 cmbs, with 0 to 10 cmbs consisting of backdirt from a nearby pothole (Table 5.11). Depths 10 through 40 cmbs were disturbed by an intrusive pit along the north wall and the recovery of a spent .22 caliber cartridge from 20 to 30 cmbs. Artifacts counts remained high between 40 to 50 cmbs. but decreased dramatically to 70 cmbs. A 3 g charcoal sample from 40 to 50 cmbs was identified as White Oak wood and provided a $\delta^{13}C$ (-26.4‰) corrected assay of 790 ± 90 BP (Tx-8427). Below 50 cm artifacts decrease rapidly with bedrock encountered across the unit between 54 and 69 cmbs. Although areas within Rockshelter A have been vandalized, excavation results revealed an intact, buried cultural deposit from 40 to 60 cmbs.

Interior dimensions of the "alcove" north of Shelter A are 1.05 x 1.00 m, with an overhang height of 0.42 m along the dripline (Figure 5.20). The ceiling height is considerably lower (about 0.25 m) towards the back. A small ledge, measuring 0.90 x 0.25 m, extends from the edge of the dripline east to the talus slope. Rather than being an enclosed room, this "alcove" was formed by limestone boulders cleaved from the limestone escarpment above. Slopewash was noted in a thin wedge between the south edge of the alcove and an adjacent boulder. Within the alcove, TP 9 (50 cm north-south x 75 cm east-west) was near the dripline and extended west, under the overhang, as far as possible to render excavation doable. Although moderate to high artifact frequencies (about 500 pieces) occurred from surface to 50 cmbs, including a dart point from 40 to 50 cmbs, this material was in secondary context. Recovered bone included the recent remains of a larger animal, possibly deer. Excavation was terminated at 50 cmbs due to the presence of immovable rocks across most of the unit.

5.6.2.2 Excavations in Shelter B

Maximum dimensions of Shelter B are 15 x 5 m with the highest point of the ceiling at 1.6 m, although most of the ceiling was considerably lower (Figure 5.21). Internally derived silts were in the shelter while a dark brown clay loam derived from the surrounding uplands, was along the front of the shelter (talus edge). The human femur exposed on the surface at the time of the shovel testing phase was no longer present, and presumably had been collected by Fort Hood archeologists for repatriation. Test pits 6 and 10 were in Rockshelter B with TP 6 centrally located in the northern half, just north of a few potholes. Artifact ubiquity was high (abut 600) from surface to 30 cmbs, with a drastic decrease from 30 to 40 cmbs (about 20). Parts of TP 6 appeared disturbed from vandalism. In the southwest quadrant, human remains were discovered 25 to 30 cmbs in a shallow pit measuring 25 cm in diameter. A rib fragment, one tooth, and a finger bone (phalanx) were observed. The fill in this area was a grayish brown silty clay loam in contrast to the dark brown, silty clay loam and a yellowish-brown silt, in rest of the unit. Context of the human remains was suspect (possibly a result of potting activity); however, this feature is similar in morphology and depositional context to a burial pit (Feature 1) encountered in TP 2 during testing of Rockshelter B at 41BL744. At the request of Fort Hood archeologists, all human remains were reentered in the test pit.

Test Pit 10, offset from the edge of a pothole in the southern half of Shelter B, extended beyond

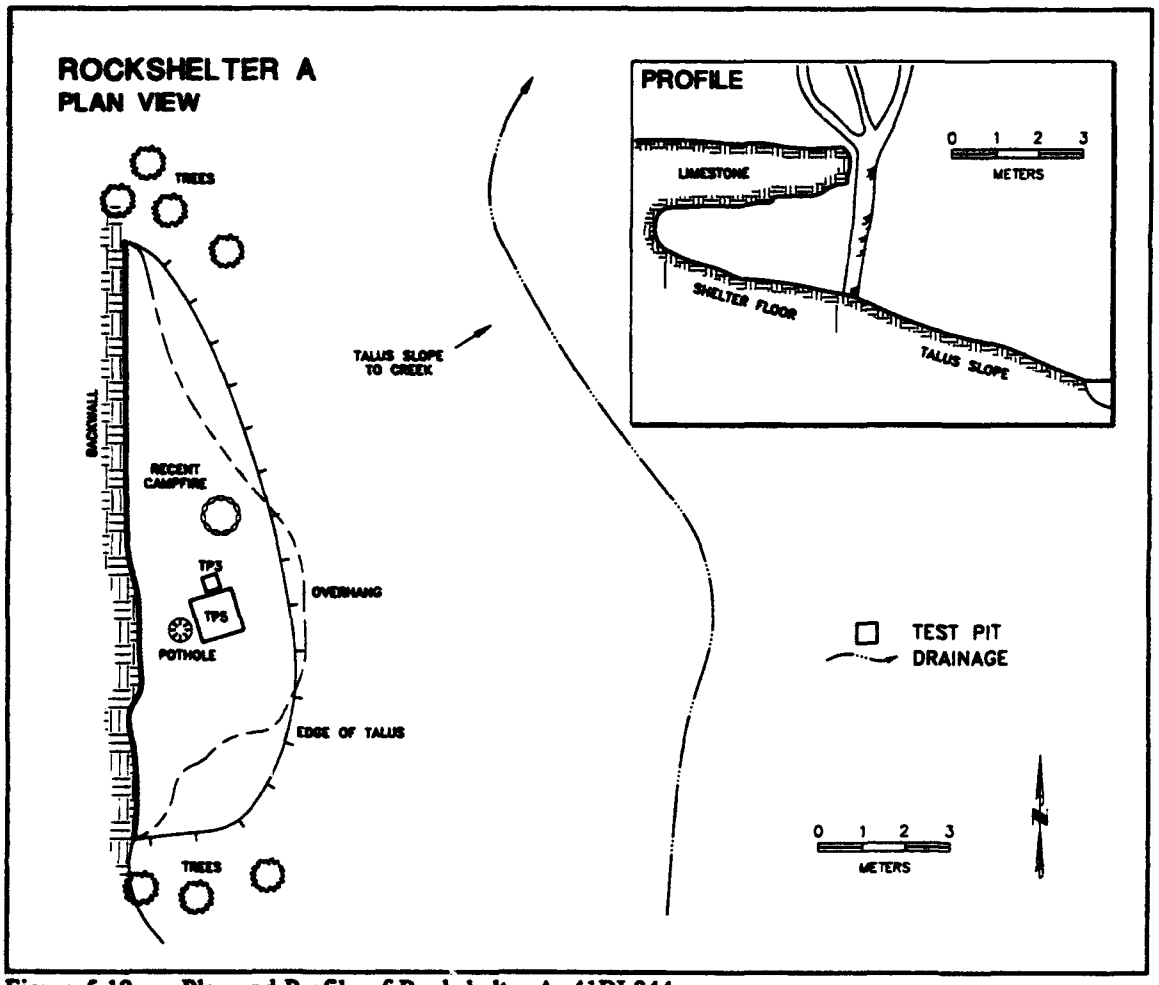


Figure 5.19 Plan and Profile of Rockshelter A, 41BL844.

the dripline toward the talus edge. Levels 1 and 2 contained a high frequencies of cultural material, about 250 pieces. These first two levels capped an apparent intact occupation lens (Feature 1) encountered 20 to 43 cmbs. When first exposed, Feature 1 was restricted to the northern half of TP 10 and had maximum dimensions of 100 x 60 cm. Vertical boundaries were clearly delimited by a black, highly organic silty loam fill compared to a strong brown silty loam and yellowish brown silt surrounding this. Artifact recovery was extremely heavy in Feature 1 and light from non-feature matrix. Cultural material from this occupation lens consisted of 624 pieces of lithic debitage, two Scallorn, a Bonham, and one unidentifiable arrow point fragment, one mussel shell, 205 burned and unburned bone fragments, and 55 burned rocks (average 5 x 5 cm). This occupation lens gradually sloped south to north and had a slightly irregular, but distinct base with an estimated area of some 10 m long by 1.5 m long. From 42 to 52 cmbs a 45 x 25 cm "pit" that contained the same fill as the occupation lens was encountered in the northeast quadrant of the unit. This pit was visible in the east wall profile. During excavation, insect disturbance and root intrusion was observed in this

Table 5.11 Artifact Recovery by Test Pit, 41BL844.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1	-	7	0.3	0	22	0	0	147	3	0	Scallorn	LP-I
	2	-	21	1.2	1	48	0	0	477	0	4	-	LP-I
	3	-	15	8.4	2	36	0	0	321	2	5	Scallorn, ?arrow, 690±100	LP-I
	4	-	12	1.3	1	29	0	0	296	1	1	?arrow	LP-I
	5	-	8	2.7	1	6	0	0	108	1	0	?arrow	LP-I
	6	-	0	0.0	0	2	0	0	18	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	17	0	0	-	unspec.
	8-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	11-13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		63	13.9	5	143	0	0	1,385	7	10		
5	1	-	0	0.0	1	1	0	0	19	0	0	-	mixed
	2	-	0	0.0	0	17	0	0	145	0	3	-	mixed
	3	-	2	1.2	0	24	0	0	342	3	2	Darl, Scallorn	mixed
	4	-	2	1.2	1	12	0	0	240	0	0	-	LP-I
	5	-	5	1.2	1	6	0	2	468	1	4	Darl, 790±90	LP-I
	6	-	0	0.0	0	1	0	0	166	0	1	-	LP-I
	7	-	0	0.0	0	0	0	0	11	0	0	-	LP-I
	Total		9	3.6	3	61	0	2	1,391	4	10		
6	1	-	3	2.0	0	19	0	1	220	2	3	?arrow	mixed
	2	-	0	0.0	0	29	0	0	220	1	1	?arrow	mixed
	3	-	2	0.5	0	26	0	0	146	0	0	-	unspec.
	4	-	0	0.0	0	2	0	0	15	0	0	-	unspec.
	Total		5	2.5	0	76	0	1	601	3	4		
8	1	-	0	0.0	2	3	0	0	7	0	0	-	mixed
	2	-	0	0.0	0	26	0	0	27	0	2	-	mixed
	3	-	1	0.1	0	4	0	0	12	0	0	-	unspec.
	4	-	2	0.9	0	5	0	0	1	0	0	-	unspec.
	5-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		3	1.0	2	38	0	0	47	0	2		
9	1	-	0	0.0	0	10	0	0	24	0	1	-	unspec.
	2	-	1	0.9	0	62	0	0	63	0	0	-	unspec.
	3	-	2	0.9	0	132	0	0	98	0	2	-	unspec.
	4	-	4	0.9	0	71	0	0	105	0	2	-	unspec.
	5	-	1	0.9	1	22	0	0	205	0	5	-	unspec.
	Total		8	3.6	1	297	0	0	495	0	10		
10	1	-	5	0.3	0	4	0	0	32	0	0	-	mixed
	2	-	17	2.7	1	13	0	0	187	0	4	-	mixed
	3	F1	31	3.7	2	38	0	0	415	4	5	Scallorn, Bonham, 1170±50	LP-I
	4	F1	33	2.5	1	11	0	0	209	0	2	-	LP-I
	5	-	0	0.0	0	2	0	0	12	0	0	-	unspec.
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		86	9.2	4	68	0	0	856	4	11		
11	1	-	2	0.4	0	6	0	0	9	0	0	-	mixed
	2	-	0	0.0	0	13	0	0	32	1	1	?arrow	unspec.
	3	-	0	0.0	0	3	0	0	17	0	4	-	unspec.
	4	-	3	0.5	0	3	0	0	7	1	0	Gower	unspec.
	5	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	6	-	0	0.0	0	1	0	0	1	0	0	-	unspec.
	7-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		5	0.9	0	26	0	0	70	2	5		

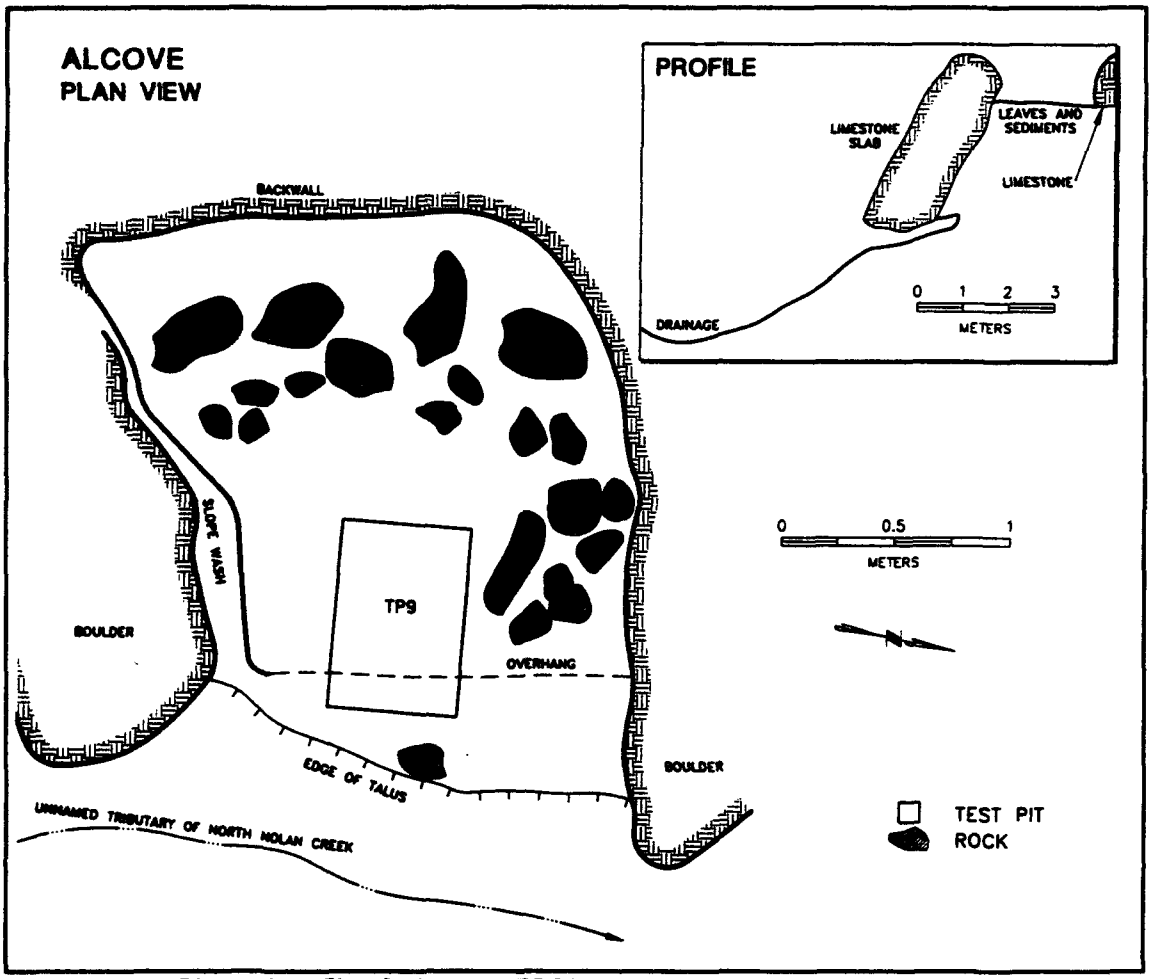


Figure 5.20 Plan and Profile of Alcove, 41BL844.

same general area. From 40 to 90 cmbs, yielded 13 lithics. Weathered, decaying limestone was exposed across the unit at 90 cmbs and excavation was terminated. Although parts of Rockshelter B had been impacted by vandalism, testing results clearly indicate this shelter contains significant archeological potential.

5.6.2.3 Excavations in Shelter D

Shelter D is 16.5 x 3.5 x 1.5 m (Figure 5.22) and contains fill similar to that observed in Shelter B. Lithics, burned rocks, mussel shells, and bone fragments were scattered across the surface, with no apparent evidence of vandalism. An antechamber, in the form of a low, narrow solution cave, was at the south end of the shelter. This antechamber/cave is filled with sediment to within 10 cm of the ceiling. Test Pit 2 was one meter from the backwall and centrally located (Figure 5.23). It consisted of 15 to 20 cm of dark, organic-rich, internally derived sediment over a meter of stratified, eboulis-rich internal sediment. Artifact ubiquity was extremely high from surface to 40 cmbs. The cultural array consisted of 1,242 lithics, six arrow points (four Scallorns), four

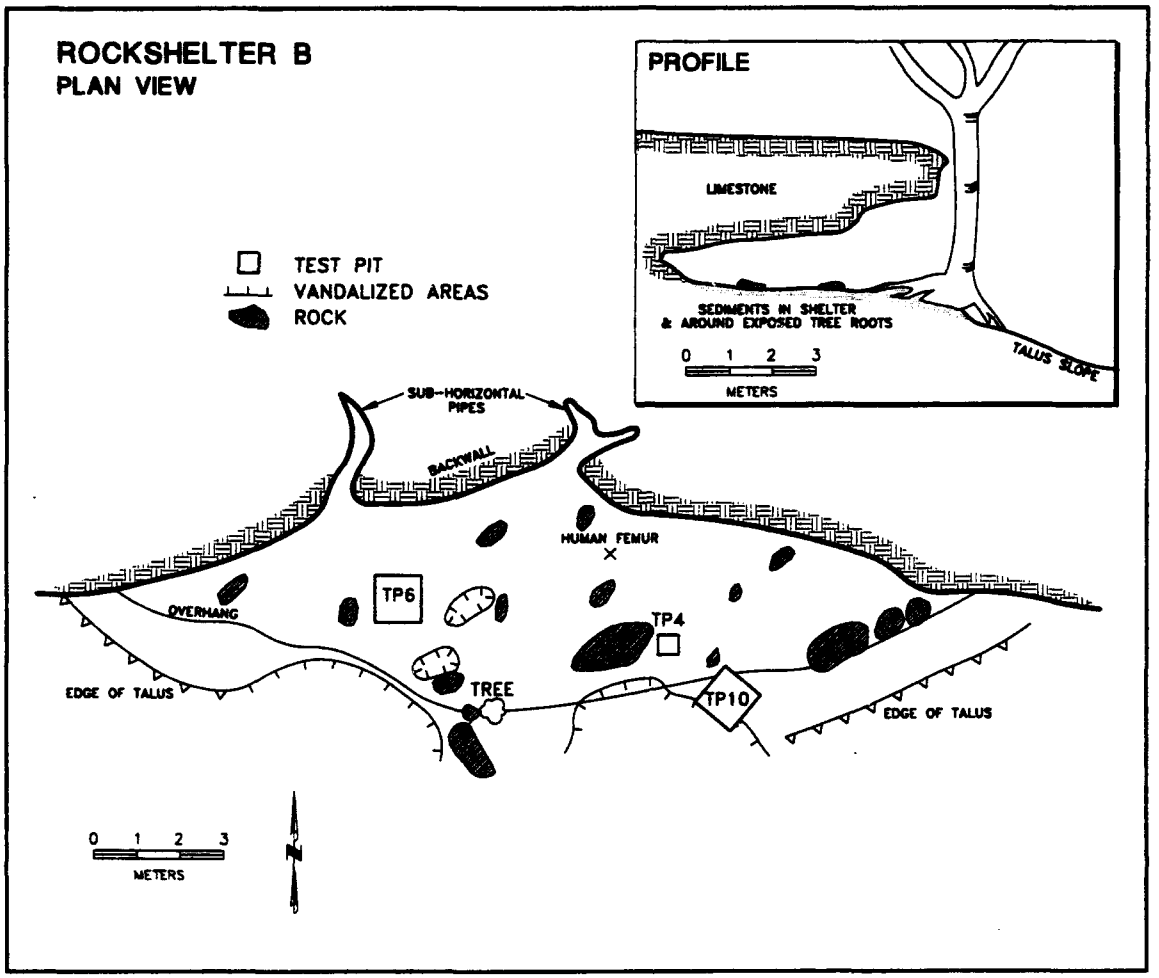


Figure 5.21 Plan and Profile of Rockshelter B, 41BL844.

mussel shell umbos, 135 burned and unburned bone fragments, charcoal, and 42 burned rocks. A 3.7 g charcoal sample from 20 to 30 cmbs was identified as White Oak wood and provided a $\delta^{13}C$ (-26.2‰) corrected assay of 690 ± 100 BP (Tx-8426). Artifact counts decreased (about 150) from 40 to 70 cmbs, with no cultural material between 70 to 126 cmbs. Bedrock, sloping east to west, was encountered across the unit from 76 to 126 cmbs.

5.6.2.4 Excavations in Shelter E

Maximum dimensions of newly recorded Shelter E are 14 x 3.5 m, with the height of the overhang ranging from 1.15 m to 0.10 m, front to back (Figure 5.24). Large, immovable pieces of roof fall were along the dripline to the edge of the talus. Test pit 8 (1 x 0.8 m) and TP 11 were excavated in Rockshelter E. Test pit 8 was wedged between the backwall of the shelter and an immovable limestone slab, near the shelter's center. Cultural material was recovered from surface to 40 cmbs, with an animal burrow and

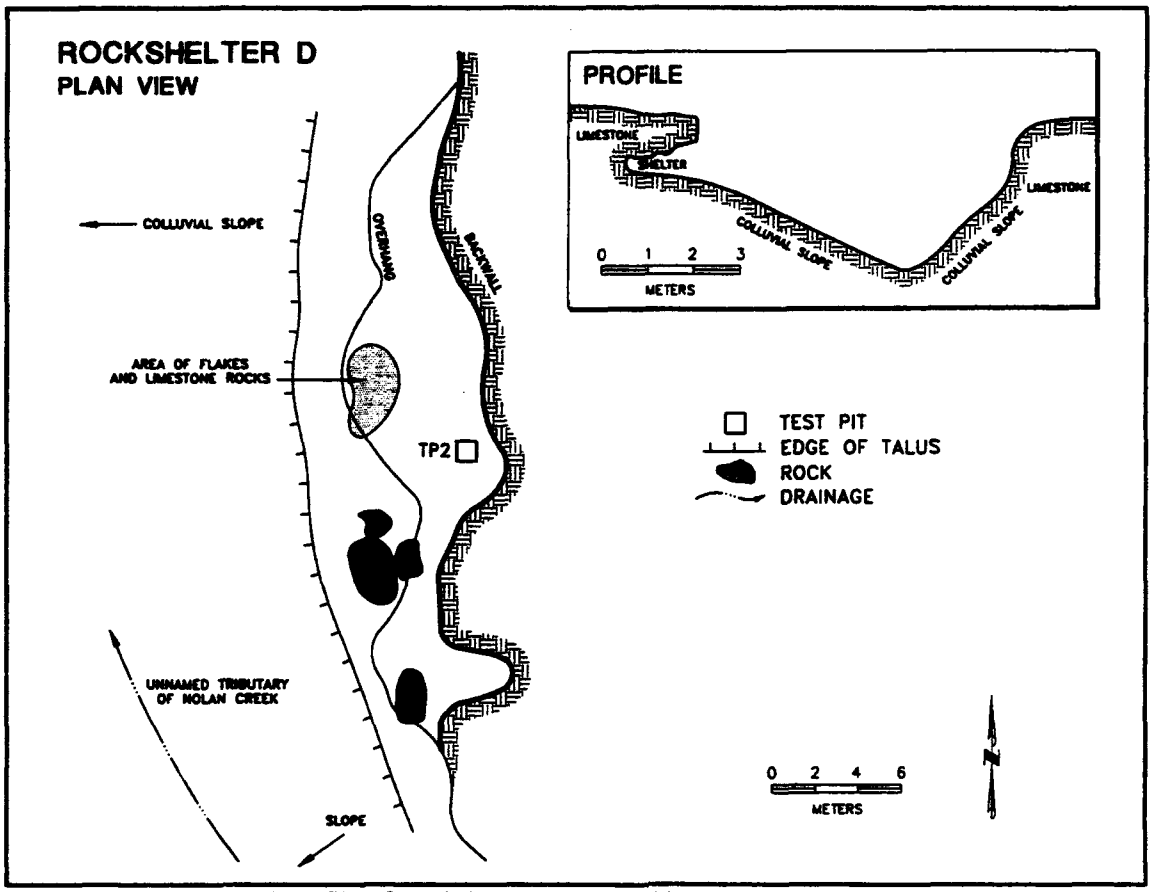


Figure 5.22 Plan and Profile of Rockshelter D, 41BL844.

rodent bones noted in the upper two levels. No artifacts were between 40 and 60 cmbs, with slanted bedrock encountered from 50 to 63 cmbs. Test pit 11, about 2 m south of TP 8, was partially in the shelter's dripline (Figure 5.25). Moderate amounts of cultural material were recovered from surface to 40 cmbs (about 75), with a unclassifiable arrow in 10 to 20 cmbs and a Gower point base in 30 to 40 cmbs. A few artifacts were recovered from levels 5 and 6. Depths 60 through 90 cmbs were culturally sterile, with decaying limestone encountered 87 to 97 cmbs.

5.6.3 Analysis and Interpretation

5.6.3.1 Definition of Analytical Units

The seven test pits in four shelters yielded 4848 pieces of lithic debitage, 20 projectile points, 51 stone tools, 713 bone fragments, 14 mussel shell umbos, 160 burned rocks, charcoal and many snail shells. One occupation lens (Feature 1) in Shelter B was intact but no other features were identified. These cultural materials were assigned to one period - the Late Prehistoric I, with a mixed group of materials, and a temporally unknown group. The Late Prehistoric I is based on two charcoal dates of 690 and 790 BP from Shelters A and D coupled with seven Scallorn, one Bonham, three



Figure 5.23 Test Pit 2 in Rockshelter D, 41BL844.

unclassifiable arrow points, and a Darl point.

The mixed deposits were in the top 30 cm of TP 5, 0 to 20 cmbs in TP 6, 8, and 10, and the top 10 cmbs in TP 11. These five zones yielded two Darl points, two Scallorn points, and two unidentifiable arrow points. The mixing occurred through looting and it is unclear if there are materials other than the Late Prehistoric I period represented. The temporally unclassifiable materials were 50 to 130 cmbs of TP 2, 20 to 40 cmbs in TP 6, 20 to 60 cmbs in TP 8, 0 to 50 cmbs in TP 9, 50 to 90 cmbs in TP 10, 10 to 100 cmbs in TP 11. Each of these groups is discussed below.

5.6.3.2 Summary of Late Prehistoric I Materials

These materials were from Shelters A, B, and D and represent multiple events and include the occupation lens in TP 10 at Shelter B, 2,858 specimens of lithic debitage, 12 points, 21 stone tools, 209 bone fragments, 10 mussel shell umbos, 118 burned rocks, charcoal, and many snail shells. The 2,858 specimens of debitage represent 11 identified and nine unidentified chert types with 27% of the materials identifiable (Table H-40). Heiner Lake Blue dominates the identified portion with 41% of the materials, while light brown cherts dominate the unidentified portion at 30%. The high number of Heiner Lake Blue along with the quantities of Heiner Lake Tan and Heiner Lake Translucent Brown make the Southeast Range materials the predominate chert province with 92% of the debitage. Only the combined indeterminates and Heiner Lake Blue occur in higher than expected frequency with all others occurring at less than expected amounts (Table H-41). The exclusion of the indeterminates results in Heiner Lake Tan and Heiner Lake Translucent Brown joining Heiner Lake Blue as higher than expected types and no change in any of the other types.

The modal peak for size occurs at the 0.5-0.9 category (n=818, 29%); however, the next larger size is close (n=736). Eighty-eight percent of the material are less than 1.8 cm in size and 73% are

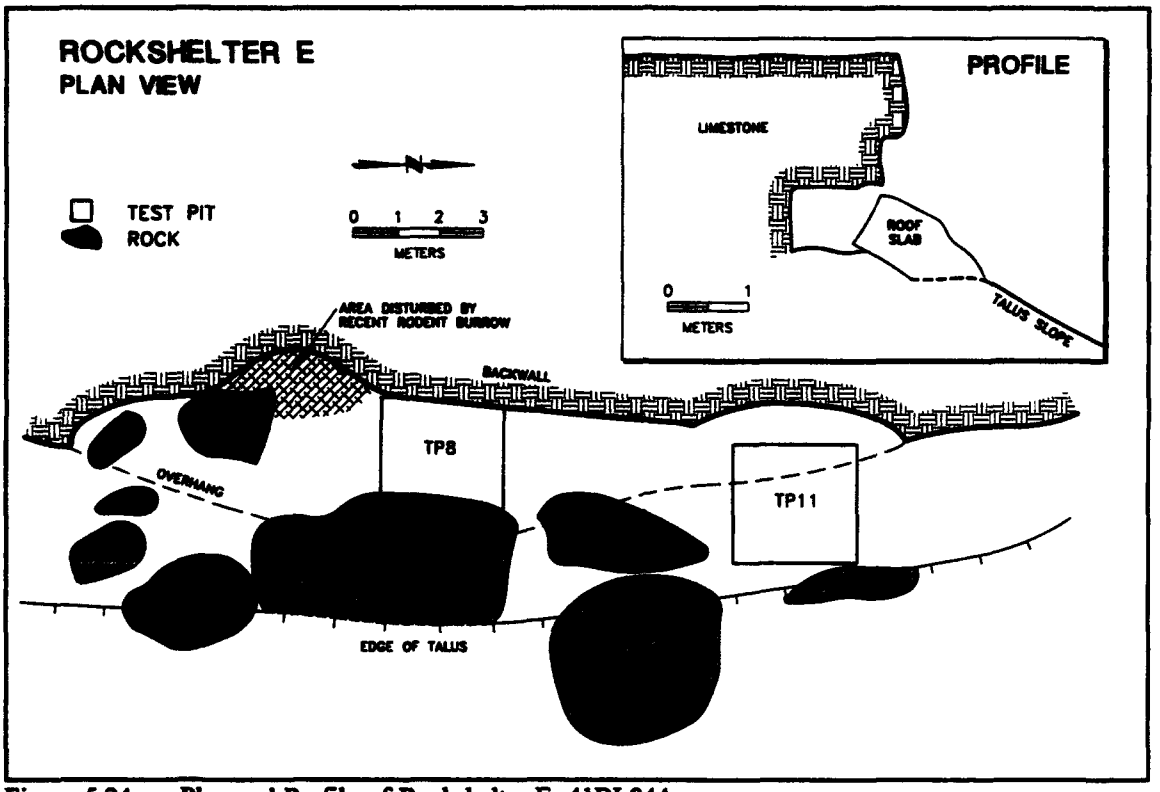


Figure 5.24 Plan and Profile of Rockshelter E, 41BL844.

less than 1.2 cm in size. The small number of flakes coupled with the moderately high number of tertiary debitage (88%) indicates a large scale biface technology. However, some large flake-blanks with significant amounts of cortex were also reduced at this site given the presence of nine cortexed specimens (Table H-42).

The 12 points consist of six Scallorn, four untyped arrow points, one Bonham, and one Darl (Table H-43). The latter is explained by latter groups collecting and reusing this point. The other arrow points were made of; four indeterminate white cherts, two indeterminate dark gray cherts, one indeterminate dark brown chert, one indeterminate light brown chert, one indeterminate miscellaneous chert, one indeterminate mottled chert, and one Heiner Lake Tan chert.

The 21 stone tools consist of seven utilized flakes, four edge modified flakes, three finished biface fragment, three middle stage biface fragment, one distal late stage biface fragment of indeterminate light brown chert, one side scraper of Heiner Lake Tan chert, and one spokeshave of indeterminate light gray chert (Table H-44). The three middle stage bifaces were made of indeterminate light brown, Heiner Lake Tan chert, and indeterminate miscellaneous chert. The three finished bifaces were made of indeterminate light brown and two of Heiner Lake Tan chert. The four edge modified flakes were made of indeterminate light brown chert, Cowhouse Mottled with Flecks, Cowhouse Mottled, Heiner Lake Tan chert, whereas the seven utilized flakes were made of Heiner Lake Tan, indeterminate light brown, indeterminate white, Cowhouse White, and indeterminate light gray and one limestone hammerstone. The nearly 50% of



Figure 5.25 Test Pit 8 (background) and 11 (foreground) in Rockshelter E, 41BL844.

these tools made of indeterminate cherts reflects the high frequency of indeterminate cherts in the debitage assemblage (73%), although the Heiner Lake Tan tools (29%) are only slightly more frequent than the Heiner Lake Tan debitage (25%) recovered.

The 209 bone fragments represent mostly (72%) large to very large mammals (bison size) 65% unidentifiable long bone fragments and 23% bone scraps (Table H-45). Species identified include antelope, bison, rabbit, deer and a bird, generally by a single element. Small to medium size mammals are represented by only 12% of the bones. Surprisingly, 62% of the bones were burned with only 12% revealing spiral breaks. The 10 umbos included two *Lampsilis hydiana,* one *Cyrtonaias sp.* and the rest are unclassifiable. This faunal assemblage indicates large mammals played the dominate role in the subsistence, supplemented by a variety of other resources.

The 118 burned rocks weighed 18.5 kg with 47% from occupation lens Feature 1 in Shelter B. The rest were distributed in Shelter A and D. A 3.7 g charcoal sample from 20 to 30 cmbs in Shelter D was identified as White Oak and provided a $\delta^{13}C$ (-26.2‰) corrected assay of 690 ± 100 BP (TX-8426). A 3.0 g charcoal sample from 40 to 50 cmbs in Shelter A was also identified as White Oak and provided a $\delta^{13}C$ (-26.4‰) corrected assay of 790 ± 90 BP (TX-8427). These two dates and associated Scallorn points indicate these events represent the Austin phase (Prewitt 1981; 1985). Very few Austin phase sites/occupations have been extensively investigated and reported upon and this site provides that opportunity. Austin phase presence in rockshelters is intriguing as they appear the dominate group to occupy shelters in this region. The explanation of this settlement pattern could contribute to our understanding of the regional pattern.

5.6.3.3 Summary of Mixed Materials

These mixed materials came from the top zones at Shelters A, B, and E and include 1,208 specimens of lithic debitage, six projectile points, 15 stone tools, 142 bone fragments, two mussel shell umbos, 27 burned rocks, and many snail shells. Although these materials came from vandals diggings and probably represent multiple prehistoric events, it could be possible that most materials are from the Late Prehistoric I period, given there is no sign of later prehistoric occupations.

The 1,208 specimens of lithic debitage represent nine identified and nine unidentified chert types with 15% of the materials identifiable (Table H-46). Heiner Lake Tan dominates the identified portion with 52%, while light brown debitage, which could be Heiner Lake Tan materials, dominates the indeterminates at 39%. The high percentage of Heiner Lake Tan and the distinct possibility that the indeterminates are also Heiner Lake Tan is not a surprise given the spatial placement of this site in the Southeast Range chert province. Only the combined indeterminates occur in higher than expected frequency with all others occurring at less than expected amounts (Table H-47). The exclusion of the indeterminates results ion Heiner Lake Blue, Heiner Lake Tan, and Heiner Lake Translucent Brown occurring in higher than expected amounts, with all other types remain unchanged.

The modal peak for size occurs at the 0.5-0.9 cm category with 66% of the debitage smaller than 0.9 cm and 84% smaller than 1.2 cm in size (Table H-46). The nature the debitage size distribution would indicate that biface reduction was a major factor at this site. This is supported by the high number of tertiary debitage (91%) (Table H-48).

The six points consist of three untyped arrow point fragments, two proximal Scallorn points, and one Darl point representative of the Driftwood phase of the Late Archaic made of Owl Creek Black chert (Table H-49). This latter point may have been collected and reused by latter groups and not actually represent an Late Archaic occupation. Both the Scallorn points were made of indeterminate dark brown chert, whereas the three others were made of indeterminate dark brown and indeterminate white cherts.

The 15 stone tools consist of seven utilized flakes, three edge modified flakes, two late stage biface pieces, one proximal end of a finished biface, one complete complex scraper, and one complete Type B chopper (Table H-50). The utilized fakes were made from five indeterminate colors and two Heiner Lake Tan cherts, whereas the edge modified flakes were of these same materials. One single platform core was also recovered.

The 142 bone fragments are dominated (77%) by small, indeterminate and unidentifiable long bone fragments that represent large to very large mammals (Table H-51). Antelope, deer, snakes, rabbits, raccoon, rats, opossum, bird, and small rodents were all identified in very low numbers. It is not clear if all these served as food resources for the prehistoric peoples. However, 67% are burned and 15% display green bone spiral fractures, both indicating cultural use. Only two umbos are present and both were unidentifiable as to species.

The 27 burned rocks weighed 6.0 kg and did not appear to represent intact features but may have been at one time. Twenty-one pieces (78%) came from TP 10, immediately above the Late Prehistoric I occupation lens and may have been part of that occupation.

5.6.3.4 Temporally Unspecified Materials

These materials include 779 specimens of lithic debitage, two projectile points, 15 stone tools, 362 bone fragments, one mussel shell, and 15 burned rocks. No features were identified in these deposits.

The 779 specimens of lithic debitage represent eight identified and nine unidentified chert types

with 25% of the assemblage identifiable (Table H-52). Heiner Lake Translucent Brown dominates the identified portion with 45%, while the light brown debitage dominates the indeterminates (33%). The combine indeterminates occur at higher than expected amounts, Heiner Lake Translucent Brown occurs in expected frequency, and all others occur at less than expected frequency (Table H-53). The exclusion of the indeterminates results in Heiner Lake Translucent Brown, Heiner Lake Tan, and Heiner Lake Blue occurring at higher than expected amounts, and all others unchanged.

The modal peak for size occurs at the 0.5-0.9 cm category with 25% of the debitage, while 85% of the assemblage is less than 1.8 cm in size. The 0.5-1.8 cm sizes create a plateau of frequency from where the numbers drop off almost evenly. Eighty-seven percent of the debitage is tertiary with a small proportion of the debitage primary in nature (Table H-54).

The two projectile points include the distal part of an arrow point made of indeterminate light brown chert and a proximal Gower dart point made of indeterminate light gray chert. Both were in TP 11 in Shelter E. The Gower point may have been collected and reused by latter groups and not represent an Early Archaic occupation. This is supported by the projected age of the deposits in this shelter. It may well be that these are again deposits of the Late Prehistoric I as reflected by the arrow point fragment. Without absolute dates it is still unclear.

The 15 stone tools consist of eight utilized flakes, a complete Type A chopper of Heiner Lake Tan chert, a early stage biface, an edge modified flake, a complete finished biface, a graver, a distal segment of a late stage biface, and the proximal end of a middle stage biface (Table H-55). The utilized flakes are mostly of Heiner Lake Tan chert.

The 362 bone fragments are mostly small unidentified long bone (35%) and indeterminate fragments (38%) of large to very large mammals (bison size) (Table H-56). Deer, raccoon, rabbits, bear, birds, small rodents are identified with deer being the most prominate (9%). Twenty-two percent are burned and other 6% show green bone spiral fractures. It is quite possible that many of these small animals could arrived in these shelters by some other means than humans. Element condition indicate some potential age, as 77% reveal marked weathering.

The 15 burned rocks weighed a total of 5.8 kg. More than half were from TP 9 and the remainder were scattered in TPs 8 and 11.

5.6.4 Conclusions

The four tested shelters and one alcove all revealed complex fills representing variable amounts of (possibly anthropic) organic-rich internal stony silts, organic-poor internal stony silts, and reddish brown and grayish brown clayey external sediments. In general, although most of these shelters were vandalized to some degree, integrity of the deposits appeared high in Shelters A, B, and D. Based on the extremely dense cultural material, including ecofacts, Rockshelters A, B, D, and E all contain some archeological potential. In addition human remains are present in Shelter B.

On the basis of the above, Rockshelters A, B, D, and E at site 41BL844 are evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood. Accordingly, Subarea B of this site is judged eligible for inclusion to the NRHP and these shelters should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.7 SITE 41BL850

In September 1994 we conducted formal test excavations at prehistoric archeological site 41BL850. Testing was designed to evaluate eligibility for inclusion to the NRHP. Four trenches were mechanically excavated and two test pits totaling 2.5 m^3 were manually excavated. The tests demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.7.1 Introduction

5.7.1.1 Site Location and Description

Site 41BL850 is a prehistoric open camp spanning an upland, footslope, and terrace, west of an unnamed tributary of South Nolan Creek. The site is in Fort Hood Training Area 15 and is presently bounded on the east and south by the Fort Hood reservation fenceline (Figure 5.26). Maximum site dimensions, as defined in 1993, measure 800 m long and wide covering an area of about 49 hectares (121 acres). For purposes of analysis, the site is considered a member of the Nolan/South site group.

5.7.1.2 Previous Work

This site was initially recorded by Rotunno and Rodriguez on 4 April 1986 as a burned rock and lithic scatter. A vandalized burned rock midden was the only feature listed on their site form. Twelve dart points, two arrow points, and a biface were collected. A high density of lithic debitage, bifaces, scrapers, and a few projectile point fragments and mussel shell was observed (Kock and Mueller-Wille 1989a). The site was estimated to be 65% disturbed by erosion, vehicular traffic, tree clearing, pipeline construction, and vandalism. The large site dimensions (1,325 x 825 m) led to its classification as a lithic resource procurement area for management purposes, even though no significant natural chert resource was present.

Kleinbach and Abbott revisited the site on 2 June 1993 and delineated three subareas on the basis of geomorphic context and the potential for intact cultural deposits. The upland was defined as Subarea A, the footslope as Subarea B, and the terrace as Subarea C.

Subarea A is mantled with a truncated, discontinuous residual soil consisting of a reddish brown Bt horizon some 150 cm thick over bedrock. The slopes are mantled with a thin, discontinuous black clay A horizon over bedrock. Tracked and wheeled vehicles, bioturbation, and sheet erosion have heavily impacted the integrity of the upland surface. The southern half of Subarea A contains a high density of lithic debitage, bifaces, projectile point fragments, scrapers, and widely scattered burned rock. A low density of scattered debitage was observed throughout the northern half of this area. The previously identified feature was a natural gray limestone.

Subarea B is a broad, gently sloping footslope mantled with a strongly developed soil that is increasing truncated upslope. The lower parts of the toeslope support a thin, rubified soil that exhibits BtR and A-Bt-R profiles. Upslope, the surface is bare limestone saporlite. The surface is strongly affected by vehicle traffic, tree clearing, and very intense sheet erosion. The southern half of Subarea B contains high density of lithic debitage and several bifaces.

Subareas A and B were determined not to posses areas with intact Holocene deposits and thus had little potential for cultural material in good context. Although the site had been classified as an Lithic Resource Procurement area, no naturally occurring chert was observed, and so the site was excluded from resurvey.

Subarea C consists of a relatively low Holocene terrace that rises 1 to 2 m above the modern stream. The alluvial fill grades up from gravels to clay loam and supports a soil exhibiting A-Bw-C and A-Bg-C profile. This subarea is moderately

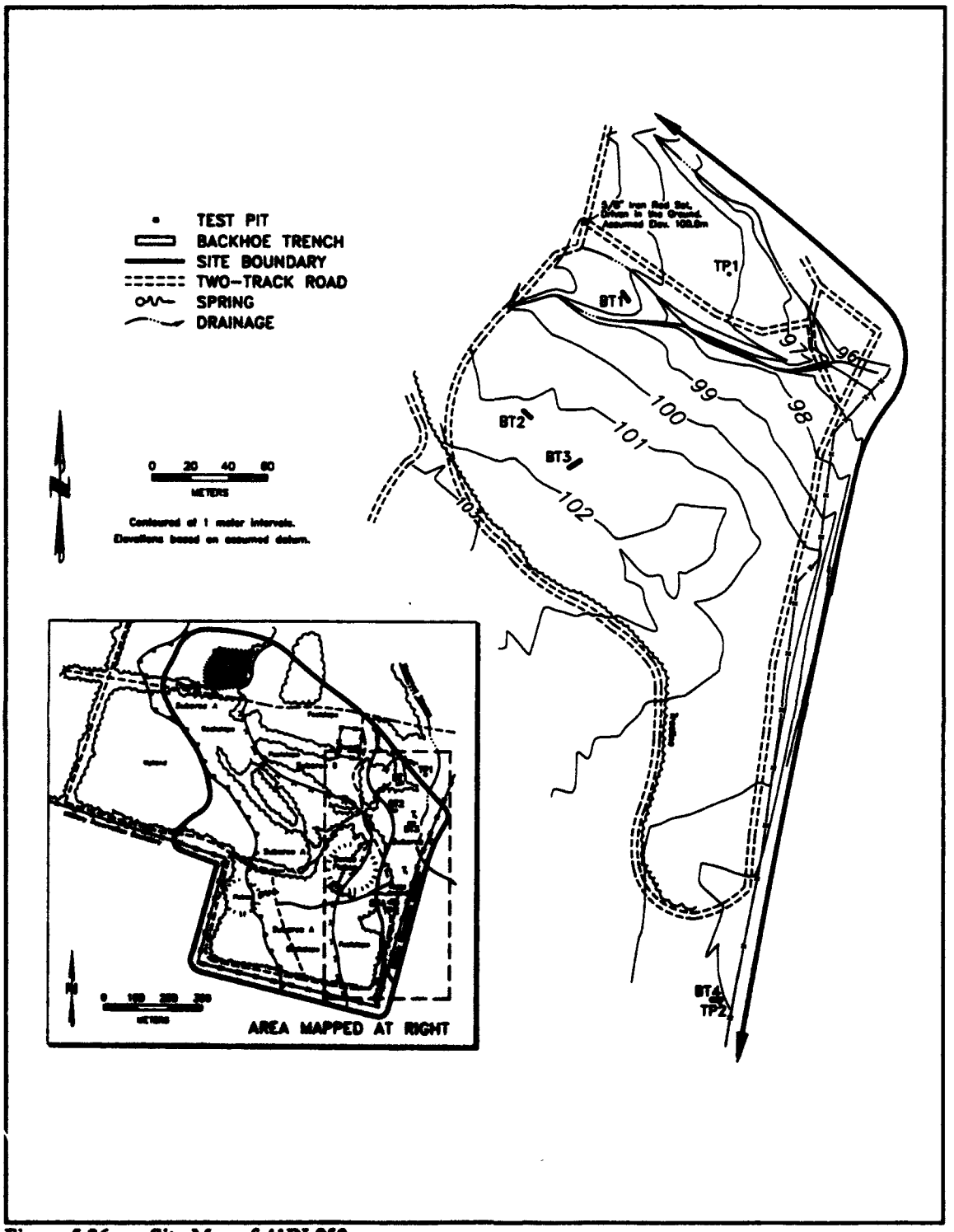


Figure 5.26 Site Map of 41BL850.

disturbed by vehicle traffic, bioturbation, cutbank erosion, and sheet erosion (Figure 5.27). Debitage was observed in small exposures along the southern part of the area.

Because this terrace had the potential for intact deposits, a shovel testing crew excavated 50 shovel tests to assess this area. Of these 50 shovel tests, 44% contained cultural material. The 22 positive shovel tests yielded 71 pieces of lithic debitage, 14 historic/recent artifacts, one Pedernales projectile point, and two bifaces. Most of the material was from 0 to 40 cmbs. Although a high density of artifacts was recovered from many of the shovel tests, disturbance was evident through historic artifacts discovered to a depth of 40 cmbs. The potential for more deeply buried cultural deposits remained unknown, and the site was recommended for further testing to determine NRHP eligibility. Two trenches and two to four square meters of manually excavated test pits were recommended to investigate the possibility of deeper deposits (Trierweiler 1994:A565-A570).

5.7.1.3 New Work

Formal testing was completed in September 1994. Four backhoe trenches (BTs 1 through 4) and two test pits (TPs 1 and 2) were excavated in Subarea C to examine site stratigraphy and prospect for buried cultural material. Three stone tools; a complete scraper, an early stage biface and a edge modified flake were recovered from the surface during these investigations. Unit sizes and depths are presented in Table 5.12.

5.7.2 Results

All four trenches revealed relatively thin profiles of very dark, clayey alluvium of probable late Holocene age. Backhoe trench 1, 7 x 0.8 m , was excavated to bedrock at a depth of 110 cm, and exhibited an Ass-Bg-R profile (Figure 5.28). The vertic A horizon was composed of black (10YR 2/1), blocky gravelly clay. At a depth of about 80 cmbs, it graded into a gleyed, dark gray (10YR 3/1) gravelly clay. The bedrock substrate consisted of marly, thin-bedded limestone. No cultural material was observed.



Figure 5.27 View North Across Southern Half of 41BL850.

Backhoe trenches 2 and 3 exhibited practically identical A1-A2-R profiles less than 50 cm thick developed in a thin mantle of alluvium and (possibly) slopewash resting on a bedrock strath (Figures 5.29 and 5.30). In each case, the A horizon was roughly 40 cm thick and consisted of black (10YR 2/1) granular sandy clay. The lower half of the A horizon in both trenches was composed of up to 75% limestone clasts. The substrate in both cases was hard limestone. No cultural material was observed in either trench.

Backhoe trench 4 was in the area noted as a bog on previous visits. This trench measured 6 x 0.8 x 1.7 m and exhibited an A-2Ass-2Cg profile 165 cm thick. The upper A horizon was composed primarily of slopewash and colluvium and consisted of a weak subangular blocky, very dark grayish brown (roughly 10YR 2.5/2) gravelly sandy clay. It graded abruptly into 1 m of black (10YR 2/1), strong medium blocky gravelly clay. A few weak argillans and common pressure faces were noted on the exterior of the peds. Below about 160 cm, the profile graded abruptly into a white (10YR 8/2), massive very gravelly clay Cg horizon. The zone showed extensive groundwater alteration through gleying, precipitation of considerable diffuse carbonate, and the presence of common organic material and yellowish redox mottles. No cultural material was observed in this trench.

After trenching was completed and no cultural material was observed, only a small area at the south edge and a small flat terrace at the north edge of Subarea C appeared to have the potential for deeply buried deposits. Accordingly, TP 1 was near the center of the small terrace at the north edge of Subarea C and excavated to dense gravels at 110 cmbs. Two stone tools and 18 pieces of lithic debitage were the only artifacts recovered (Table 5.13). Debitage was recovered from only the top 70 cmbs, except level 2, with no debitage in levels 8-11. A snail sample was taken from level 2. The level frequencies of debitage ranged from a high of six pieces (level 1) to a single item (level 7). The two stone tools included an early stage biface from level 4 and an edge modified piece was in level 5. Gravel and unmodified chert nodules were present in each level, the frequency of which increased with depth.

Table 5.12 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	7	0.8	1.1	Holocene alluvium
BT 2	6	0.8	0.6	Holocene alluvium
BT 3	6	0.8	0.6	Holocene alluvium
BT 4	6	0.8	1.7	Holocene alluvium
TP 1	1.00	1.00	1.10	Holocene alluvium
TP 2	1.00	1.00	1.40	Holocene alluvium

Test pit 2 was offset from the south wall of BT 4 and excavated to dense gravels at 140 cmbs. The upper 40 cm contained an abundance of colluvial gravels and a single late stage biface from 10 to 20 cmbs. Below these gravels, only a single flake was recovered from 90 to 100 cmbs. The unit was void of snails and burned rock.

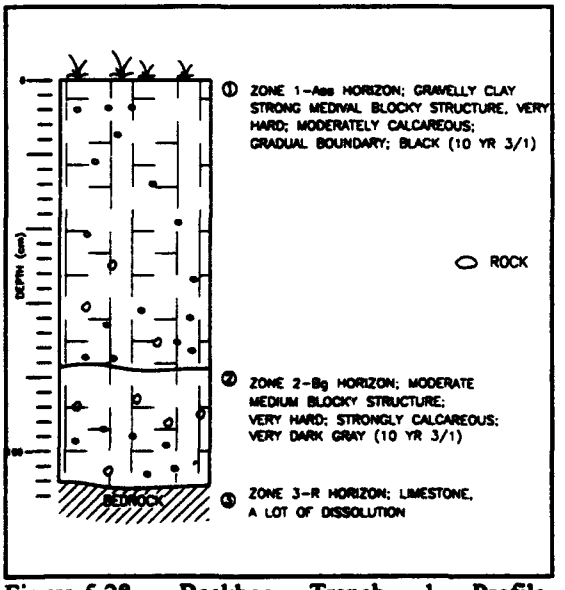


Figure 5.28 Backhoe Trench 1 Profile, 41BL850.

5.7.3 Analysis and Interpretation

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single Analytical Unit. Three stone tools were randomly collected from the surface but none were diagnostic. Both test pits yielded cultural material (n=22) but only a single piece of debitage and a late stage biface came from TP 2. The 18 pieces of debitage, one early stage biface, and one edge modified flake from TP 1 were vertically distributed over the upper 70 cm with no clear occupation zone. This sparse vertical distribution may indicate numerous short term events. Again, there is no indication of when these events occurred as diagnostic artifacts and charcoal were absent.

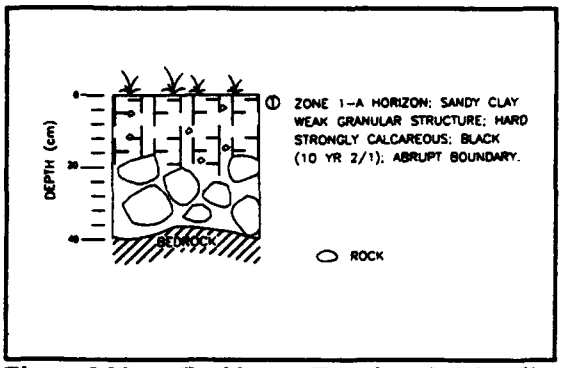


Figure 5.29 Backhoe Trench 2 Profile, 41BL850.

The 19 specimens of lithic debitage represent five unidentified types. No flake was smaller than 0.9 cm in size. One specimen was larger than 5.2 cm (Table H-57). Seventy-nine percent are partially covered in abraded cortex (Table H-58), with the cortex bearing flakes in the larger size categories. All three of the tools collected from the surface were manufactured from Heiner Lake chert materials, two browns, and a tan (Table H-59). The other tools were made from Green/Brown/Green from North Fort Hood chert province and an indeterminate mottled from an unknown source. As expected the dominant cherts were from the closest chert resources. However, given the chert types present in the debitage, none of these tools were made at their discard location.

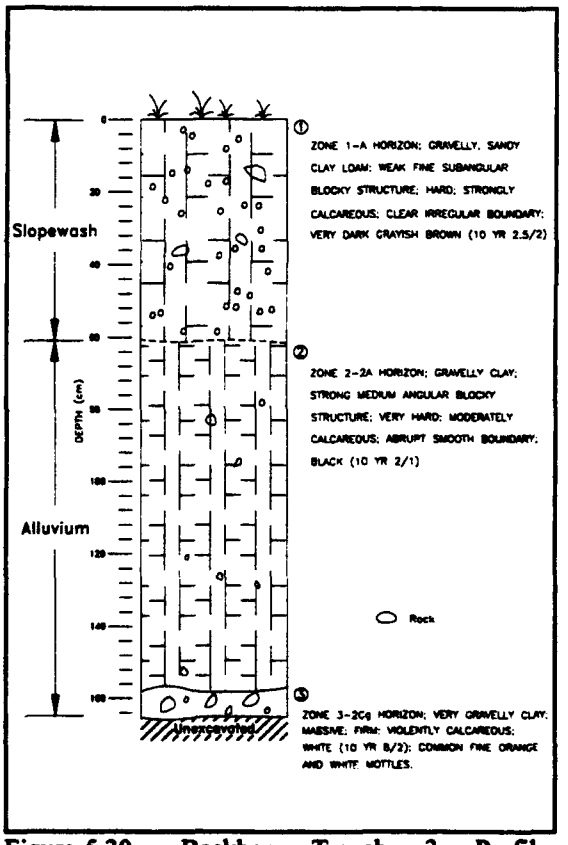


Figure 5.30 Backhoe Trench 3 Profile, 41BL850.

5.7.4 Conclusions

The four trenches excavated in Subarea C on 41BL850 reveal a suite of clayey, late Holocene deposits ranging from less than 50 cm to slightly more than 1 m thick. No cultural material was detected in association with any of the trenches.

Table 5.13 Artifact Recovery by Test Pit, 41BL850.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	1	-	unspec.
	6	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	18	0	2		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	3-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	11-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	1		

Recovery of cultural material from the manually excavated units was sparse, with no clear indications of intact cultural contexts. The majority of items in TP 1 appeared to come from disturbed context. Overall frequency of cultural material was quite low (n=20), with a net density of only nine items per m^3. Overall lithic ubiquity was relatively low as well, with 58% of tested levels having no recovered lithics. Moreover, no cultural features were observed in any of the four trenches or two test pits. Accordingly, we conclude that site 41BL850 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.8 SITE 41CV44

In September 1994 we conducted formal test excavations at prehistoric archeological site 41CV44. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Three test pits, totaling 2.3 m^3, and two backhoe trenches were excavated. These excavations demonstrate the presence of intact, buried, and stratified cultural components dating to the Late Archaic and Late Prehistoric periods. These deposits have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.8.1 Introduction

5.8.1.1 Site Location and Description

Site 41CV44 is in Fort Hood Training Area 2. This prehistoric open camp lies on a north facing colluvial slope above the south side of Owl Creek. The site extends from about mid-slope down to the contact with the alluvial terrace. A number of extremely massive boulders have come to rest at various positions on the slope. A small crevice "shelter/overhang" is at the back side (facing upslope) of one of these boulders, at the upper central part of the site (Figure 5.31). Maximum site dimensions, defined in 1992, measure 80 x 65 m, with a north-south long axis, covering an area of 0.5 hectare (1.2 acres). For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.8.1.2 Previous Work

Rogers and Avery originally recorded the site in July 1972 as a burial site. Possible human remains were noted around the bases of massive limestone boulders on the lower parts of a steep colluvial slope. They noted eight different disturbed locations at the boulder bases that revealed cultural material. The eight areas yielded debitage, an Ensor point base, mussels shell, scrapers, bifaces, and unidentified bone fragments. Vandalism had disturbed considerable area and formal test excavations were recommended.

On 15 June 1984, Strychalski visited the site, completed a new site form and described the site as a burned rock midden and rockshelter in the intermediate uplands of a north facing slope. About 40% of the site was considered to be disturbed by vandalism, erosion, and miscellaneous military activities (Carlson et al. 1986). In March 1992 Frederick and Quigg reassessed the site based on geomorphic context and the potential for intact cultural deposits. A single shovel test (ST 1) was excavated to 40 cmbs just outside the small shelter/overhang formed in the upslope side of a large boulder. The recovered artifact assemblage included 71 pieces of debitage, 51 mammal bone fragments, a hammerstone, and 103 burned rocks. Based on these positive results, supplemented with the cultural material reported previously, the site was thought to contain considerable cultural material in potentially good context and formal testing was recommended to determine NRHP eligibility. A minimum testing effort of one trench and four to six square meters of manually excavated test units were recommended (Trierweiler 1994:A615-A618).

5.8.1.3 New Work

Because the site was possibly in an endangered species habitat, Gil Eckrich (Fort Hood, Fish and Wildlife) and Kleinbach field checked the site's location on 29 August 1994. After inspecting the areas in which excavations were to be undertaken, Gil Eckrich granted permission for work to proceed with the stipulation that all trenching be limited to the lower part of the slope. Formal testing was completed in late September 1994. Two relatively long trenches (BTs 1 and 2) were excavated into the toeslope and distal Owl Creek terrace to examine the stratigraphy of the site and to prospect for buried cultural material, and three test pits (TPs 1, 2, and 3) were excavated to recover a representative sample of cultural material. Unit sizes and depths are presented in Table 5.14.

5.8.2 Results

The site is on the distal part of the T_1 terrace of Owl Creek and on the adjacent colluvial slope. A distinctive attribute is the presence of several massive (up to the size of a small bus) limestone fall blocks which litter the colluvial toeslope.

5.8.2.1 Excavations in the Alluvial Terrace and Colluvial Toeslope

Backhoe trench 1 was between two boulders (one of which contained the crevice "shelter") and extended 30 m from the colluvial toeslope out onto the distal terrace and excavated to 220 cmbs. Six

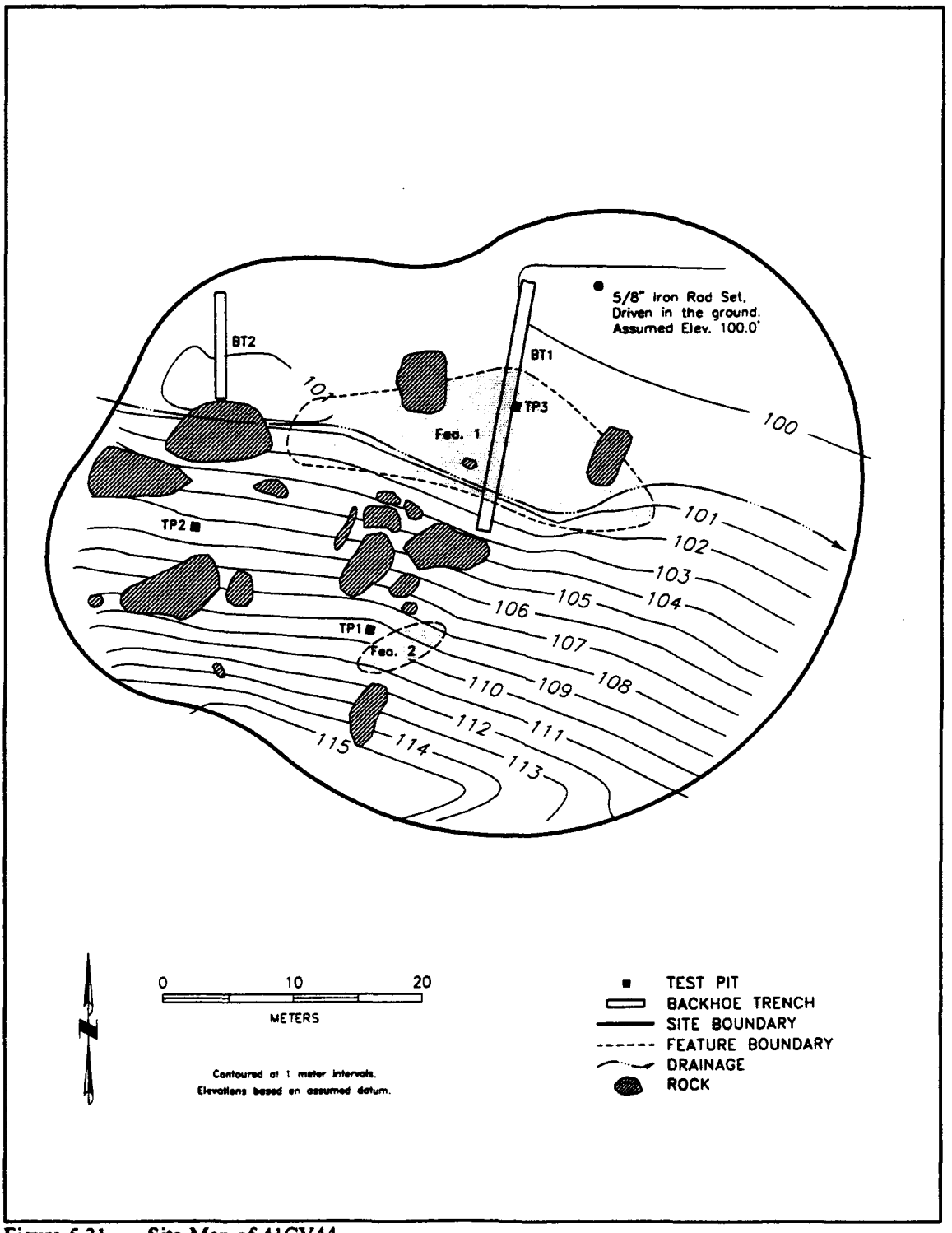


Figure 5.31 Site Map of 41CV44.

depositional zones were identified along the length of BT 1 (Figure 5.32). These zones represent both vertical and horizontal variability in the exposed sediments, and did not occur as a single stacked column anywhere in the trench. Rather, lateral variability along the trench represents changes in soil development (pedofacies variation; as in Zone 2A and Zone 2B) or depositional character (lithofacies variation; as in Zone 5 and Zone 6). Zone 1, present only at the downslope end of the trench, represents relatively recent slopewash. It consisted of massive to weak granular, very dark grayish brown (10YR 3/2) gravelly sandy loam. Zone 2 (which was subdivided into 2A and 2B on the basis of variation in rock content and carbonate morphology) consisted of a black (10YR 2/1), fine blocky stony clay loam cumulic A horizon formed primarily from colluvium and slopewash. This zone formed the surface horizon upslope and was buried by 20 to 25 cm of Zone 1 at the downslope end of the trench. Thickness of the zone varied considerably but averaged 40 to 60 cm. Zone 2A was defined at the downslope end of the trench and exhibited abundant coarse carbonate filaments, while at the opposite end of the trench Zone 2B was considerably stonier and exhibited only very weak carbonate filaments. It graded down into Zone 3 (Bw horizon), which consisted of very dark brown (10YR 2/2), weak blocky gravelly sandy loam. The zone contained a few fine carbonate filaments, primarily at the lower end of the trench below Zone 2A. Overall, Zones 2 and 3 are interpreted as a colluvial apron mantling the toeslope. A considerable quantity of cultural material, including flakes, burned rock, bone, stone tools, and mussel shell was observed throughout Zones 2 and 3. Cultural material thins out about 5 m from the upslope end of the trench, strongly suggesting that the material was deposited by human activity on the toeslope rather than colluvially reworked from an occupation higher up the slope (see below). Although a few localized strata of concentrated artifacts could be identified, for the most part the material appeared to be distributed evenly throughout Zones 2 and 3. Zone 4 consisted of a lenticular bed of clast-supported sandy to loamy gravel at the lower end of the trench. It abruptly truncated Zone 5, which consisted of blocky, light brownish gray (10YR 6/2) sandy to silty loam. The zone contained common fine carbonate filaments throughout and is tentatively interpreted as the Fort Hood alluvium of Nordt (1992). Upslope, this zone merged gradually with Zone 6, which consisted of a similar matrix containing much more abundant colluvial gravel. A proximal Pedernales point came from the backdirt of this trench.

Table 5.14 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	30	0.8	2.2	alluvial terrace
BT 2	8	0.8	2.0	alluvial terrace
TP 1	1.00	1.00	0.30	colluvial slope
TP 2	1.00	1.00	0.80	colluvial slope
TP 3	1.00	1.00	1.20	alluvial terrace

Test pit 3 was offset from the east wall of BT 1, and excavated to 120 cmbs. In this test pit, a burned rock midden (Feature 1) was present from 0 to 80 cmbs (Figure 5.33). Hundreds of flakes (n=277), 24 bone fragments and 45 burned rocks, two edge modified flakes, a couple broken dart points (Ensor and Palmillas), mussel shell fragments and recent military debris were recovered from the upper 20 cm, with the presence of the latter indicating disturbance and/or colluvial redeposition of material from upslope. From 20 to 60 cmbs, 1468 flakes, 151 burned rocks (ranging from 29 to 42 per level), 153 bone fragments, 18 stone tools, six dart points, two cores, and a few mussel shell fragments were recovered (Table 5.15). Recovery began to diminish below about 60 cmbs, where about 87 flakes, 10 bone fragments, and 32 burned rocks were found. The base of the midden was determined to occur between 70 to 80 cmbs, when the dark brown charcoal stained clay loam changed to a light brown clay loam with dense alluvial and colluvial gravels. The bottom level of the midden (70 to 80 cmbs) contained 43 flakes, 22 bone fragments, and 14 burned rocks.

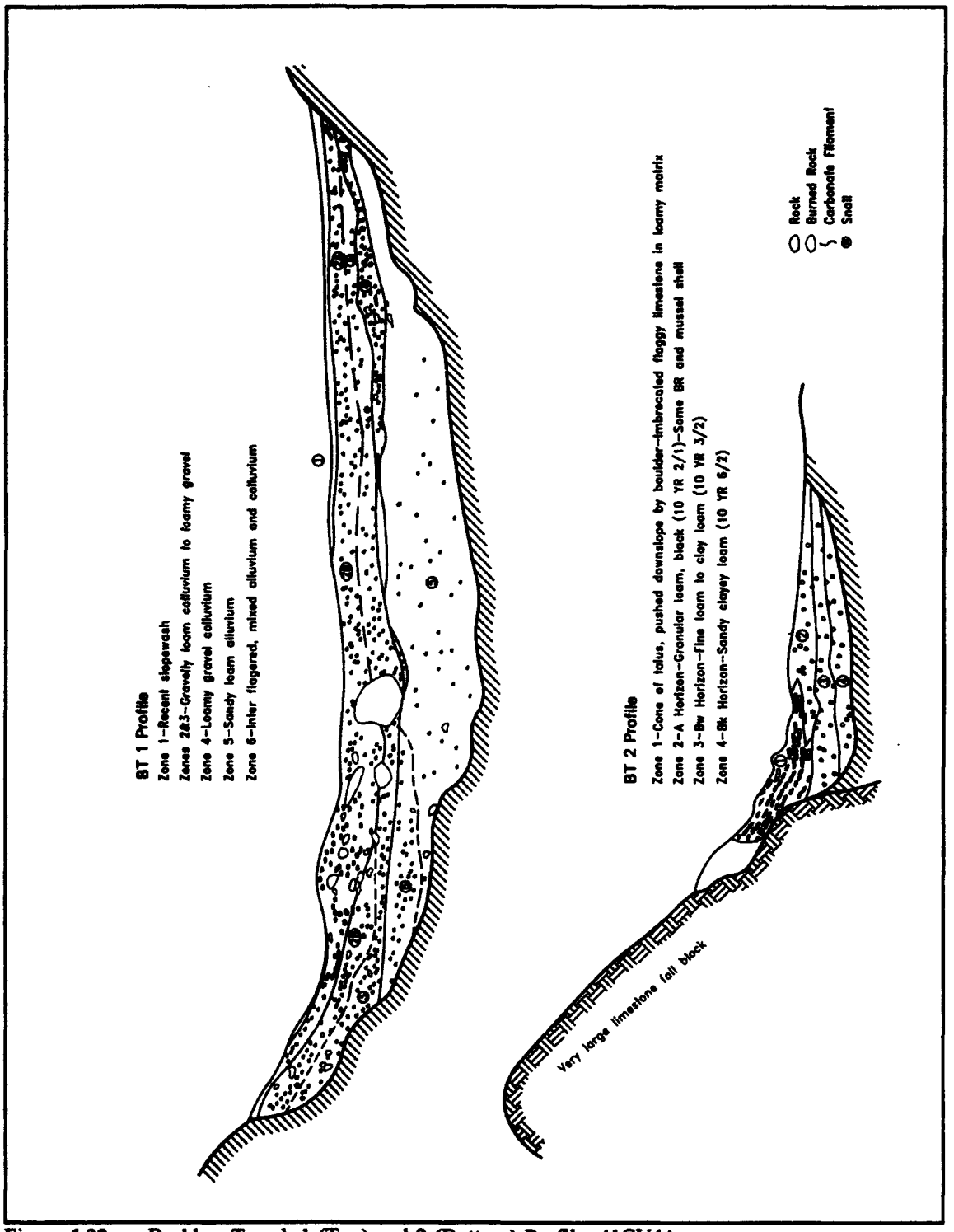


Figure 5.32 **Backhoe Trench 1 (Top) and 2 (Bottom) Profile, 41CV44.**

Below this, from 80 to 120 cmbs, 94 flakes, 23 bone fragments, and no mussel shell or burned rocks were recovered. One very small (0.02 g) charcoal sample from level 8 was identified as juniper wood and provided a $\delta^{13}C$ (-24.1‰) corrected assay of 930 ± 50 BP (Beta-83255).

Backhoe trench 2 was at the base of a very large boulder which had calved off from the margin of the Manning surface. The trench was roughly 2 m deep and extended out toward the stream roughly 8 m. It exhibited an A-Bw-Bk profile. Zone 1 consisted of a cone of flaggy, imbricated limestone talus (C horizon) at the base of the boulder. It probably represents material spalled from the sloping surface of the large spall block, but may actually represent an accumulation of coarse talus pushed in front of the boulder as it slid downslope. It interfingered downslope with Zone 2 (A horizon), which consisted of black (10YR 2/1), granular stony clay loam roughly 70 cm thick. This zone is equivalent to zone 2A in BT 1, and also contained abundant cultural material. Zone 3 underlay the talus cone at the southern end of the trench and Zone 2 away from the boulder. It consisted of about 60 cm of very dark grayish brown (10YR 3/2) blocky clay loam. Zone 4 consisted of weak blocky, light brownish gray (10YR 6/2) sandy clay loam and contained common carbonate filaments. Overall, the profile is interpreted as mixed Holocene colluvium and alluvium (the latter probably representing either the West Range fill or a stacked, welded sequence of the West Range and Fort Hood fills of Nordt 1992) overridden by a wedge of coarse colluvium associated with the large boulder. A complete drill made of Owl Creek Black was collected from the backdirt of this trench.

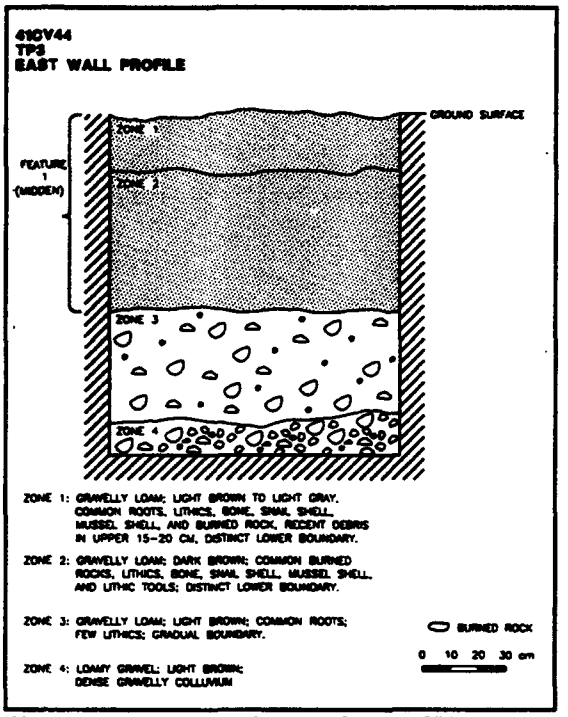


Figure 5.33 Test Pit 3 Profile, 41CV44.

5.8.2.2 Excavations in the Colluvial Slope

Test Pit 2 was excavated behind the very large boulder which marked the upslope edge of BT 2. This test pit was on a relatively flat platform about 3 m lower in elevation than the boulder containing the rockshelter. In the upper 20 cm, one burned rock and a five bone fragments were recovered. Level 3 contained five flakes, six bone fragments, and a burned rock. Levels 4 and 5 each contained 37 and 41 flakes respectively, a utilized flake, a late stage biface, a side scraper, a mussel shell, and a six bone fragments. In addition, two burned rocks were found in level 4. From 50 to 60 cmbs, one flake and a dart point were found. No cultural material was between 60 to 80 cmbs and the unit terminated at bedrock at 80 cmbs. Dense colluvium was present in each level excavated.

Test pit 1 was on a flat area just outside (upslope) the shelter (overhang) formed behind a massive boulder (Figure 5.34). In each level excavated from 0 to 30 cmbs, high frequencies of lithic debitage, burned rocks, and bone fragments, along with a few bifaces and mussel shell fragments were recovered. In addition to these artifacts, a complete unidentified arrow point was from 10 to 20 cmbs and charcoal was from 10 to 30 cmbs. A sketch drawn at the time of discovery somewhat

Table 5.15 Artifact Recovery by Test Pit, 41CV44.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	50	10.0	0	0	0	0	0	0	0	-	unspec.
	2	-	35	5.0	0	0	0	0	0	0	0	-	unspec.
	3	-	20	5.0	0	0	0	0	0	0	0	-	unspec.
	Total		105	20.0	0	0	0	0	0	0	0		
2	1	-	0	0.0	0	3	0	0	0	0	0	-	mixed
	2	-	1	0.8	0	5	0	0	0	0	0	-	mixed
	3	-	1	0.8	0	6	0	0	5	0	0	-	unspec.
	4	-	2	1.5	0	4	0	0	37	0	3	-	LA
	5	-	0	0.0	0	2	0	0	41	0	0	-	LA
	6	-	0	0.0	0	0	0	0	1	1	0	Ellis	LA
	7-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		4	3.1	0	20	0	0	84	1	3		
3	1	F1	11	2.5	0	13	0	0	205	1	0	Ensor	mixed
	2	F1	34	6.0	0	11	0	0	72	1	2	Palmillas	mixed
	3	F1	42	6.0	1	11	0	1	219	2	4	Ensor, Lange	LA
	4	F1	29	3.5	1	14	0	0	430	1	3	?dart	LA
	5	F1	46	8.0	1	67	0	1	409	1	7	?dart	LA
	6	F1	34	5.0	0	15	0	0	410	2	4	Ellis, Ensor	LA
	7	F1	32	4.0	1	10	0	0	87	0	0	-	LA
	8	F1	14	0.8	0	46	0	0	43	0	0	930±50	LA
	9	-	0	0.0	0	1	0	0	28	0	7	-	unspec.
	10	-	1	0.5	0	22	0	0	33	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	27	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	Total		243	36.3	4	210	0	2	1,969	8	27		

resembles a Scallorn-like point. In level 3, several human skeletal elements were found in the screen and at various places in the test pit. Elements included an incisor, a carpal, a clavicle, and about 10 phalanges. Based on the presence of a complete arrow point, relatively large root growth in the unit, and the absence of recent debris, the cultural material in TP 1 was thought to be in primary context. At this point, the Fort Hood Staff Archeologist was notified that human remains had been discovered. At his direction, all cultural material was returned to TP 1, and the unit backfilled. The burial was designated Feature 2.

5.8.3 Analysis and Interpretation

5.8.3.1 Definition of Analytical Units

The cultural material and human remains discovered in TP 1 were immediately reburied and



Figure 5.34 Test Pit 1 Behind Large Boulder, 41CV44.

therefore not analyzed and will not be discussed below. Test pits 2 and 3 combined to yield 2,053 pieces of lithic debitage, 31 stone tools, 9 projectile points, 230 bone fragments, four mussel shell umbos, 352 burned rocks (59.4 kg), charcoal, snail shells, and one burned rock midden Feature 1. The materials from TPs 3, 30 to 60 cmbs and TP 2, 20 to 80 cmbs were assigned to one temporal period, the Late Archaic period, based on two Ellis, two Ensor, and a Lange dart point, and the midden deposit. The material from the top 20 cm of each unit was considered mixed because of the recent military items in these levels. Below the Late Archaic midden in TP 3, 80 to 120 cmbs and TP 2, 60 to 80 cmbs, were materials that could not be confidently assigned to a particular age and therefore were unclassifiable to a time period. This latter material could well be turbated or dispersed from the Late Archaic midden above, but without diagnostics or absolute ages, it is unclear if there is a real association. These three analytical units are discussed below.

5.8.3.2 Late Archaic Materials

These materials include 1,677 specimens of lithic debitage, 21 stone tools, two cores, seven projectile points, 169 bone fragments, four mussel shell umbos, 199 burned rocks, charcoal, snail shells and one burned rock midden (Feature 1). The 1,677 specimens of lithic debitage represent 11 identified and eight unidentified chert types with 48% of the materials identifiable (Table H-60). Among the identifiable cherts Fort Hood Yellow (32%) and Owl Creek Black (33%) stand out. The North Fort province with four types (n=618; 77%) significantly outnumbers the Southeast Range materials (n=159; 20%). This is not surprising given the location of this site group within the North Fort chert province. Within the indeterminate cherts, dark gray (31%) and miscellaneous chert (39%) are most prominent. As partially anticipated, the combined indeterminates, Fort Hood Yellow and Owl Creek Black occur in higher than expected frequency, Heiner Lake Tan

occurs in expected frequency and all others occur in less than expected frequency (Table H-61). The exclusion of the indeterminates results in Heiner Lake Tan joining Fort Hood Yellow and Owl Creek Black as occurring in higher than expected frequency, Gray/Brown/Green occurring in expected frequency, and all others remain unchanged.

The modal peak for size category occurs in the 0.5 to 0.9 cm. The drop off in frequency is more gradual to the larger sized debitage. All size categories are represented with 78% of the debitage is less than 1.2 cm and over 90% less than 1.8 cm. Eighty-seven percent of the debitage is tertiary (Table H-62). Coupled with the size data, the cortex data suggest a great deal of biface reduction and probably projectile point manufacture along with resharpening. These can easily been seen by calculating the percentage of tertiary flakes in each size category which ranges from 98% tertiary in the less than 0.5 cm group to 0% in the greater than 5.2 cm group. A definite break in the number of tertiary specimens is seen from the 1.2 to 1.8 cm category (85%) to the 1.8 to 2.6 cm category (62%).

The seven points consist of two complete Ellis points, the proximal end of an Ensor, a complete Ensor, a complete Lange, and two dart point fragments (Table H-63). Since 80% of the identified debitage was Owl Creek Black it is surprising that only one points is of this material. This would imply that the Owl Creek Black tools manufactured were carried off.

The 21 stone tools consist of six utilized flakes, five scrapers, four late stage bifaces, three edge modified flakes, a middle stage biface, a crushing/abrading stone, and a spokeshave (Table H-64). This occupation is one of the few, no matter what age, that yielded scrapers. These tools were manufactured on Fort Hood Yellow (n=5), Gray/Brown/Green (n=5), and Texas Novaculite (n=1), from the North Fort chert province (52%), and Heiner Lake Tan (n=4), Heiner Lake Translucent Brown (n=1), from the Southeast Range chert province (24%) and Cowhouse Mottled with Flecks (n=3), Cowhouse dark gray (n=1) from the Cowhouse bedload (19%). The dominance of North Fort cherts is mirrored in the debitage. It is noteworthy that none of these tools were of indeterminate cherts, whereas 871 pieces of debitage are indeterminate cherts (52%). Some core reduction and/or flake production is reflected by the presence of two cores, one of Owl Creek Black which was lightly tested, while the Gray/Brown/Green piece was a multiple platform core.

The 169 bone fragments represented nearly 90% large to very large mammals with only about 7% small to medium animals. Deer (n=4) and snake (n=1) elements were positively identified (Table H-65). Thirty-eight (22.5%) were burned while another 38 (22.5%) revealed spiral fractures. These characteristics indicate positive use by man. Apparently while at this location, the Late Archaic peoples relied on deer to bison size animals. The presence of only four umbos support the hunting resource pattern. The umbos represent Unionacea (n=3) and *Amblema* sp. (N=1).

The 199 burned rocks were all part of the midden feature and weighed 28.8 kg. Two float samples yielded 61.9 and 19.7 g of light fraction which were submitted for scanning. The former, from TP 3, 40 to 50 cmbs yielded less than 25 carbonized wood fragments, of which one piece was of Leguminous wood and one unidentified carbonized seed. The latter sample, also from TP 3, but from 20 to 30 cmbs, had less than five pieces of carbonized wood fragments. Age of the charcoal sample (930 ± 50 BP) does not correlate with the age indicated by the projectile points and therefore has some uncertainty. The entire TP 3 yielded only dart points; thus no arrow points supported the charcoal assay. It is believed that this extremely small (0.02 g) charcoal fragment is too recent for this depth and thereby represents an intrusion. Late Archaic burned rock middens are quite common at Fort Hood and indicate intense/repeated use of this immediate region. The

Ensor and Ellis dart points imply a Twin Sister phase (Prewitt 1981; 1985) occupation.

5.8.3.3 Mixed Materials

These materials consist of 277 specimens of lithic debitage, two dart points, two stone tools, 32 bone fragments, and 46 burned rocks.

The 277 specimens of lithic debitage represent five identified and seven unidentified chert types with 45% of the materials identifiable (Table H-66). Fort Hood Yellow and Owl Creek Black stand out among the identified cherts at 33% and 46%, respectively. The North Fort chert province materials dominate the identified debitage with four types and 98%. Of note among the indeterminates is light brown chert at 54%. Only the combined indeterminates occur in higher than expected frequencies, Fort Hood Yellow and Owl Creek Black occur in expected frequency, and all others occur in less than expected amounts (Table H-67). The exclusion of the indeterminates results in Fort Hood Yellow and Owl Creek Black occurring in higher than expected quantities, Gray/Brown/Green occurs in expected frequency, and all others occur in less than expected frequencies.

The modal peak for size is the 0.9 to 1.2 cm category with a more gradual drop off toward the smaller size. Ninety-five percent of the debitage is less than 1.8 cm in size, while the tertiary debitage is 87% of the total (Table H-68). The data indicate a dominance of biface manufacture over core reduction.

The two dart points, a medial fragment from a Ensor made of indeterminate dark brown, and a proximal Palmillas made of Heiner Lake Tan may have been part of the midden. The other tools represent two edge modified flakes of Heiner Lake Tan and Gray/Brown/Green chert. The material types indicate the utilization of at least two known source areas in Fort Hood.

The 32 bones were mostly long bone and vertebrae fragments of deer to bison size animals (Table H-69). One deer tibia was positively identified. One fragment was burned and 16 pieces had spiral fractures. These are quite similar to those elements from the midden and at one time may have been part of it. The midden also yielded 46 burned rocks that weighed 9.3 kg. These materials were probably once part of the midden as the burned rock and Late Archaic points would indicate.

5.8.3.4 Temporally Unspecified Materials

These materials include 99 pieces of lithic debitage, seven stone tools, 29 bone fragments, and two burned rocks (1.3 kg). The 99 specimens of lithic debitage represent five identified and six unidentified chert types with 46% of the materials identifiable (Table H-70). Once again the North Fort materials dominate the identified assemblage with four types and 93%. Fort Hood Yellow stands out among the identified materials at 59%. Within the indeterminates light brown and miscellaneous are dominant materials at 42% and 34%, respectively. Not surprisingly, Fort Hood Yellow and the combined indeterminates occur in higher than expected frequencies, with all others occurring in less than expected frequency (Table H-71). The exclusion of the indeterminates results in no change for Fort Hood Yellow, but Fort Hood Gray, Gray/Brown/Green, and Owl Creek Black occur in expected amounts and Heiner Lake Tan occurs in less than anticipated amounts.

The modal peak for size is the 0.9 to 1.2 cm category with even drop off to both ends of the spectrum. Over 82% of the materials are tertiary (Table H-72). These two data sets combined indicate a dominance of biface or core reduction strategies.

The stone tools consist of one Pedernales dart point, three edge modified flakes, a distal end of a finished biface, two gravers, a drill, and utilized specimen (Table H-73). The material types are similar to those represented in the lithic debitage.

The bone fragments were again represented by mostly deer size pieces with four burned and two spiral fractured pieces (Table H-74). Deer was positively identified by a tibia fragment. These materials of unknown time periods, and mostly from below the Late Archaic midden in TP 3, may represent disturbed midden materials or potentially other occupations.

5.8.4 Conclusions

Backhoe trenches were used to investigate deposits on the toeslope. Cultural material was discovered in association with an upper clay loam interpreted as largely colluvial in BT 1 and mixed alluvial and colluvial in BT 2. This material does not continue up the toeslope, which suggests that it represents an in situ occupation (or occupations) rather than colluvially reworked material. Although little evidence of discrete cultural strata was observable in the dense artifact concentration noted in the profile, a few sub-horizontal concentrations noted within the larger matrix suggest that discrete occupation surfaces may be identifiable.

The midden deposit in TP 3 and sparse buried material in TP 2 represent probable Twin Sisters phase occupation(s) of the Late Archaic period (Prewitt 1981; 1985). The single charcoal pieces dated to 930 BP appears too recent for this period and therefore is believed to be intrusive. These Late Archaic middens are frequent at Fort Hood and indicate considerable use of the region at that time.

The human burials previously reported and the partial individual discovered in TP 1 are unanalyzed, but potentially date to the Late Prehistoric period based on the one arrow point in association. These indicate a special use for this site and could add considerable important information.

On the basis of the above, we judge 41CV44 to be significant and eligible for inclusion to the NRHP under criterion "d" by virtue of containing cultural and environmental data that can contribute substantially to the current state of development of prehistory for Central Texas in general and the Fort Hood area in particular. We therefore recommend that the site be avoided and protected to prevent the loss of significant scientific information. Because known significant deposits occur in shallowly buried contexts the site requires measures to protect it against subsurface disturbance by vandalism, subsurface disturbance by mechanical and manual excavations performed by military personnel during training activities, and traffic by tracked and wheeled vehicles; given the known presence of human remains with associated grave goods, the potential for further damage from vandalism should be regarded as substantial.

5.9 SITE 41CV45

In early to mid-October 1994 we conducted formal test excavations at prehistoric archeological site 41CV45. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 2.4 m^3 were manually excavated and 11 trenches were mechanically excavated. These test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.9.1 Introduction

5.9.1.1 Site Location and Description

Site 41CV45 lies in Fort Hood Training Area 2. This large, open site is situated on a large alluvial fan and floodplain and is delimited by unnamed tributaries to the east and west, and a steep colluvial slope to the south (Figure 5.35). Many dirt roads criss-cross the site, with a stone wall and old fence lines also present on the north side. Maximum site dimensions, as defined in 1993, measured 225 x 150 m, with an east-west long axis, and covering an area of 3.4 hectares (8.4 acres). For purposes of analysis, the site is considered a member of the Owl Creek site group.

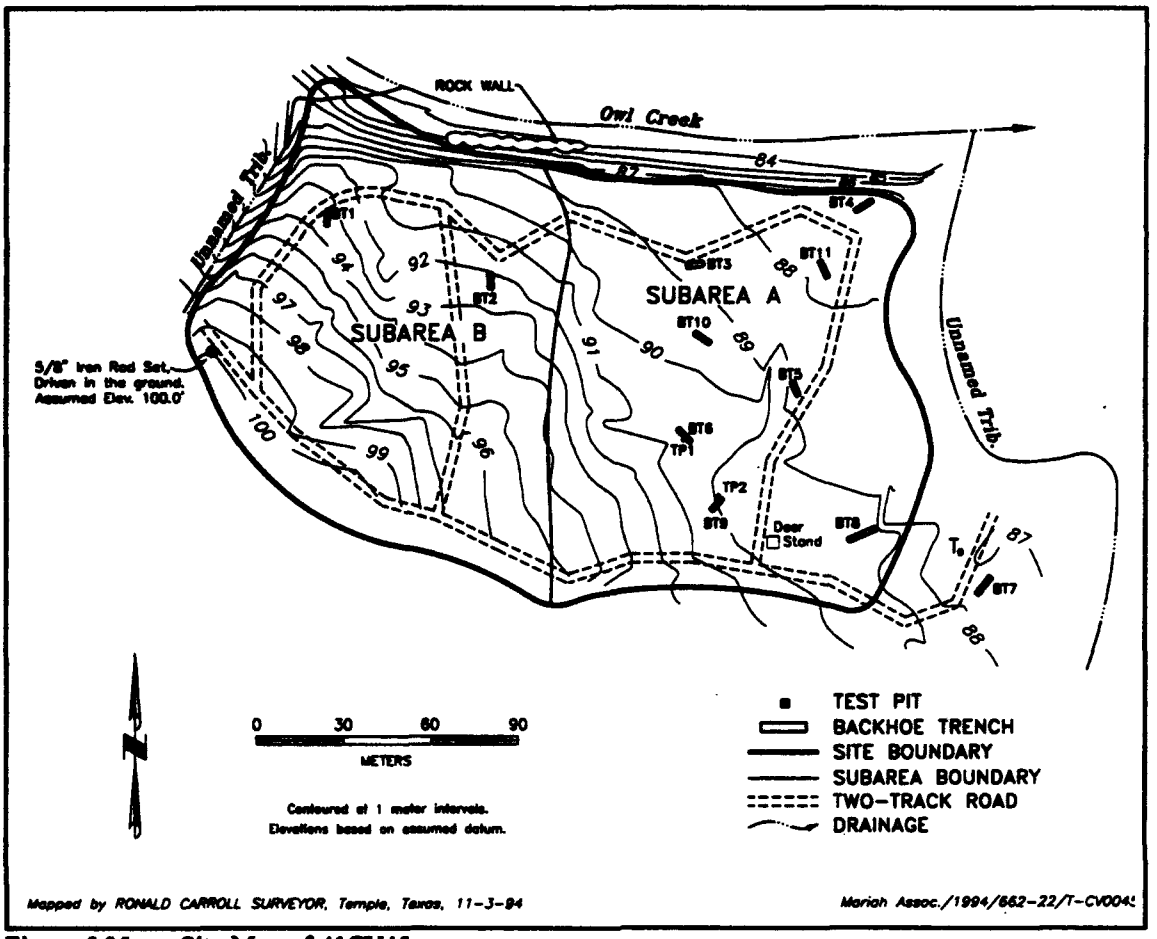


Figure 5.35 Site Map of 41CV45.

5.9.1.2 Previous Work

The site was first recorded by Rodgers on 9 September 1972 as an open camp with debitage, scrapers, hammerstones, manos, and a point base, scattered across the surface of a colluvial shelf. It was thought the site area may have been cultivated and some potholes were noted.

On 26 February 1976 Thomas visited the site and collected a Castroville point (Late Archaic), a Pedernales point (Middle Archaic), and a possible Bulverde (Middle Archaic) point. On 13 June 1985, Strychalski again recorded the site, noting an extensive lithic scatter on moderate slopes south of Owl Creek (Carlson et al. 1986). A keeled end scraper and an untyped dart point were collected. Depth of deposit was estimated at 5 to 10 cm, with erosion, roads, and tracked vehicles impacting 15% of the site.

On 10 March 1992, Quigg and Frederick evaluated the site and delineated two subareas on the basis of archeological potential and geomorphic context. Subarea A subsumed the T_1 surface of Owl Creek and the medial and distal portions of the fan. The cutbank along Owl Creek indicated that multiple alluvial fills may be present beneath the T_1 surface.

A scatter of lithics and burned rocks were observed across this subarea, however, a stone wall and diversion canal were also noted, suggesting cultivation of subarea A. Subarea B consisted of the proximal fan section situated along the western side. A dense, surficial lithic scatter was noted, with gravel and pebble size fragments of limestone and chert also mantling the surface. Sheet erosion was described as actively modifying this area and no in situ deposits were observed. Therefore, potential for cultural material in good context was limited here and no further work was recommended for Subarea B.

Based on the potential for buried cultural deposits in Subarea A, 24 shovel tests were dug on 30 March 1992. The tests ranged from 30 to 80 cm in depth, with 50% containing cultural material. However, 90% of the artifacts were found in the upper 30 cm of deposit (plow zone). Due to questionable context, there appeared to be limited archeological potential in the limits of shovel testing. However, six trenches were recommended in order to examine the structure and geometry of the fills and to investigate the potential for deeply buried deposits (Trierweiler 1994:A619-A622).

5.9.1.3 New Work

Because the site was possibly in an endangered species habitat (Figure 5.36), on 29 August 1994 Eckrich (Fort Hood, Fish and Wildlife) and Kleinbach field checked the site's location. After inspecting the areas in which excavations were to be undertaken, Eckrich granted permission for the archeological work to proceed.

Formal testing was conducted in early to mid-October 1994. Two trenches (BTs 1 and 2) were excavated in Subarea B with nine trenches (BTs 3-11) dug in Subarea A. Trenches were placed to examine site stratigraphy and to prospect for buried cultural material. Although manual excavations had not been recommended, two test pits (TPs 1 and 2) were also dug, due to the discovery of cultural material exposed in BTs 6 and 9. One test pit was offset from each trench which exposed cultural material above. The unit sizes and depths are presented in Table 5.16.



Figure 5.36 View Southwest from Northeast Corner of Site 41CV45.

5.9.2 Results

5.9.2.1 Excavations in the Proximal Fan

Two trenches (BTs 1 and 2) were excavated in the proximal fan deposits of Subarea B on the western side. Trench 1 was at the northwestern site margin above the confluence of Owl Creek and its unnamed tributary. Trench 2 was about 50 m east of BT 1. The two trench profiles were practically identical, as both exhibited an O-A-Bw-Bk profile, and BT 1 was selected for recording (Figure 5.37). The surface horizon extended to a depth of 8 cm and consisted of a mat of gravels and partially-decomposed juniper needles. This surface mat was discontinuous due to sheetflow scour. The underlying A horizon extended to a depth of 22 cm. It consisted of dark grayish brown (10YR 4/2) massive silty to sandy gravel. The Bw horizon consisted of 18 cm of massive, light brownish gray (10YR 6/2) silty gravel, and graded down into the massive, very pale brown (10YR 7/3) sandy to silty gravel of the Bk horizon. This horizon was the only horizon with visible carbonate, which occurred both as common filaments and as diffuse matrix carbonate. No cultural material was observed in either trench below the O horizon.

5.9.2.2 Excavations in the T_1 Terrace

The remaining nine trenches were excavated in Subarea A. Because several trenches exhibited similar profiles, only four (BTs 3 through 6) were profiled and described in detail. Backhoe trench 3 was excavated in distal fan sediments in the north-central part of the site, and exhibited an A-Bk profile (Figure 5.38). The A horizon extended to 20 cmbs and consisted of dark grayish brown (10YR 4/2) weak blocky sandy clay loam. It was underlain by a light yellowish gray (2.5Y 7/3) to white (2.5Y 8/2) gravelly sandy loam to loamy sand. This lower horizon exhibited a weak blocky structure and was yellower at the eastern end of the trench and whiter at the western end, possibly indicating that it represents uneven truncation of an older soil. The matrix was suffused with soft carbonate masses and diffuse matrix carbonate. No buried cultural material was observed. Similar profiles were exposed in BTs 7 through 9.

Table 5.16 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	0.8	proximal fan
BT 2	5	0.8	1.0	proximal fan
BT 3	5	0.8	1.0	alluvial terrace
BT 4	5	0.8	1.6	alluvial terrace
BT 5	5	0.8	1.2	alluvial terrace
BT 6	5	0.8	2.0	alluvial terrace
BT 7	7	0.8	2.0	alluvial terrace
BT 8	8	0.8	2.5	alluvial terrace
BT 9	6	0.8	1.8	alluvial terrace
BT 10	5	0.8	1.5	alluvial terrace
BT 11	5	0.8	1.2	alluvial terrace
TP 1	1.00	1.00	1.40	alluvial terrace
TP 2	1.00	1.00	1.00	alluvial terrace

Backhoe trenches 4 and 5 were excavated into late Holocene alluvium on the margin of the fan. Trench 4 exhibited an A-Bk profile 160 cm thick (Figure 5.39). The A horizon consisted of 70 cm

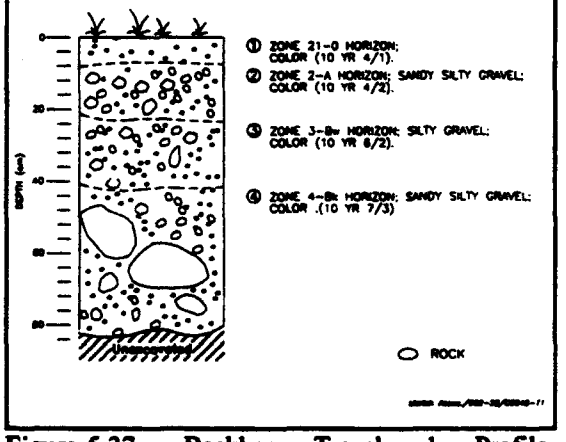


Figure 5.37 Backhoe Trench 1 Profile, 41CV45.

of dark grayish brown (10YR 4/2) granular gravelly loam. Several stringers of gravel were present in the upper 30 cm, and a few carbonate filaments were observed near the transition to the Bk horizon. This lower zone consisted of light brownish gray (2.5Y 6/2) blocky gravelly clay loam and contained common fine carbonate filaments. Backhoe trench 5 exhibited an A-Bw-Bk profile 115 cm thick. The A horizon extended to a depth of 45 cm and consisted of black (10YR 2/1) granular gravelly clay loam. The Bw horizon was 20 cm thick and consisted of very dark grayish brown (10YR 3/2) granular gravelly sandy loam. The Bk horizon consisted of massive, pale brown (10YR 6/3) graded loamy gravel containing few carbonate filaments (Figure 5.40). No cultural material was observed in either trench.

Backhoe trench 6 revealed a profile composed of distal fan alluvium over probable older stream alluvium. A large chert flake was noted in the south wall profile at about 120 cmbs. Overall, the trench exhibited an O-A-C-2Ab-2Bwkb-2Bkb-2C profile (Figure 5.41). The fan alluvium consisted of 40 cm of brown (10YR 5/3) gravelly sandy loam with very weak organic enrichment in the upper 22 cm. It overlaid a buried A horizon 18 cm thick composed of granular, dark brown (10YR 2/2) gravelly sandy loam. This horizon appeared to be the top of a deposit of Holocene stream alluvium and contained common small fragments of orange (probably burned) limestone. It graded downward into a Bwkb horizon approximately 25 cm thick. This horizon was composed of dark brown (10YR 3/3) sandy loam that contained common carbonate filaments and graded from granular to fine blocky structured with depth. Like the buried A, it contained fine flecks of burned limestone. The Bk horizon was 65 cm thick and consisted of pale brown (10YR 6/3), weak blocky sandy loam to silty loam containing common carbonate filaments. The substrate was a very pale brown (approximately 10YR 7.5/3) massive loamy silt. Although several other trenches were placed in the same vicinity, no equivalent deposits of the lower unit were detected anywhere else on site.

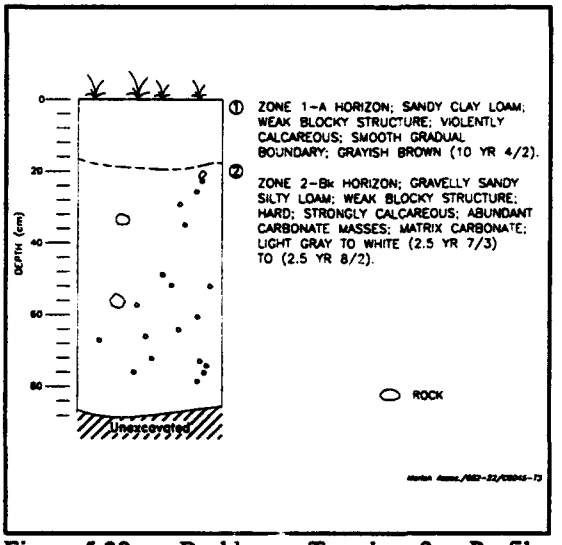


Figure 5.38 Backhoe Trench 3 Profile, 41CV45.

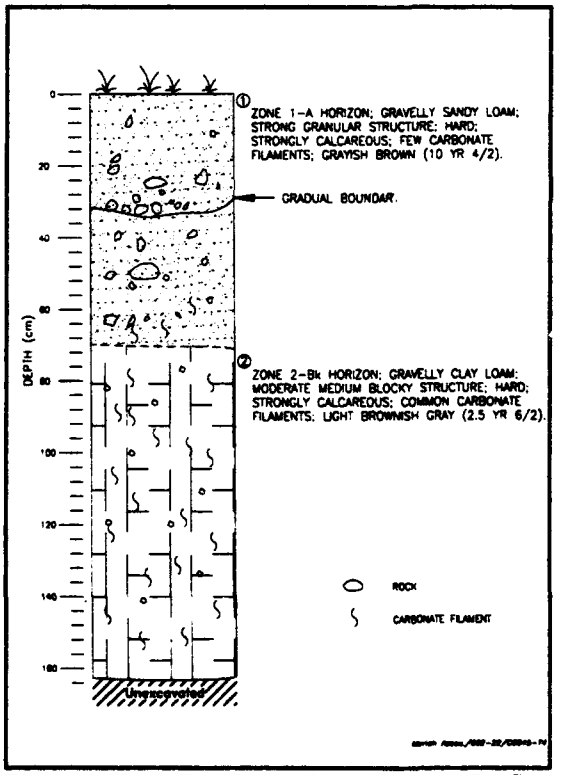


Figure 5.39 Backhoe Trench 4 Profile, 41CV45.

Test Pit 1 was offset from BT 6, over the observed artifact, and excavated to 140 cmbs. An average of nine lithics were recovered from every level, a burned rock noted in levels 5 and 10, and 14 scattered snails (Table 5.17). No cultural features were recognized. The 131 pieces of lithic debitage showed slight frequency differences by level, but it appears this material is redeposited. No discrete buried occupations were apparent.

Test pit 2 was offset from BT 9, about 50 m south of TP 1 along the edge of the slope. A few burned rocks noted in the west wall profile of BT 9 at 40 to 50 cmbs became the target of TP 2 which was excavated to 100 cmbs. As in TP 1, lithic debitage was recovered in every level, with burned rocks noted in levels 3 through 5. The 10 cm thick levels averaged 4.4 pieces of debitage with a peak in artifact frequencies in level 5 (n=14). This material appeared redeposited. Recent disturbance down to at least 40 cm was evidenced by a shallow and roughly square walled "trench" in the western half of the test pit. The apparent "trench" extended the entire length (north to south) of the test pit, was about 30 cm wide. It was filled with 70 to 80 medium sized limestone cobbles and with numerous cigarette filters. No surface manifestation of the trench was apparent.

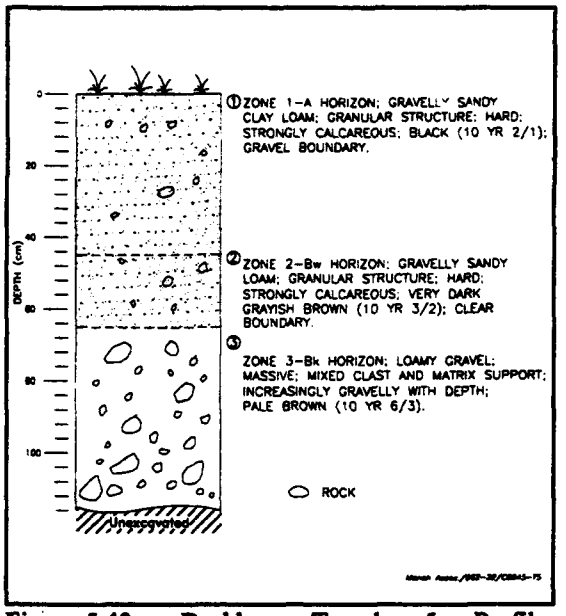


Figure 5.40 Backhoe Trench 5 Profile, 41CV45.

5.9.3 Analysis and Interpretation

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, the excavation proveniences from the proximal fan and T1 surface are grouped together as a single Analytical Unit.

Two of the 11 backhoe trenches yielded minimal amounts of cultural material in Subarea A. Subsequently two test pits were excavated off the margins of the productive backhoe trenches (BTs 6 and 9). These two hand dug units yielded 131 and 44 specimens of lithic debitage, no apparent intact features, and two and 17 burned rocks respectively. Cultural materials were relatively evenly distributed vertically in the deposits, and appeared to be in disturbed redeposited context. The poor overall context negated any further investigations.

The 175 specimens of lithic debitage represent four identified and eight unidentified chert types with 25% of the materials identifiable (Table H-75). Only the three Heiner Lake Tan chert specimens (2%) represent a non-North Fort province material. Only Owl Creek Black occurs in expected frequency with indeterminate light brown in higher than expected frequency, while all other cherts occur in less than expected amounts (Table H-76). When the indeterminate cherts are excluded, all identified categories occur in less than expected frequencies. All sizes of debitage, except the smallest category, are represented and skewed toward the less than 1.8 cm range. Coupled with the small size of the debitage is the high frequency of tertiary debitage (85%) which indicates late stage tool manufacture (Table H-77).

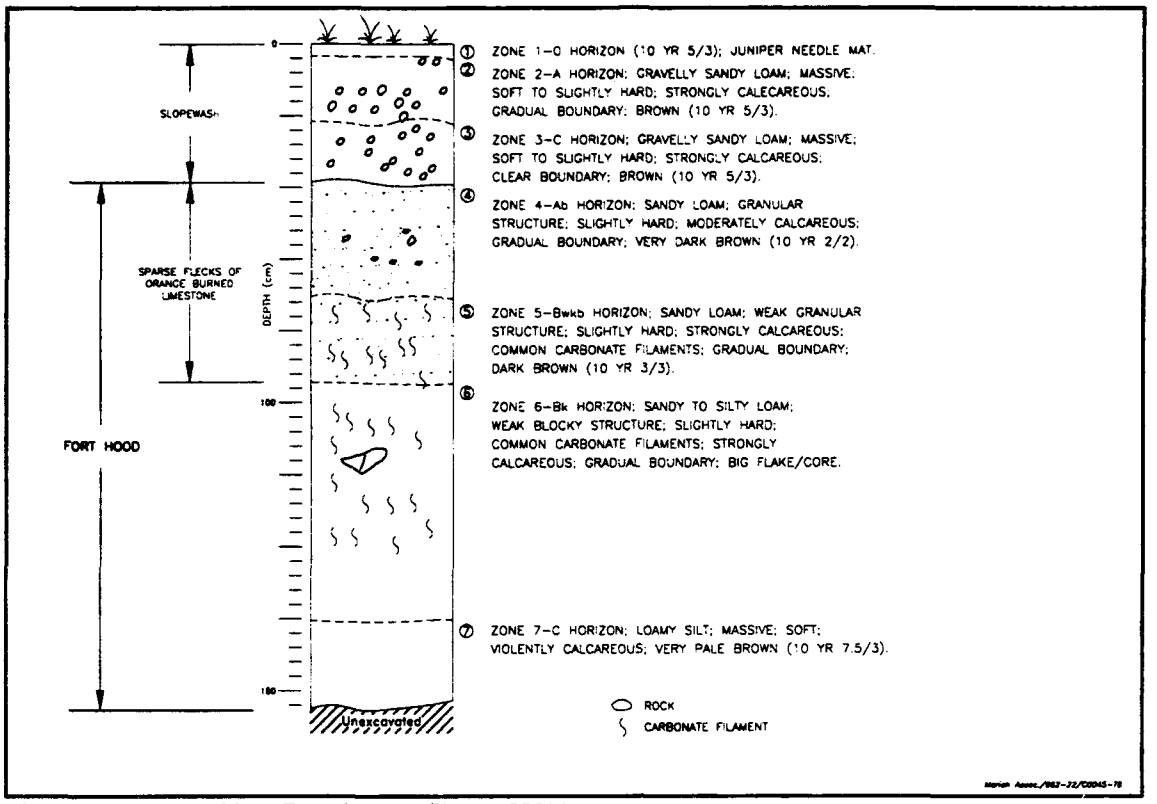


Figure 5.41 Backhoe Trench 6 Profile, 41CV45.

5.9.4 Conclusions

The majority of the site is underlain by relatively coarse-grained fan sediments that have poor potential to contain archeological materials in good context. Recent stream alluvium was observed in two trenches (BTs 4 and 5) but no cultural material was detected in either of these trenches. Trench 6 consisted of a relatively thin drape of fan alluvium over older Holocene alluvium that is tentatively equated with the Fort Hood alluvium of Nordt (1992). No equivalent depositional unit was detected in nearby trenches, suggesting that this alluvium is an isolated remnant buried by the fan. All of the cultural material recovered from TPs 1 and 2 is interpreted as secondary deposits which resulted from downslope alluvial and colluvial processes on the fan. The recent disturbance noted in TP 2 at 20 to 40 cm may be a military slit trench (latrine), although no organic deposits were noted.

We conclude that site 41CV45 contains no significant archeological materials in primary stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

Table 5.17 Artifact Recovery by Test Pit, 41CV45.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	13	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	27	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	5	-	1	0.1	0	0	0	0	8	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	15	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	9	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	10	-	1	0.1	0	0	0	0	9	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	20	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	8	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		2	0.2	0	0	0	0	131	0	0		
2	1	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	3	-	1	0.2	0	0	0	0	8	0	0	-	unspec.
	4	-	1	0.2	0	0	0	0	9	0	0	-	unspec.
	5	-	15	2.0	0	0	0	0	14	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	Total		17	2.4	0	0	0	0	44	0	0		

5.10 SITE 41CV46

From September through October 1994, we conducted formal test excavations at prehistoric archeological site 41CV46. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Six trenches were mechanically dug and four test pits totaling 4.4 m^3 were manually excavated. These tests demonstrate the presence of some intact, buried cultural components dating to the Late Archaic period that have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.10.1 Introduction

5.10.1.1 Site Location and Description

Site 41CV46 is in northeastern Fort Hood, in Training Area 2. This site is a prehistoric open camp on a large alluvial fan that protrudes from the southern valley wall onto a limestone strath surface (T_2) on the south side of Owl Creek (Figure 5.42). A highly vandalized burned rock midden (Feature 1), estimated at 140 m long x 80 m wide, is exposed on the fan surface along the southern site margin. Maximum site dimensions, as defined in 1993, measures 200 m long x 180 m wide with an east-west long axis that covers an area of 3.6 hectares (8.9 acres). For purposes of analysis, this site is considered a member of the Owl Creek site group.

5.10.1.2 Previous Work

This site was originally described by Rodgers in 1972 as a large and extensively vandalized burned rock midden. In 1976 Thomas visited the site and collected several artifacts, including the base of a Wells point. The site was visited again in 1984 by Moore and Ensor who described a lithic scatter along the north edge of a slope extending down to the margins of Owl Creek, hence a new site form and map were completed (Carlson et al. 1986). The debitage found on the floodplain was considered to be associated with lithic procurement activities. Although a high density of flakes, burned rocks, bifaces, and mussel shells were observed at the southern part, no feature or midden was recorded. A Gower and Ensor point were collected. More than 50 cm of archeological deposits were judged to be present and the site was estimated to be 33% disturbed by vandalism, mechanical trenching, erosion, and a road.

In March 1992 Frederick and Quigg reassessed the site based on geomorphic context and the potential for intact cultural deposits. Burned rock, debitage, and stone tools were observed in the very stony black silty clay which formed the upper 50 cm of the alluvial fan deposit. A Darl point was collected from the surface of the T_2 terrace. Twenty-nine shovel tests were excavated, of which 86% yielded positive results. An abundance of flakes, a few bone fragments, a Fairland and a Marcos point, a hammerstone, and three bifaces were recovered from the positive shovel tests, to depths of 80 cmbs. Based on these shovel testing results, two cultural components appeared to be present. Formal testing was recommended to determine the context of the cultural remains and NRHP eligibility. The recommended testing effort included four to six backhoe trench and six to ten square meters of manually excavated test pits (Trierweiler 1994:A623-A629).

5.10.1.3 New Work

Because this site was possibly in an endangered species habitat (Figure 5.43), Gil Eckrich (Fort Hood, Fish and Wildlife) and Kleinbach field checked the site's location on 29 August 1994. After inspecting the areas in which excavations were to be undertaken, Eckrich granted permission for the archeological work to proceed. Formal testing was completed in early October 1994. Six backhoe trenches (1 through 6) were excavated to examine site stratigraphy and prospect for buried cultural material and four test pits (1 through 4) were excavated to recover a representative sample of cultural material. Sizes and depth of units are listed in Table 5.18.

5.10.2 Results

5.10.2.1 Excavations in the Alluvial Fan

Four trenches (BTs 1 through 4) were excavated on the alluvial fan. Trenches 2 and 3, excavated on the proximal part of the fan and in burned rock midden F 1, exhibited a very gravelly sequence interrupted by intense vandal disturbance of the burned rock midden (Figure 5.44). The upper meter displayed a chaotic admixture of infilled, overlapping potholes, spoil piles, and patches of in situ sediment such that it is difficult to discern vandalized areas.

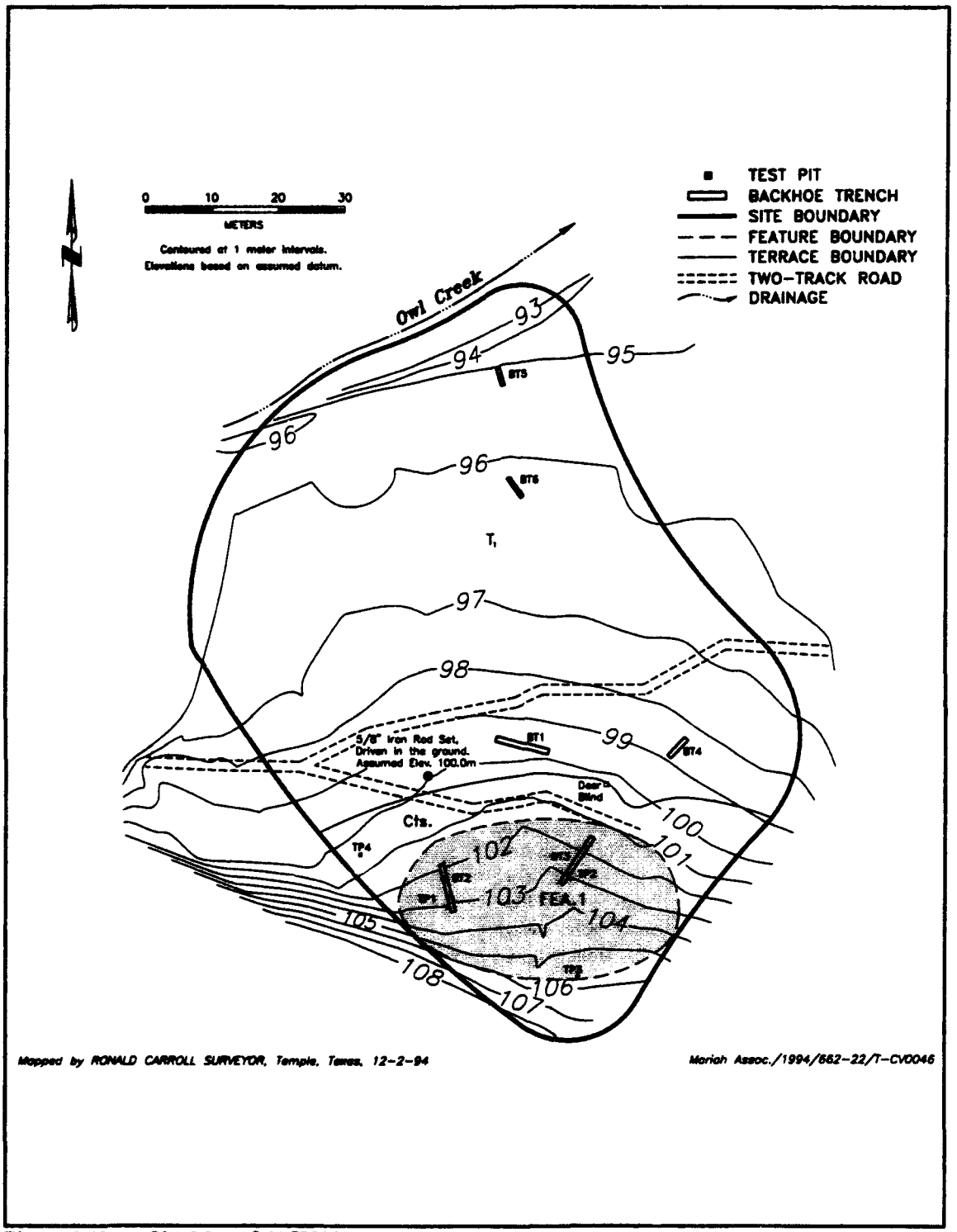


Figure 5.42 Site Map of 41CV46.



Figure 5.43 Overview of Site 41CV46, Exposed Cutbank Along Owl Creek.

The recorded section from BT 2 is representative of the character of the deposits examined in both trenches (Figure 5.45). Zone 1 consisted of 50 cm of loamy gravel and rock that contained a mix of burned and unburned limestone rocks and flakes which represents a spoil pile resting on the surface. Zone 2 extended to a depth of 110 cm, and consisted of clast supported limestone gravel and angular limestone fragments in a black (10YR 2/1) clay loam matrix. Although a moderate number of flakes and burned rocks were distributed throughout the zone, most material was probably colluvially reworked from upslope. Zone 3, the principal cultural horizon and the target of the potholes, consisted of a typical burned rock midden deposit interbedded in the fan measuring about 50 cm thick. It consisted of limestone gravel and angular burned limestone in a black (10YR 2/1) loamy matrix. The zone was suffused with flakes and burned rocks and contained occasional bone and mussel shell fragments. It graded down into bedded fan gravels in a dark grayish brown (10YR 4/2) loamy matrix. Although this lowest zone (at least 1 m thick) contained some burned rocks and flakes, it appeared to be below the principal occupation.

Test pit 1, offset from the west wall of BT 2, was excavated to the contact of the base of the burned rock midden and dense fan gravels at 130 cmbs.

Table 5.18 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	14	0.8	4.0	alluvial fan
BT 2	15	0.8	2.5	alluvial fan
BT 3	20	0.8	2.4	alluvial fan
BT 4	5	0.8	1.3	alluvial fan
BT 5	7	0.8	2.5	alluvial terrace
BT 6	6	0.8	1.3	alluvial terrace
TP 1	1.00	1.00	1.30	alluvial fan
TP 2	1.00	1.00	1.10	alluvial fan
TP 3	1.00	1.00	1.00	alluvial fan
TP 4	1.00	1.00	1.00	alluvial fan

The thoroughly disturbed upper 90 cm was removed as overburden and was not screened. From 90 to 130 cmbs, the intact midden was along the eastern edge of the test pit whereas the western part continued with spoil within a deep pothole. The spoil continued to be removed as overburden before excavating intact midden deposit. An intact area measured 100 x 30 cm from 90 to 100 cmbs and yielded 52 flakes. Recovery increased dramatically in the following two levels with 1,045 flakes, 32 burned rocks and 31 bone fragments, and five dart points. In addition, a hammerstone and four flake tools were recovered from 100 to 110 cmbs plus two mussel shells and a biface were recovered from 110 to 120 cmbs. In levels 11 and 12, the undisturbed part of this unit measured 100 cm by about 45 cm. From 120 to 130 cmbs, recovery from the intact midden section (now 100 x 62 cm) included 129 flakes, 20 burned rocks, seven bone fragments, a mussel shell, a chopper, three flake tools, and two biface fragments (Table 5.19).

Test pit 4 was a freestanding unit west of BT 2 and TP 1 and about 15 m west of the westernmost observed pothole excavated to a large boulder or bedrock at 100 cmbs. Within the upper 70 cm, dense gravels and various amounts of flakes and burned rocks were found in each level. The frequency of artifacts in these upper levels ranged from two flakes and four burned rocks in the top 10 cmbs, to 50 flakes and 12 burned rocks from 30 to 40 cmbs, to 88 flakes and eight burned rocks from 60 to 70 cmbs. From 70 cmbs to the base of the test pit, F 1 (the midden) was encountered. From 70 to 80 cmbs, 105 flakes, 42 burned rocks, mussel shell fragments, and a Montell point (Late Archaic) were found. From 80 to 90 cmbs, 22 flakes and 54 burned rocks were recovered and the lowest level excavated (90 to 100 cmbs) yielded four burned rocks directly atop the large boulder or bedrock.

Trench 3 was excavated through the central part of the fan. Stratigraphy was similar to that in BT 2, with a few areas at the base of vandals' spoil zone that was undisturbed. Test pit 2 was offset from

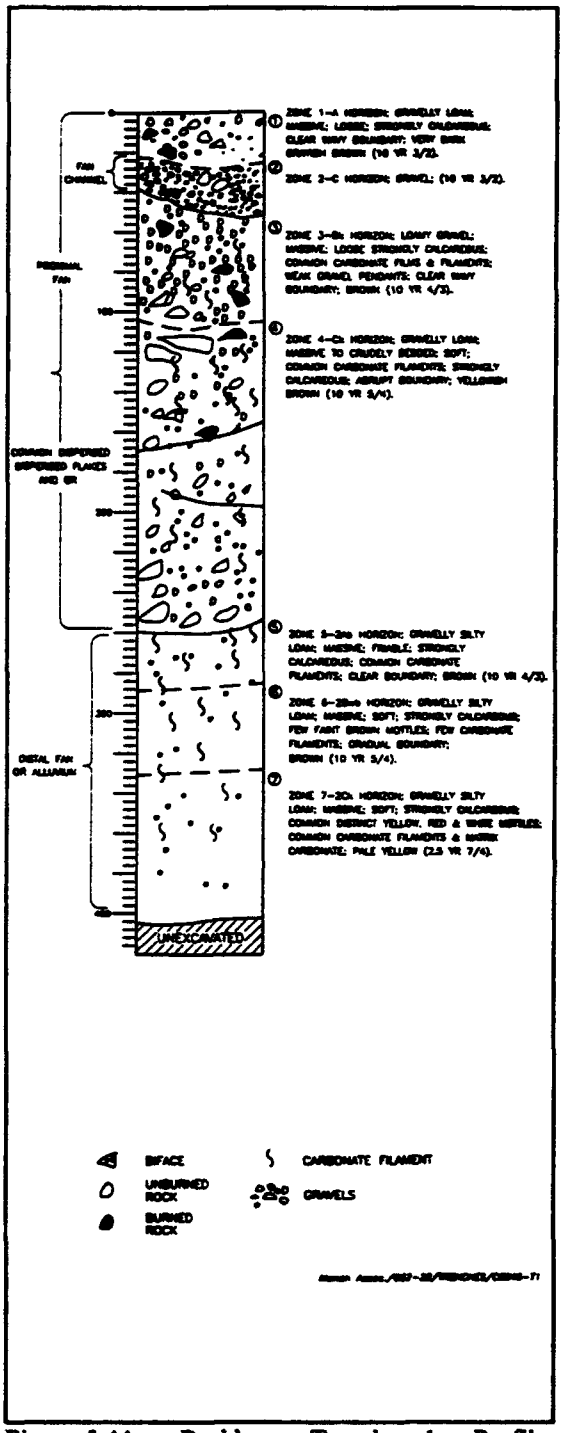


Figure 5.44 Backhoe Trench 1 Profile, 41CV46.

Table 5.19 Artifact Recovery by Test Pit, 41CV46.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6-9	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	10	F1	0	0.0	0	0	0	0	52	0	0	-	unspec.
	11	F1	12	2.5	0	13	0	0	523	3	5	Marcos, Marshall, Pedernales	MA
	12	F1	20	4.5	3	19	0	1	522	2	10	Marshall, Montell	MA
	13	F1	20	5.0	1	7	0	2	129	0	6	-	MA
	Total		52	12.0	4	39	0	3	1,226	5	21		
2	2-7	F1	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	F1	14	3.0	0	7	0	0	160	0	2	-	mixed
	9	F1	58	12.0	0	6	0	0	318	3	4	?arrow	mixed
	10	F1	52	13.0	1	13	0	0	33	1	1	Ensor	mixed
	11	F1	2	0.8	0	0	0	0	32	0	1	-	mixed
	Total		126	28.8	1	26	0	0	543	4	8		
3	1	-	13	1.5	0	0	0	0	3	0	0	-	mixed
	2	-	11	2.0	0	3	0	1	45	2	2	Scallorn, ?arrow	mixed
	3	-	24	3.5	1	0	0	0	24	0	4	-	LA
	4	-	39	6.8	0	0	0	0	59	1	6	Montell, ?dart, 1010±70	LA
	5	-	21	4.5	0	16	0	0	35	0	0	-	LA
	6	-	15	2.3	0	22	0	0	14	0	1	-	LA
	7	-	15	5.0	0	0	0	0	6	0	0	-	unspec.
	8	-	14	2.3	0	0	0	0	1	0	0	-	unspec.
	9	-	9	2.0	0	0	0	0	3	0	0	-	unspec.
	10	-	11	2.0	0	0	0	0	6	0	0	-	unspec.
	Total		172	31.9	1	41	0	1	196	3	13		
4	1	-	4	1.0	0	0	0	1	2	0	0	-	unspec.
	2	-	6	1.5	0	0	0	0	11	0	1	-	unspec.
	3	-	4	1.0	0	0	0	0	16	0	0	-	unspec.
	4	-	12	3.0	0	0	0	0	50	1	0	-	LA
	5	-	6	1.5	0	0	0	0	32	0	0	-	LA
	6	-	6	1.5	0	0	0	0	68	0	0	-	LA
	7	-	8	2.0	0	0	0	0	88	0	0	-	LA
	8	F1	42	9.0	0	0	0	0	105	1	4	Montell, 1720±50	LA
	9	F1	54	9.5	0	0	0	0	22	0	0	-	LA
	10	F1	4	1.0	0	0	0	0	0	0	0	-	LA
	Total		146	31.0	0	0	0	1	394	2	5		

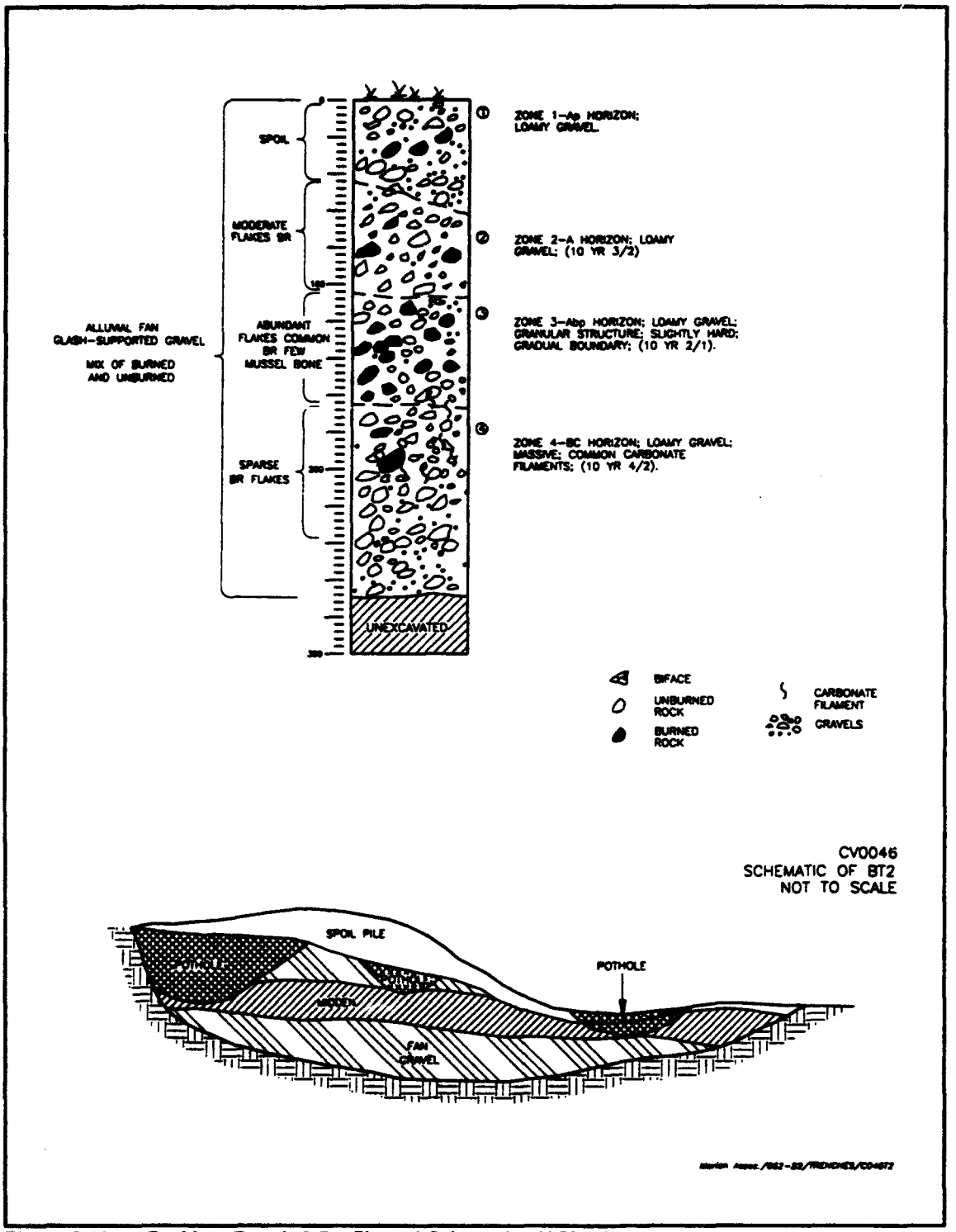


Figure 5.45 Backhoe Trench 2 Profile and Schematic, 41CV46.

the east wall of BT 3 and excavated to dense fan gravels at 110 cmbs. The upper 70 cm that contained the spoil in a pothole at the eastern edge of the unit extended to 110 cmbs was removed as overburden and was not screened. An intact midden deposit (F 1) was encountered in the western part of TP 2 from 70 to 110 cmbs. From 70 to 90 cmbs, 478 flakes, 72 burned rocks, a biface, two dart point and an arrow point fragment, and 13 bone fragments were recovered. The lowest two levels each contained substantially fewer flakes (n=64), 54 burned rocks, an Ensor point, and several bone and mussel shell fragments. Test pit 3 was upslope from TP 2, at the base of the hill slope and on the southern edge of the fan. This unit was excavated to 100 cmbs. Each level excavated contained dense gravels and various amounts of flakes and small burned rocks. In addition, a burned stump and root mold were present along the east wall from 33 to 90 cmbs (visible in profile). The frequency of cultural material increased sharply from three flakes and 13 burned rocks in the upper 10 cm, to 45 flakes, 11 burned rocks, three bone fragments, a biface section, and two arrow point fragments from level 2. Recovery from 20 to 30 cmbs included 24 flakes and 24 burned rocks. A peak in recovery occurred from 30 to 40 cmbs, where 59 flakes, 39 burned rocks, four bifaces, two choppers, and a Montell point (Late Archaic) were found. Flake and burned rock frequencies gradually decrease to the base at 100 cmbs. In contrast to TPs 1 and 2, a distinct midden deposit was not in this test pit.

Two additional trenches (BTs 1 and 4) were excavated at more distal parts of the fan surface, beyond the principal vandalized midden area. Trench 1 was excavated to slightly more than 4 m, and exposed a section composed of about 2.5 m of coarse grained, proximal fan sediments underlain by at least 1.5 m of loamy deposits tentatively interpreted as distal fan sediments. Overall, BT 1 exhibited an A-C-Bk-Ck-2Ab-2Bwb-2Ck profile. The upper A-C sequence consisted of a 50 cm thick deposit of very dark grayish brown (10YR 3/2) lenticular bedded channel gravels. It was inset into massive, dark brown (10YR 4/3) loamy gravels that contained common carbonate films and filaments (Bw horizon) that graded into a sequence of massive to crudely bedded yellowish brown (10YR 5/4) loamy gravel and gravelly loam. A Langtry point, dating to the Middle Archaic, was collected from the north trench wall at 55 cmbs. This 2 m thick sequence of proximal fan sediments contained considerable amounts of dispersed burned rock and flakes, but nearly all of it appeared to be in secondary context. The underlying fine-grained deposits consisted of a 20 cm thick buried A horizon composed of massive, dark brown (10YR 4/3) gravelly silt loam; a 45 cm thick Bw horizon composed of yellowish brown (10YR 5/4) massive silty loam; and a Bk horizon at least 70 cm thick composed of mottled, pale yellow gravelly silt loam suffused with common carbonate filaments and matrix carbonate. No cultural material was noted in the lower deposits.

Trench 4 was excavated in a similar topographic position and revealed deposits similar to the upper, coarse-grained facies in BT 1. It was not excavated to sufficient depth to determine if a fine-grained unit similar to that detected in BT 1 was present. Only a few burned rocks in obvious secondary context were observed in the trench profile.

5.10.2.2 Excavations in the Alluvial Terrace

Two final trenches (BTs 5 and 6) were excavated on the terrace in front of the fan. Trench 5 was adjacent to the Owl Creek terrace scarp. It revealed a weak A-Bw-C soil profile developed in loamy sand and loamy gravel (Figure 5.46). The A horizon was 25 cm thick and consisted of massive, dark brown (10YR 3/3) loamy fine sand. It graded into a Bw horizon 25 cm thick composed of yellowish brown (10YR 5/4) massive loamy fine sand. The C horizon extended to the base of the trench at 125 cm and consisted of massive to crudely bedded, yellowish brown (10YR 5/4) to very pale brown (10YR 7/3) loamy gravel. No cultural material was observed.

Trench 6 was about 30 m back from the scarp and exhibited a thick (at least 2.6 m) A-AB-Bwk-Bk profile developed in loamy alluvium (Figure 5.47). The A horizon was 30 cm thick and consisted of weak blocky, black (10YR 2/1) sandy loam. The underlying AB horizon was 35 cm thick and consisted of very dark grayish brown (10YR 4/2) blocky gravelly loam. The Bwk horizon was dark brown (10YR 4/3), massive gravelly sandy loam. It contained common carbonate filaments and was 45 cm thick. The Bk horizon extended to a depth of 265 cm and consisted of massive, yellowish brown (10YR 5/4) gravelly loam. No cultural material was detected in association with either BTs 5 or 6.

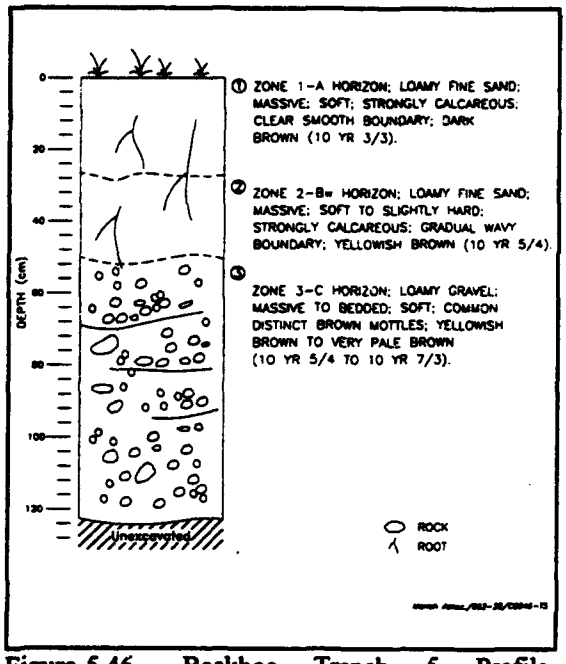


Figure 5.46 Backhoe Trench 5 Profile, 41CV46.

5.10.3 Analysis and Interpretation

5.10.3.1 Definition of Analytical Units

The four test pits yielded 2,359 specimens of lithic debitage, 14 projectile points, 47 stone tools, 106 bone fragments, 496 burned rocks, six mussel shell umbos, charcoal, many snail shells, and parts of buried F 1. These materials were assigned to the Late Archaic plus one temporally unassigned group and one mixed group. The Late Archaic is based on two charcoal dates of 1010 BP and 1720 BP, and on two associated Montell points.

5.10.3.2 Late Archaic Materials

These materials are from TPs 3 and 4, 20 to 60 cmbs in the former and 30 to 100 cmbs in the latter. Cultural materials include 497 specimens of lithic debitage, three projectile points, 15 stone tools, 39 bone fragments, one umbo, 231 burned rocks, charcoal and snail shells.

The 497 specimens of lithic debitage represent eight identified and eight unidentified chert types with 61.8% of the materials identifiable (Table H-78). Fort Hood Yellow dominates the identified materials with 33.9%, while the miscellaneous category dominates the indeterminates (43.2%). Only three of the four chert provinces are represented with North Fort materials dominating (81%) due in large part to the high numbers of Fort Hood Yellow and the contributions of Gray/Brown/Green and Owl Creek Black. Fort Hood Yellow, Gray/Brown/Green, and the combined indeterminates occurring in higher than expected frequencies, with Heiner Lake Tan and Owl Creek Black occurring in expected frequencies; all others occur in less than anticipated amounts (Table H-79). The exclusion of the indeterminates results in Heiner Lake Tan occurring in higher than expected and no other changes.

The modal peak for size is really two categories separated by a fraction of a percentage point. Seventy-nine percent of the materials are smaller than 1.8 cm in size, with those specimens higher and lower than the peaks in nearly equal amounts. These high number of small flakes supports a biface reduction strategy which is equally supported by the 3:1 ratio of tertiary to cortex bearing materials (Table H-80).

The three points were identified as two Montell, one complete and one distal fragment, and a distal fragment of an untyped point (Table H-81). Only the indeterminate miscellaneous chert is well represented in the debitage, therefore these points may have come in as finished points. The other 15 tools consist of four utilized flakes, three finished bifaces, two edge modified flakes, two late stage bifaces, two middle stage bifaces, one complete crushing/abrading tool, and one complete Type B Chopper (Table H-82). These were manufactured from various chert types including four Heiner Lake Tan, four Fort Hood Gray, two Fort Hood Yellow, two indeterminate dark brown, one indeterminate light gray and one Cowhouse Mottled with Flecks.

The 38 bone fragments were identified as representing mostly (58%) large to very large mammals (bison size), two deer elements are present as is one turtle plastron (Table H-83). Nearly half the fragments were unidentifiable long bone sections with 10 pieces of metapodial, a phalanx, rib, vertebra, an axis, and four unidentifiable pieces. Only one piece is burned, with 14 displaying spiral fractures, and 30 pieces revealing marked weathering on their surfaces. Only a single unclassifiable umbo was recovered.

The 231 burned rocks weighed 44.6 kg with 100 burned rocks (19.5 kg) from midden F 1. A very small (0.05 g) charcoal sample from TP 4, 70 to 80 cmbs in F 1 was of indeterminate wood and provided a $\delta^{13}C$ (-26.3‰) corrected assay of 1720 ± 50 BP (Beta-83256). A light fraction sample weighing 71 g from this same provenience yielded no carbonized wood or seeds although some non-carbonized seeds were present. A second charcoal sample weighing 5.4 g from TP 3, 30 to 40 cmbs was identified as oak wood and provided a $\delta^{13}C$ (-25.6) corrected assay of 1010 ± 70 BP (Beta-83523). This latter date is slightly too young and may indicate some mixing. It was associated with a Montell point but the disturbance noted above puts this into question.

Late Archaic burned rock middens are quite common in Fort Hood and other areas of Central

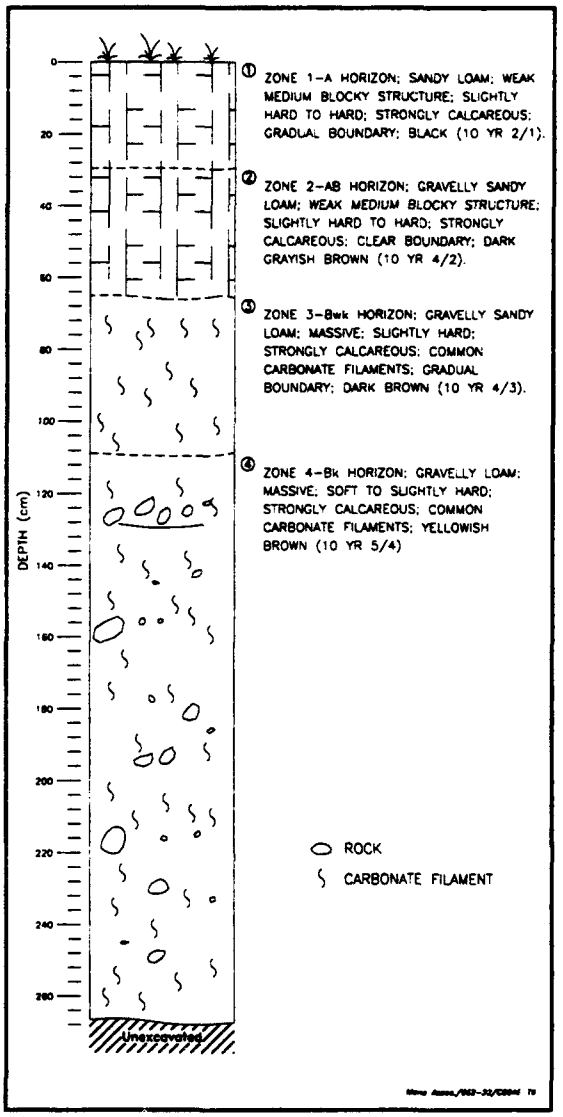


Figure 5.47 Backhoe Trench 6 Profile, 41CV46.

Texas and Montell points are a common occurance. The presence of these points would indicate Prewitt's Uvalde phase association (1981, 1985), although Prewitt did not indicate this phase was associated with burned rock middens (1981). Part of this midden are still intact even though considerable vandalism has destroyed much of the near surface deposits.

5.10.3.3 Mixed Materials

These materials include 1,817 specimens of lithic debitage, 11 points, 31 stone tools, 68 bone fragments, five mussel shell umbos, 202 burned rocks, some charcoal and many snail shells. These were from TPs 1 and 2 and primarily disturbed from vandalism.

The 1,817 specimens of lithic debitage represent 11 identified and eight unidentified chert types with 61.3% of the materials identifiable (Table H-84). Gray/Brown/Green dominates the identified portion with 45.5%, while the indeterminates are dominated by the miscellaneous category at 60.1%. Although all four chert provinces are represented, North Fort materials contribute 95.4% primarily due to the dominating presence of Gray/Brown/Green and the large numbers of Fort Hood Yellow. Southeast Range materials contribute less than 4% of the total identified portion. As would be expected Fort Hood Yellow, Gray/Brown/Green and the combined indeterminates occur in higher than statistically expected frequencies, Owl Creek Black occurs in the expected amount, while all others occur in less than anticipated amounts (Table H-85). The exclusion of the indeterminates results in Owl Creek Black increasing from expected amounts to higher than expected amounts.

The modal peak for size occurs in the 0.5-0.9 cm range although the next larger category is only four percentage points less in frequency. The drop off in frequency occurs at a slower rate to the larger end of the spectrum. Eighty-size percent of the debitage is less than 1.8 cm in size and 95.9% is less than 2.6 cm in size. These data in conjunction with the cortex data of 84.1% of the materials as tertiary clearly indicates high amounts of biface reduction (Table H-86). Completely cortex dorsal faces are present in only 1% of the materials.

The 11 points were identified as two untyped arrow points, one blade section of a Scallorn, two untyped dart point fragments, two Marshalls, an Ensor, a Montell, a Pedernales, and a Marcos (Table H-87). The 31 other stone tools consist of 12 utilized flakes, seven late stage biface pieces, four edge modified flakes, three middle stage bifaces sections, one medial section of a finished biface, a complete Type A Chopper, a complete crushing/abrading stone, one complete graver, and one hammerstone (Table H-88). The latter was the only non-chert piece. The indeterminate cherts account for ten pieces of various colors, whereas Heiner Lake Tan and Gray/Brown/Green each accounted for five specimens, and Owl Creek Black for three and the eight other pieces were of various colors of chert.

The 68 bone fragments were mostly (77%) unidentifiable long bone fragments of large to very large mammals (bison size) (Table H-89). No deer elements were identified but about ten pieces appeared to represent small to medium size mammals. Twenty pieces are burned and 32 show spiral fractures indicating human manipulation. The five umbos were identified as *Tritigonia verruccosa, Amblema plicata, Quadrula* sp. and two unknown.

The 202 burned rocks weighed 44.2 kg and were mostly from disturbed areas of midden F 1 in the lower parts of TPs 1 and 2.

5.10.3.4 Temporally Unspecified Materials

These materials include 45 specimens of lithic debitage, one stone tool, 63 burned rocks. These occurred in TP 3, 60 to 100 cmbs, and TP 4, 0 to 30 cmbs. The lack of projectile points and charcoal hinders assignment of these zones.

The 45 specimens of lithic debitage represent seven identified and six unidentified chert types with 62.2% of the materials /identifiable (Table H-90). Gray/Brown/Green dominates the identified portion with 42.9, while dark gray dominates the indeterminates. Only North Fort and the Southeast Range chert provinces contribute materials with the North Fort cherts dominating (82%). Gray/Brown/Green and the combined indeterminates occur in higher than expected

frequency, while Heiner Lake Tan, Fort Hood Yellow, Owl Creek Black occur in expected frequency, and all others occur in less than expected frequency (Table H-91). The exclusion of the indeterminate materials results in all sources except for Gray/Brown/Green which remains unchanged, to occur in expected frequencies.

The modal peak for size is the combination of the 0.9-1.2 cm and the 1.2-1.8 cm size categories which are separated only by four specimens. These two categories contribute two-thirds of the materials. The quantity of materials appears to have a constant drop-off rate to both ends of the size spectrum. Eighty-two percent of the materials are tertiary in nature, with one specimen having a completely cortified dorsal face (Table H-92).

Three points of North Fort cherts were recovered: Castroville, Langtry, and Wells (Table H-93). The one tool is a proximal late stage biface made of Fort Hood Yellow chert. A single platform core was also recovered. The 63 burned rocks weighed 14.6 kg with most of these occurring below the midden in TP 3.

5.10.4 Conclusions

This site appears to represent a thick, extensive burned rock midden of primarily Late Archaic age developed on and in alluvial fan deposits and buried by up to 1 m of more recent fan sediments. Backhoe trenches on the more distal portions of the fan surface and on the terrace failed to produce any cultural material in apparent primary context. Unfortunately, it appears that the much of this midden has been thoroughly disturbed by vandals who expended considerable effort to quarry into the fan and loot the buried deposits. Due to repeated and overlapping episodes of vandalism, it is difficult to judge the total extent of disturbance, but at least half of the deposits have been impacted by this activity. Nonetheless, some midden deposits are still intact below the vandalized zone and in isolated pockets of irregular shape and size. While prospecting for these intact pockets and winnowing out the disturbed zones may be problematic, the richness of the remaining intact deposits suggests that the site still has significant research potential bearing on problems of cultural chronology and paleo-economy.

Site 41CV46 is evaluated as containing intact archeological deposits with some potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the eligible midden component is exposed on the surface and is well known to local vandals, the site has a high probability of adverse impact in the future. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic.

5.11 SITE 41CV47

In late September 1994 we conducted formal test excavations at prehistoric archeological site 41CV47. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 1.8 m^3 were hand excavated. These tests demonstrate the presence of intact, buried, and stratified cultural deposits dating to the Late Prehistoric period which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.11.1 Introduction

5.11.1.1 Site Location and Description

Site 41CV47 is in northeastern Fort Hood, Training Area 2. The site consists solely of a potted burned rock midden on a gently sloping bench in the middle of steep colluvial slopes (Figure 5.48). Maximum site dimensions as defined in 1993 include a buffer zone around the feature and measure 70 x 50 m, with a north-south

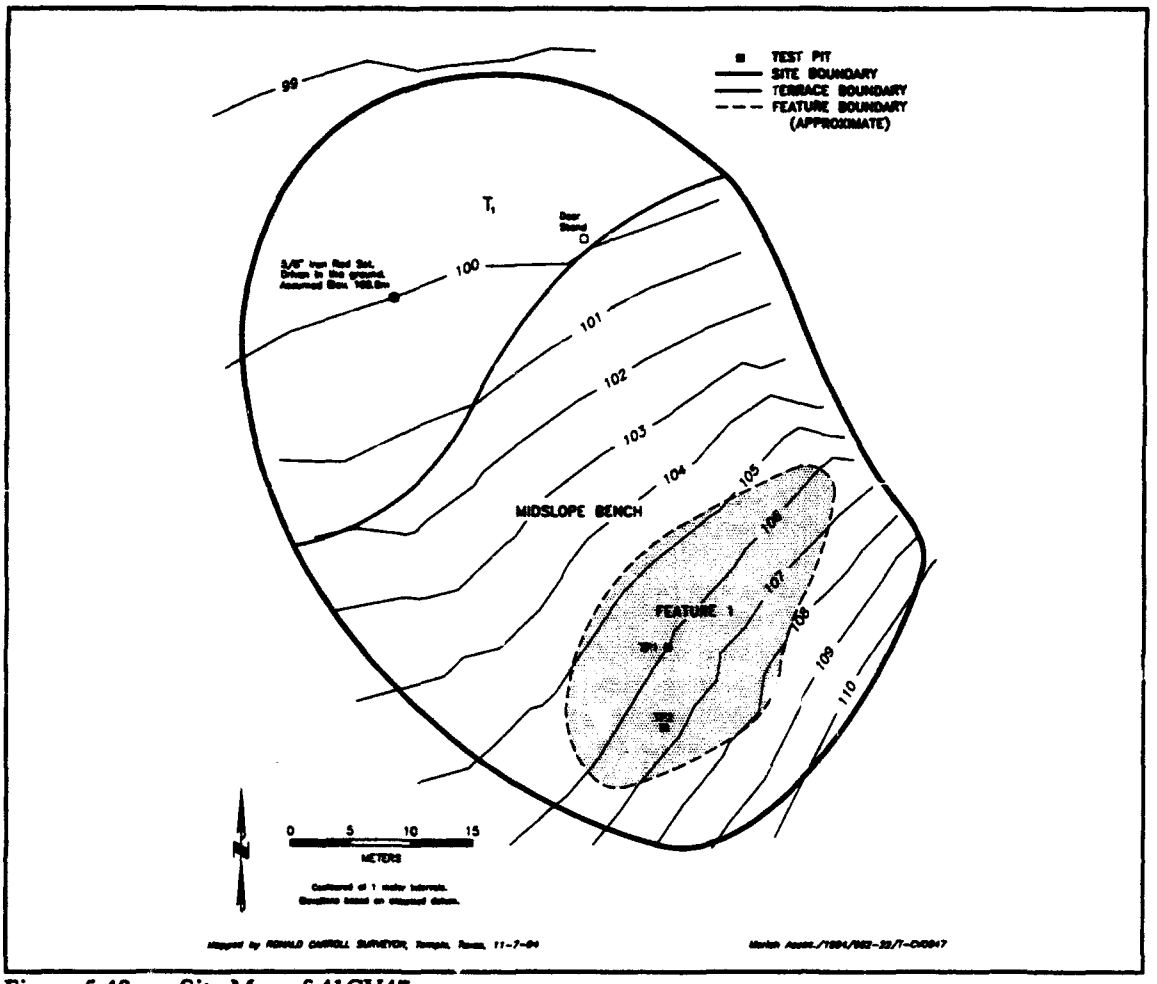


Figure 5.48 Site Map of 41CV47.

long axis. Site area is estimated as 0.4 hectare (1.0 acre). For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.11.1.2 Previous Work

The site was first recorded by Rodgers on 23 September 1972. He noted lithics, bone, and mussel shell and concluded the site was a short term occupation. The site measured 25 x 15 m, had an estimated deposit of greater than 50 cm, and was vandalized. On 28 February 1976, Lebo visited the site and collected some material. Artifacts included debitage, scrapers, bone fragments (some possibly deer), shell fragments, two Perdiz points, one Castroville and one indeterminate arrow point. In late March 1976, Thomas determined the site extended further west than originally recorded in 1972. He determined this new section to be a large surface scatter measuring 200 x 100 m, whereas the part of 41CV47 recorded in 1972 was restricted to a potted burned rock midden. A scraper, knives, and a point (first typed as a Nolan, then later as a Bulverde) were collected.

On 13 June 1982, Ensor recorded the site as a fairly well preserved burned rock midden on a

bench overlooking a small tributary (Carlson et al. 1986). Debitage, burned rocks, bifaces, and mussel shell were noted. During this visit, the recorded site dimensions were 65 x 40 m, with an estimated depth of deposit less than 50 cm. The site was impacted 7% by erosion and vandalism.

On 5 March 1992, Quigg and Frederick revisited and reevaluated based on the potential for buried cultural deposits and geomorphic context. The site consisted of a vandalized burned rock midden with moderate amounts of lithics (Perdiz and Darl points collected), shell, and bone, but a relatively low density of burned rocks. Estimated midden dimensions were 40 x 30 m. On 24 March 1992, two shovel tests (STs 1 and 2) were excavated to 52 and 78 cmbs. A total of 161 pieces of cultural material including lithics, bone, shell fragments, and burned rocks were in these tests. Cultural material was distributed in all levels, with the highest frequencies from 10 to 30 cmbs. Shovel testing results indicated that in situ archeological deposits may be present and formal testing was warranted to determine NRHP eligibility. The recommended testing effort included 2 to 3 backhoe trenches and 2 to 4 square meters of manually excavated test pits (Trierweiler 1994:A630-A633).

5.11.1.3 New Work

Because the site was in an endangered species protected area (Figure 5.49), Gil Eckrich (Fort Hood, Fish and Wildlife) and Kleinbach visited the site on 29 August 1994 to check its location. Due to the midslope location (i.e., prime bird habitat), permission to mechanically trench the site was denied. However, since the impacts of manually excavated test pits would not adversely affect the area, Eckrich allowed manual excavation to proceed. Two test pits (TPs 1 and 2) were excavated in late September 1994. Test pit 1 was on an apparent undisturbed area adjacent to a pothole. Test pit 2 was about 8 m south (upslope) of TP 1. Unit size and depth are presented in Table 5.20.

5.11.2 Results

Both test pits exhibited similar profiles, although the profile in TP 2 farther upslope was more compressed than the profile exposed in TP 1. In both cases, the entire profile was composed of gravelly sandy loam and exhibited an O-A-Bk-BCk horizon sequence. The overall thickness of the profile was about 90 cm in TP 1 and 60 cm in TP 2. The O horizon was about 5 cm thick and consisted of a mixture of mineral matter, decomposing amorphous organic matter, and partially decomposed juniper needles that made up about 40% of the overall volume. The A horizon was about 15 cm thick and consisted of very dark grayish brown (10YR 3/2) granular gravelly sandy loam. It graded into a very gravelly, grayish brown (10YR 5/2) granular Bk horizon that contained a considerable quantity of flakes, burned rock, and bone (Table 5.21), as well as significant amounts of unburned colluvial limestone. The BCk horizon was weak blocky and light brownish gray (10YR 6/2), and contained sparse amounts of cultural material.

Test pit 1 was excavated to subsoil at a depth of 108 cmbs. In the upper 10 cm, a moderate lithic density, including a Perdiz point, and only one burned rock were found. The burned rock midden, Feature 1, started at 11 cmbs and continued to 100 cmbs (to 108 cmbs based on the natural slope of deposit). A high frequency of cultural material was present in all levels. A Bonham point was recovered from Level 1, a Cliffton point from level 2, with a Bonham and untyped arrow point in level 3. Overall, few unburned rocks were noted in each level. A total of 5.4 g of charcoal was recovered from TP 1. One small (1.1 g) sample from level 6 was identified as White Oak wood and yielded a $\delta^{13}C$ (-25.0‰) corrected assay of 700 ± 50 BP (Beta 83257).

Test pit 2 was excavated to subsoil at 70 cmbs. Many flakes and some burned rocks were recovered surface to 30 cmbs, and a Bonham point was also in level 3. Feature 1 was at 30 cmbs and extended to 60 cmbs. Overall, artifact types and



Figure 5.49 Thick Brush Covering Site 41CV47.

frequencies were low compared to TP 1. In addition, the overall density of unburned to burned rocks in the feature fill was comparable. A few burned rocks and flakes were recovered from the lowest level (60 to 70 cmbs), which also contained a very heavy density of unburned rocks.

5.11.3 Analysis and Interpretation

5.11.3.1 Definition of Analytical Units

Material from these two test pits dug through midden F 1 included 1,159 pieces of lithic debitage, 10 stone tools, seven projectile points, two cores, 94 bone fragments, 581 burned rocks (77 kg), charcoal, and snail shells. The material from below 30 cmbs in each pit was assigned to the Late Prehistoric I period based on the presence a charcoal date of 700 BP from TP 1, level 6. The cultural material in the top 30 cmbs of the midden deposit, including three Bonham and a Cliffton was considered mixed because of the vandalism. It is possible that the upper material also belongs to the Late Prehistoric I period, but a conservative approach was taken. Each of these analytical units is discussed below.

5.11.3.2 Late Prehistoric I Materials

The midden deposits included 407 pieces of lithic debitage, six stone tools, two projectile points, 2 cores, 40 bone fragments, 383 pieces of burned rock (53 kg), charcoal flecks and snail shells. The

Table 5.20 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	1.08	colluvial toeslope
TP 2	1.00	1.00	0.70	colluvial toeslope

Table 5.21 Artifact Recovery by Test Pit, 41CV47.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	1	0.5	0	0	0	0	33	1	0	Bonham	mixed
	2	F1	14	1.8	1	10	0	0	295	1	0	Cliffton	mixed
	3	F1	175	18.8	3	44	0	0	384	2	1	Bonham, ?arrow	mixed
	4	F1	75	8.5	2	14	0	1	136	0	1	-	LP-I
	5	F1	50	5.0	1	2	0	0	79	0	1	-	LP-I
	6	F1	35	4.5	0	3	0	1	42	0	0	700±50	LP-I
	7	F1	42	4.0	0	13	0	0	59	0	0	-	LP-I
	8	F1	31	2.5	0	5	0	0	15	0	0	-	LP-I
	9	F1	23	4.0	0	2	0	0	29	0	0	-	LP-I
	10	F1	24	4.5	0	1	0	0	22	1	1	Starr	LP-I
	Total		470	54.1	7	94	0	2	1,094	5	4		
2	1	-	0	0.0	0	0	0	0	12	0	1	-	mixed
	2	-	0	0.0	0	0	0	0	4	0	0	-	mixed
	3	-	8	3.1	0	0	0	0	24	1	2	Bonham	mixed
	4	F1	38	7.5	0	0	0	0	9	0	0	-	LP-I
	5	F1	35	6.0	0	0	0	0	9	0	0	-	LP-I
	6	F1	27	6.0	0	0	0	0	7	0	1	-	LP-I
	7	-	3	5	0	0	0	0	0	0	2	-	LP-I
	Total		111	23.1	0	0	0	0	65	1	6		

407 specimens of lithic debitage represent seven identified and nine unidentified chert types with 27% of the materials identifiable (Table H-94). North Fort province cherts Fort Hood Yellow and Gray/Brown/Green stand out among the identified materials at 31% and 36%, respectively. However, indeterminate light brown debitage is the most dominate among the entire assemblage at 20% compared to Gray/Brown/Green at 9%. In total North Fort materials are 23% of the total assemblage with four types and 88% of the identified materials. Only the combined indeterminates occur in higher than expected frequencies, Gray/Brown/Green occurs in expected quantity and all others occur in less than expected frequency (Table H-95). Exclusion of the indeterminates results in Fort Hood Yellow and Gray/Brown/Green occurring in higher than expected amounts, Heiner Lake Tan and Owl Creek Black occurring in expected amounts, and all others unchanged.

The modal peak for size occurs at the 0.9-1.2 cm category with a drop of almost equal value to both ends of the spectrum. Eighty-four percent of the debitage is less than 1.8 cm in size. Coupled with the size data is the fact that 88% of the materials are tertiary (Table H-96). This information is highly suggestive of large-scale biface production. However, of note is the lack of any material less than 0.5 cm in size which should be present for this type of tool manufacture. Potentially, biface production was occurring, but not proceeding to

smaller size tools or those needing fine refining and trimming.

The complete Starr point (or Fresno preform) was made of indeterminate light brown chert. The six stone tools consist of two late stage bifaces, an edge modified flake, a utilized specimen, a distal end of a scraper, and the distal end of finished biface (Table H-97). The two multiple platform cores were made of Fort Hood Yellow and a Gray/Brown/Green chert. The tools and cores represent the two major known chert localities at Fort Hood plus a number of unknown sources.

The 40 bone fragments represented mostly (98%) medium to large mammals, deer size with one small to medium size mammals (Table H-98). Eight pieces were burned including two antler pieces, and at least six had spiral fractures indicating cultural use. These indicate that deer size animals were the primary food resource used here with this midden.

The 383 pieces of burned rock that weighed 53 kg were not part of any other feature besides the midden itself. The age of 700 BP places this midden into the Austin phase (Prewitt 1981; 1985) but unfortunately no diagnostic points were obtained to confirm this cultural association. The age is near the dividing line between the Austin and Toyah phases. Many of the burned rock midden deposits at Fort Hood date to this period.

5.11.3.3 Mixed Materials

The disturbed top 30 cmbs with mixed deposits include 752 specimens of debitage, four stone tools, five arrow points, 54 bone fragments, 198 burned rocks (24 kg), charcoal and snail shells.

The 752 specimens of lithic debitage represent six identified and nine unidentified chert types with only 13% of the materials unidentifiable (Table H-99). Only Fort Hood Yellow stands out among the identified materials at 58%. Three types of unidentifiable cherts are present in high amounts : dark gray, light brown, and miscellaneous cherts. The North Forts as a group are 88% of the identifiable cherts as would be expected given the location of this site with the Owl Creek site group. However, only the combined indeterminates occur in higher than expected frequencies with all other cherts at less than expected frequencies (Table H-100). The exclusion of the indeterminates results in Fort Hood Yellow occurring at higher than expected frequency, Heiner Lake Tan, Gray/Brown/Green, and Owl Creek Black occurring at expected frequencies, and all others unchanged.

The modal peak for size of debitage occurs at the 0.5-0.9 cm category; however, the drop off is more gradual to the smallest sized category. Eighty-one percent of the debitage is smaller than 1.2 cm in size and 94% is smaller than 1.8 cm in size. Only the largest size category is not present. A moderately high percentage (85%) of the debitage is tertiary (Table H-101). The size data taken in conjunction with the cortex data suggests that biface reduction was a large part of the tool manufacture combining to form the mixed component. This may indicate that although the upper levels of the test pits are mixed, the suggestion of large-scale biface production that holds true for the Early Late Prehistoric may hold for whatever combination of time periods this mixed assemblage results from.

The one Cliffton and three Bonham points were all indeterminate cherts of various colors, whereas the one untyped arrow point was of Owl Creek Black. The four stone tools consist of two late stage bifaces, Chopper Type B, and an edge modified flake (Table H-102). The material types are very similar in frequencies as those identified in the Early Late Prehistoric period.

The 54 bone fragments included mostly medium to large mammals size pieces (deer size), with five pieces of small to medium size pieces (Table H-103). Deer was mammal positively identified. Seventy-eight percent of these bones were burned with eight exhibiting spiral fractures. Again these

are nearly identical to the mammals recovered from below in the intact part of the midden.

The 198 burned rocks (24.2 kg) appeared to be part of the midden but the vandalism had disrupted their original context. Only about 1.1 g of charcoal were recovered in the mixed zone and none of these were identified or dated.

The three Bonham points coupled with the lack of other known Central Texas types (i.e., Scallorn and Perdiz) may indicate this midden was attributable to an undefined phase or may suggest that the deposits date near the beginning of the Toyah phase of the Central Texas sequence (Prewitt 1981; 1985).

5.11.4 Conclusions

Based on two test pit results and the exposure of midden deposits by pothunting activity, estimated minimum Feature 1 dimensions are 30 m north-south x 20 m east-west. In both test pits, F 1 extended across the entire unit, with no internal patterning noted. The rock size ranged from 3 to 14 cm, with an average of 5 to 10 cm. The upper three levels of the midden deposit, in both units, contained higher artifact counts with amounts steadily decreasing with depth. While some parts of the feature have been clearly vandalized and therefore assigned to Mixed materials, the only disturbance noted during excavation was minor root activity. The lower parts of the midden, identified as part of the Late Prehistoric I period dating to 700 BP, are intact. Middens dating to this period are relatively common at Fort Hood.

Despite the relatively high frequency of recovered cultural material, the midden deposits at 41CV47 do not resemble the typical toeslope middens encountered at Fort Hood. The principal difference is the lack of an over thickened, black A horizon that typically forms the matrix of middens in this general setting, but there is also a generally higher frequency of unburned limestone clasts than are typically encountered. Therefore, it appears that the site developed on an actively (albeit slowly) aggrading colluvial surface that was being supplied with relatively unweathered sediment rather than highly weathered, organic-rich sediment derived from erosion of a well-developed soil on the slope and/or upland.

Accordingly, site 41CV47 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because eligible components are relatively shallowly buried, they are vulnerable to impacts from training and other activities that affect the surface of the site. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel; and prevent the impact of traffic on the surface.

5.12 SITE 41CV48

In January and February 1995, we conducted formal test excavations at prehistoric archeological site 41CV48. Formal testing was designed to evaluate eligibility of the site for inclusion to the NRHP. Seven trenches were mechanically dug and three test pits totaling 4.2 m^3 were hand excavated. These test excavations demonstrate the presence of intact, buried, and stratified cultural components dating to the Middle Archaic period which have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.12.1 Introduction

5.12.1.1 Site Location and Description

Site 41CV48 is in eastern Fort Hood, Training Area 2. A north flowing unnamed tributary of Owl Creek bisects the site (Figure 5.50).

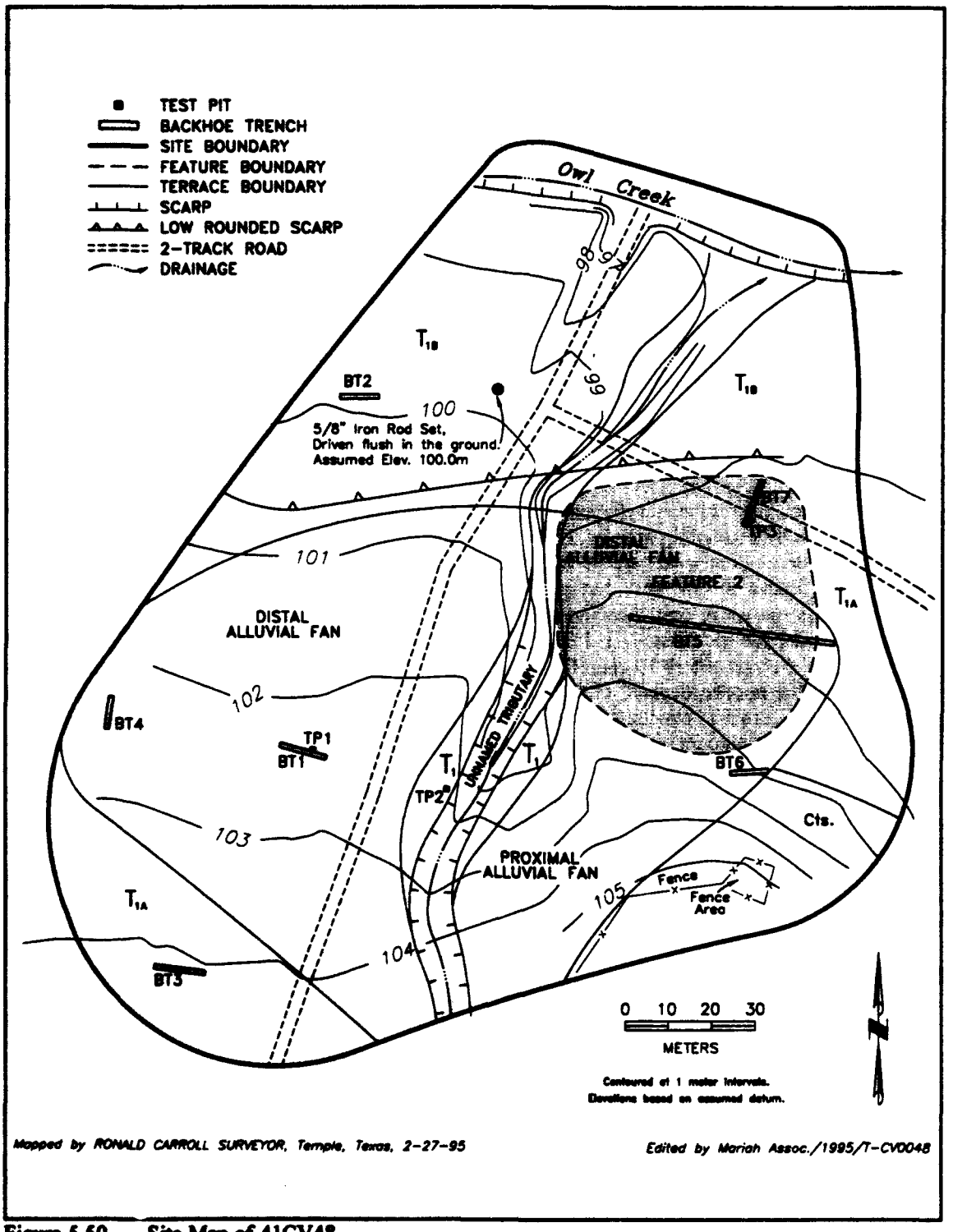


Figure 5.50 Site Map of 41CV48.

Maximum site dimensions, as defined in 1992, measure 130 m by 60 m with a northeast-southwest long axis. The site covers about 0.8 ha. For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.12.1.2 Previous Work

Avery first recorded this site as consisting of two different areas (west and east) on 10 August 1971 and 30 September 1972. A north flowing, unnamed tributary of Owl Creek separated the two areas. The west component revealed a few concentrated areas of "flint" south of Owl Creek and north of a tree line and flakes were observed in vandalized areas just west of a tank trail and south of a gate/barrier. The east component covered about 100 x 100 m south of an east-west oriented tank trail. This part had been extensively vandalized, with one very recent pothole noted. Cultural material included lithic debitage, hammerstones, mano fragments, a point base, knife fragments, a possible hand-axe, and historic ceramics. Both parts of the site appeared to have been cultivated.

On 28 February 1976, Thomas and Herring again recorded this site. Artifact distribution was low and the previously noted vandal's holes were still prominent, with pre-forms, bifaces, debitage, manos, metates, hammerstones, a Wells dart point, a Bulverde dart point, and an untyped dart point observed. A burned rock midden was noted.

On 15 June 1984, Moore and Ensor again recorded the site as a very heavily potted burned rock midden east of the unnamed tributary (Carlson et al. 1986). A high density of burned rocks and lithic debitage were noted, and the depth of deposit was estimated as greater than 50 cm thick.

On 12 March 1992, Quigg and Frederick recorded the site based on archeological potential and geomorphic context. The site was noted to be on and within an alluvial fan constructed by an unnamed tributary on the Holocene floodplain (T_1 surface) of Owl Creek. The surface of the fan east of the tributary had been intensively potted (Figure 5.51), but the terrace east and north of the fan was relatively untouched, although it was noted that evidence of vandalism may have been removed by cultivation. Inspection of pothole walls indicated that an A-Bk profile was present in one area of the site, and cultural deposits in excess of a meter thick were expected in some places. The fan appeared to be at least partly Holocene age and graded to an alluvial fill which was interpreted as the West Range alluvium of Nordt (1992). Cultural material, mainly observed in the vandalized areas, included lithic debitage, stone tools, and burned rocks. The site also extended west of the tributary based on the presence of a light scatter of burned rocks and lithic debitage visible in a road cut. However, due to overall poor exposure, the western site boundary could not be defined. Because there was the potential for buried archeological material, a crew excavated 10 shovel tests on 25 March 1992. Most shovel tests exhibited high artifact frequencies, with cultural material obtained from depths ranging up to 70 cmbs. These cultural deposits were of unknown significance and formal testing was recommended to determine NRHP eligibility. The recommended testing effort included 2 to 3 backhoe trenches through the midden area, several other trenches south and west of the midden to prospect for cultural deposits, and three to six square meters of manually excavated test pits (Trierweiler 1994:A634-640).

5.12.1.3 New Work

Formal testing was completed 20 February 1995. Seven backhoe trenches (1 through 7) were excavated to examine site stratigraphy and to prospect for buried cultural material, and three test pits were hand excavated to recover representative cultural material. Test pits 1 and 3 were offset from backhoe trenches; TP 2 was a free standing unit and was oriented to magnetic north. Sizes and depths of units are listed in Table 5.22.



Figure 5.51 Potted Burned Rock Midden Feature 2 with Backhoe Trench 5 in Upper Left, 41CV48.

5.12.2 Results

5.12.2.1 Excavations in the Alluvial Fan

Trench 1 was excavated on the gently sloping fan surface 40 m west of the tributary and about 150 m south of Owl Creek. It revealed a moderately thick Ap-AB-Bw-Bk-BC profile developed in gravelly clay loam and loam. Although little primary stratification was apparent, systematic variation in the gravel content suggested that the sediments were stratified. This sequence is interpreted as fine-grained lateral fan sediments of early-middle Holocene (Fort Hood equivalent) age capped by a thin (less than 1 m) drape of late Holocene (e.g., West Range) sediment. This cap contained a moderately high density of burned rock and flakes between about 25 cm and 75 cmbs (e.g., in and just below the plow zone). No cultural material was noted in the walls below about 75 cmbs.

Test pit 1, offset from the north wall of BT 1 above an area that appeared to contain an intact cultural deposit, was excavated to 120 cmbs (Figure 5.52). A plow zone was recognized in the upper 30 cm and was removed unscreened; however, an untyped dart point was collected from this disturbed fill. Based on the high frequency of burned rocks and lithics noted in the plow zone, this disturbed matrix was part of a burned rock midden, designated F 1. This midden continued to

Table 5.22 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	8	0.8	2.0	alluvial fan
BT 2	8	0.8	2.3	alluvial fan
BT 3	11	0.8	2.6	alluvial fan
BT 4	7	0.8	3.0	alluvial fan
BT 5	35	1.5	3.2	alluvial fan & midden
BT 6	6	0.8	2.4	alluvial fan
BT 7	8	0.8	1.3	alluvial fan & midden
TP 1	1.00	1.00	1.20	alluvial fan & midden
TP 2	1.00	1.00	2.00	tributary terrace
TP 3	1.00	1.00	1.00	alluvial fan & midden

70 cmbs, but the integrity of the deposit from 30 to 50 cmbs was doubtful as evidenced by a mottled matrix, and was believed to indicate a continuation of the plow zone. Cultural material recovered from Feature 1 included high to moderate amounts of lithic debitage (n=1,323), five dart point fragments, 34 bone fragments, 148 burned rocks, and one mussel shell umbo. The burned rocks were primarily angular to subangular and ranged in size from 6 to 20 cm in maximum diameter. No internal patterning was apparent. The midden extended across the entire unit. A 0.1 g charcoal from the lowest part of F 1 in TP 1 (60 to 70 cmbs) was of indeterminate wood but provided a $\delta^{13}C$ (-26.0‰) corrected assay of 3790 ± 50 BP (Beta 83342). From 70 to 120 cmbs, artifact counts steadily decreased (Table 5.23). A rodent burrow was noted in level 10, and contained about 80% of the lithic debitage recovered from that level.

Trench 2 was about 90 to 100 m north of BT 1, and 40 m south of Owl Creek. This trench revealed an overthickened cumulic Ap horizon (greater than 1 m) over a sandy to silty loam alluvial deposit (Figure 5.53) interpreted as the West Range fill of Nordt (1992). The Ap horizon was composed of complex interdigitated lenses and fragments of reddish brown loam (representing reworked fan sediment) and grayish brown loam (representing reworked alluvial sediment). The Ap horizon is interpreted as Historic-age slopewash that rapidly accumulated on the flat T_{1B} surface due to repeated cultivation of the sloping fan surface upslope. The West Range alluvium graded from a weak blocky, dark grayish brown (10YR 4/2) gravelly silty loam to a massive, yellowish brown (10YR 5/6) sandy loam with depth. No cultural material was noted in the trench.

Trench 3 was on the upper T_{1A} surface about 50 m south of BT 1 and 40 m west of the small tributary. This trench revealed a deposit of stream and/or fan alluvium that apparently predates the majority of fan sediments investigated (e.g., in BTs 1, 4, 5 through 7). It revealed a thick Ap-AB-Bw-Bk profile under a thin veneer of recent slopewash.

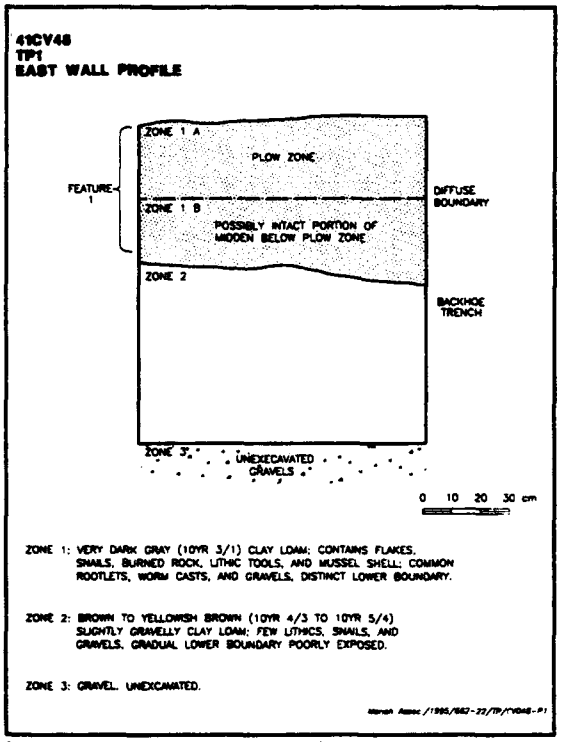


Figure 5.52 Test Pit Profile, 41CV48.

The sediment consisted of silty loam and graded from dark gray (10YR 3/1) through yellowish brown (10YR 5/4) to very pale brown (10YR 7/4) with depth. The Bk horizon, which lay at a depth of almost 200 cmbs, contained common carbonate masses and soft nodules to 1 cm in diameter, suggesting considerable antiquity. No cultural material was detected in the trench.

Trench 4 was 40 to 50 m west of BT 1 and 20 m southwest of a white metal post (Fort Hood firing point #130). It revealed a profile that was very similar to BT 1 (i.e., Ap-AB-Bw-Bk-BC horizon sequence in gravelly loam and clay loam) but contained very little cultural material. The dominantly fine-grained deposits were cut with two gravelly fan channels at about 120 to 140 cm and 280 to 300 cm. Like BT 1, it is interpreted as early to middle Holocene (Fort Hood equivalent) lateral fan alluvium.

Table 5.23 Artifact Recovery by Test Pit, 41CV48.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F3	0	0.0	0	0	0	0	0	1	0	Pedernales	mixed
	2	F3	0	0.0	0	0	0	0	0	0	0	-	mixed
	3	F3	0	0.0	0	0	0	0	0	0	0	-	mixed
	4	F3	61	11.0	0	1	0	0	403	1	20	?dart	MA
	5	F3	46	6.0	1	2	0	0	542	2	21	Pedernales	MA
	6	F3	34	12.0	0	12	0	0	260	0	13	3790±50	MA
	7	F3	7	0.5	0	19	0	0	118	2	7	Pedernales, ?dart	MA
	8	-	5	0.3	0	6	0	0	56	0	3	-	MA
	9	-	4	0.3	0	0	0	0	30	0	0	-	MA
	10	-	2	0.3	0	0	0	0	51	0	0	-	MA
	11	-	0	0.0	0	0	0	0	8	0	0	-	MA
	12	-	0	0.0	0	0	0	0	4	0	0	-	MA
	Total		159	30.4	1	40	0	0	1,472	6	64		
2	1	-	0	0.0	0	0	0	0	236	0	23	-	mixed
	2	-	0	0.0	0	2	0	0	323	1	18	?arrow	mixed
	3	-	3	1.0	0	0	0	0	666	1	13	ceramic, Pedernales	mixed
	4	-	12	3.5	0	2	0	0	854	0	21	ceramic	mixed
	5	-	19	3.0	0	11	0	1	1,229	4	25	ceramic, Scallorn, Clifftton	mixed
	6	-	14	3.0	0	6	0	0	768	0	19	ceramic	mixed
	7	-	13	2.5	0	8	0	0	375	0	8	-	mixed
	8	-	17	4.5	1	7	0	0	254	1	7	Pedernales	mixed
	9	-	8	2.0	0	12	0	0	473	0	6	-	mixed
	10	-	18	6.0	0	10	0	0	206	0	3	-	mixed
	11	F3	65	19.0	0	24	0	0	636	1	14	Lange, 970±100	mixed
	12	F3	59	7.7	0	18	0	0	419	2	7	Pedernales, ?dart	mixed
	13	F3	20	10.6	0	9	0	0	88	0	2	-	mixed
	14	F3	27	3.5	0	5	0	0	119	0	2	-	mixed
	15	F4	33	6.5	0	13	0	0	277	2	7	Pedernales	MA
	16	F4	22	4.5	0	9	0	0	482	0	4	-	MA
	17	F4	28	5.0	0	1	0	0	388	1	6	?dart, 3510±40	MA
	18	F4	44	8.5	0	5	0	0	181	3	2	Pedernales	MA
	19	F4	55	14.5	1	6	0	0	56	0	3	-	MA
	20	-	3	0.2	0	0	0	0	16	0	0	-	MA
	Total		460	105.5	2	148	0	1	8,046	16	190		
3	1	F2	0	0.0	0	0	0	0	0	2	1	Morrill, Pedernales	mixed
	2	F2	0	0.0	0	0	0	0	0	0	0	-	mixed
	3	F2	0	0.0	0	0	0	0	0	0	0	-	mixed
	4	F2	250	70.0	1	4	0	2	1,662	1	39	Pedernales	MA
	5	F2	185	38.0	0	0	0	1	299	0	6	-	MA
	6	F2	81	17.0	0	1	0	0	66	0	2	-	MA
	7	-	0	0.0	0	0	0	0	27	0	0	-	MA
	8	-	2	1.0	0	0	0	0	23	0	0	-	MA
	9	-	0	0.0	0	6	0	0	12	0	0	-	MA
	10	-	0	0.0	0	0	0	0	1	0	0	-	MA
	Total		518	126.0	1	11	0	3	2,090	3	48		

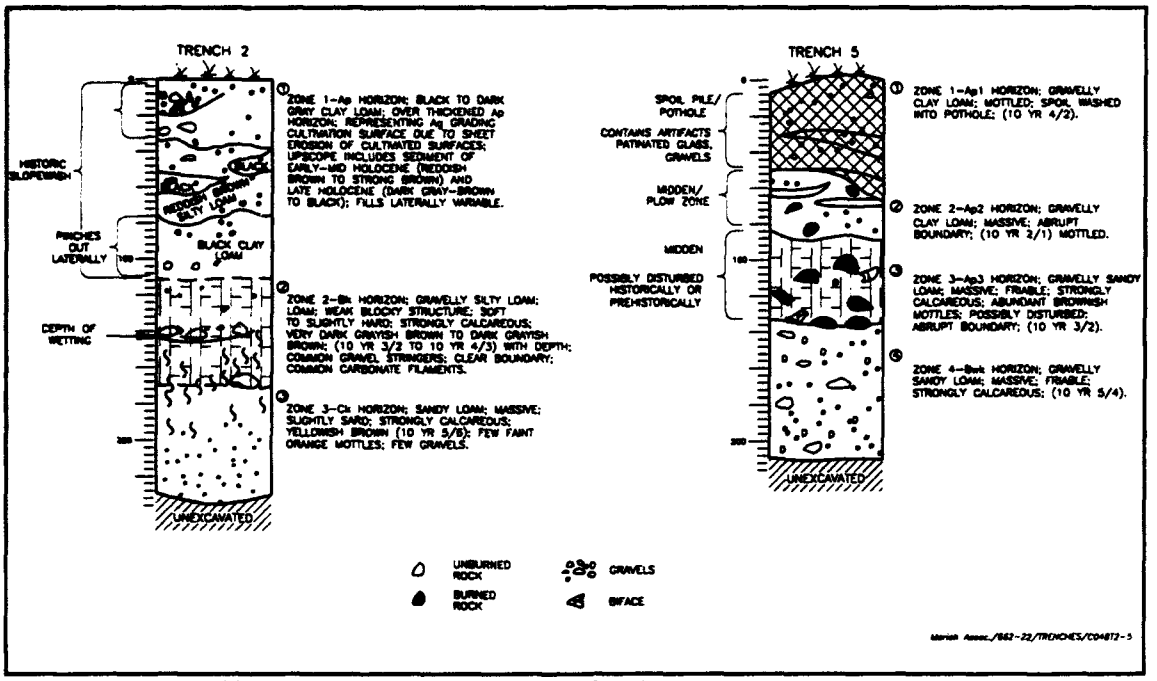


Figure 5.53 Backhoe Trench 2 and 5 Profiles, 41CV48.

5.12.2.2 Excavations in the Burned Rock Midden

Trench 5 extended from near the edge of the inset tributary T_1 terrace east across the fan, bisecting the heavily vandalized midden deposit (F 2). The profile revealed a thick midden deposit almost entirely disturbed by cultivation and multiple generations of intersecting vandal pits underlain by yellowish brown (10YR 5/4) moderately to strongly gravelly massive loam. Overall, the trench exhibited an Ap1-Ap2-Ap3-Bwk profile. Based on the intersecting, curvate bottoms of the vandal pits (which are frequently lined with a lens of yellowish gray clay loam), the midden deposit appears to be almost totally disturbed; however the presence of some conjoined, fractured burned rock clasts suggests that at least some small pockets of intact midden are present at depth. The underlying fan deposits are much more gravelly than in the trenches on the opposite side of the incised tributary, indicating that the midden is situated on the axial portion of the fan. Based on the extent of vandalism and the exposures afforded by trenching, Feature 2 measures 60 m in diameter, with an estimated 90% of the midden disturbed by cultivation and vandalism.

Trench 7 was 30 m north and perpendicular to BT 5 and 40 m east of the tributary. It revealed a relatively thin (about 40 cm) midden deposit over a deposit of relatively dense fan gravel. The upper 20 cm of the midden exhibited obvious cultivation disturbance, but the lowest part of the midden appeared relatively intact. The shallow plow zone suggests that cultivation was accompanied by considerable sheet erosion, truncating the midden.

Trench 6 was 30 m south of BT 5, just upslope of the boundary of the midden. It revealed an Ap-Bw-2Bk profile developed in brown to yellowish brown (7.5YR 4/2 to 10YR 5/4), weak blocky silty loam to sandy clay loam. It is interpreted as two generations of Holocene fan alluvium and slopewash. No cultural material was noted in the trench.

Test pit 3 was offset from the east wall of BT 7 above a part of F 2 that seemed relatively intact. As in TP 1, the upper 30 cm of deposit consisted of a plow zone, and therefore removed unscreened. Two dart points were collected from this unscreened fill; based on high densities of burned rocks and lithic debris, this disturbed deposit appears to be part of F 2 (Figure 5.54). The midden continued to 62 cmbs; however, based on the similarity of the plow zone to the deposit (very firm, blocky, and dense) from 30 to 50 cmbs, the depth of disturbance may be greater than originally thought. Overall, F 2 contained high frequencies of medium sized, angular burned rocks (n=516) and lithics (n=2,027), one dart point, and five bone fragments. The midden covered the entire unit, with no apparent internal patterning.

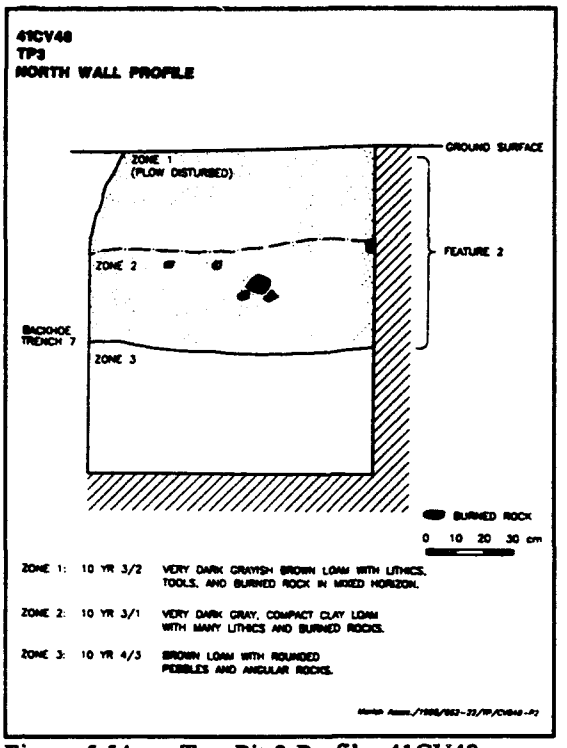


Figure 5.54 Test Pit 3 Profile, 41CV48.

5.12.2.3 Excavations in the Tributary Terrace

Test pit 2 was amongst a few small junipers along the edge of a small tributary terrace inset against the fan deposits west of the tributary. Two stacked fills of late Holocene age (possibly equivalent to the Ford and West Range fills of Nordt 1992) were observed overlying fan deposits beneath the surface (Figure 5.55). Overall, the test pit exhibited a complex AC-2Ap-3AB-3ABk-3BC-4Bkb-5ABkb-5Bkb profile. The upper AC horizon consisted of slopewash deposited since cessation of agricultural activity on the surface, and was 2 to 3 cm thick. The plow zone (2Apb horizon) consisted of weak blocky, very dark grayish brown (10YR 3/2) gravelly clay loam, and was about 40 cm thick. The 3AB horizon, which also may have been disturbed by plowing, was also composed of gravelly clay loam. However, it was darker colored (10YR 2/1) and slightly more structured. It was roughly 20 cm thick, and graded into a similar horizon (3ABk) that differed primarily in the presence of common fine carbonate filaments. At 82 cmbs, this horizon graded into a very gravelly very dark grayish brown (10YR 3/2) gravelly clay loam. At 110 cm, this horizon graded abruptly into a moderately structured, brown (10YR 4/3) gravelly clay loam (4Bkb horizon) that is interpreted as the probable base of the Ford alluvium. The 5ABkb horizon extended from 132 to 170 cmbs, and was separated from the overlying 4Bkb by a distinct erosional unconformity. The horizon consisted of dark brown (10YR 3/3) gravelly sandy loam and exhibited weak blocky structure. The 5Bkb horizon extended from 170 cmbs to the base of the test pit at 200 cm and consisted of weak blocky, brown (10YR 3/4) gravelly clay loam. Zones 1 through 5 are interpreted as a stacked series of cumulic soils within alluvium equivalent to the Ford alluvium, and zones 6 through 8 are interpreted as the West Range alluvium of Nordt (1992). Both of these fills represent tributary alluvium inset against the fan.

From the surface to 100 cmbs in TP 2, included; extremely dense lithic debitage, three arrow points and two dart points, moderate quantities of burned rocks (n=104) and bone fragments (n=48 burned and unburned), three mussel shell umbos, nine

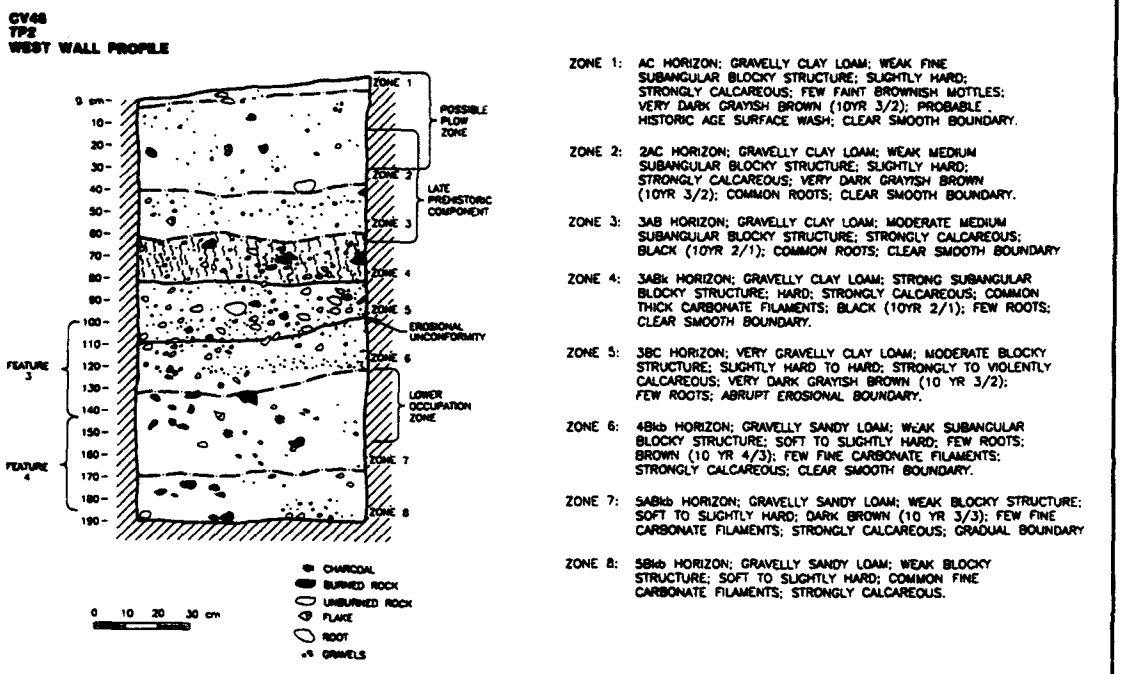


Figure 5.55 Test Pit 2 Profile, 41CV48.

prehistoric ceramic sherds, and a piece of drilled shell (a possible pendant). The upper 40 cm of deposit had been plowed, and also yielded recent and historic material including three wire nails, nine pieces of glass and a metal fragment. A roofing nail was in level 5, and a .22 shell casing was in level 7, indicating that the upper 70 cm of deposit is somewhat disturbed.

Below this level, F 3, a burned rock midden deposit, continued to 100 cmbs and generally extended across the southern two-thirds of the unit. The non-feature fill consisted of a dense gravel and cobble deposit. With depth, the gravel (non-feature) deposit encroached southward across the unit, and at 130 cmbs, covered the northern two-thirds of the unit. The lower part of F 3 included a mixture of burned rock and gravel deposits, with the ratio of burned to unburned rock higher (3 to 1) from 100 to 110 cmbs and lower (2 to 1) in level 12. At 120 cmbs and continuing to 140 cmbs, the gravel density (non-feature) sharply decreased with depth and the fill contained only a few gravels. The non-feature fill and the matrix from F 3 were excavated and screened separately. Artifact frequencies were overwhelmingly higher, per level, from the feature fill. From 0 to 140 cmbs the recovery included 6,661 pieces of lithic debitage, a Pedernales point, a complete drill, 56 burned and unburned bone fragments, three mussel shell fragments, and 275 burned rocks. The burned rocks were primarily medium sized angular pieces or fist sized cobbles, with no apparent internal patterning. Feature 3 appeared to be largely confined to the basal part of the Ford fill, and there is a high probability that all material in Feature 3 is colluvially reworked off of the higher fan surface. A 1.1 g charcoal sample from 100 to 110 cmbs was of indeterminate "porous" wood and provided a $\delta^{13}C$ (-24.8‰) corrected assay of 970 ± 100 BP (Beta-83341).

At about 140 cmbs, directly beneath F 3, another burned rock midden (F 4) covered the entire unit and extended to 190 cmbs. A dense pocket (15 cm in diameter) of *Rabdotus* sp. shells was encountered 140 to 142 cmbs in the southwest quadrant of the unit and a sample of 25 shells was collected from this area.

Artifact recovery was similar to F 3, but also included a hammerstone, three Pedernales points, and two additional dart points. Numerous lithics show evidence of severe heat-treatment and every stage of lithic reduction was apparent. Most burned rocks were medium sized and angular, with very few tabular pieces noted. No internal patterning was apparent, with a light gravel density noted near the base of the deposit. A 2.0 g charcoal sample from 160 to 170 cmbs in F 4 was identified as juniper wood and provided a $\delta^{13}C$ (-24.2‰) corrected assay of 3510 ± 40 BP (Beta-83421). Two Pedernales points were from the level just below and two others from 140 to 150 cmbs. Sixteen pieces of lithic debitage and three burned rocks were found 190 to 200 cmbs. Dense gravels and carbonate nodules were also encountered and excavation was halted at 200 cmbs.

5.12.3 Middle Archaic Materials

5.12.3.1 Middle Archaic Materials

The three test pits identified three and possibly four burned rock features, and yielded 11,623 pieces of lithic debitage, 304 stone tools, 30 projectile points, 199 bone fragments, nine ceramic sherds, five mussel shell umbos, 1,137 burned rocks, charcoal and many snail shells. These cultural remains were assigned to one temporal period - the Middle Archaic and one mixed group. The Middle Archaic is based on two charcoal dates of 3790 and 3510 BP from 60 to 70 cmbs in F 1 in TP 1 and 160 to 170 cmbs in F 4 in TP 2 respectively. The materials between 30 and 100 cmbs in TP 3, F 2, also belong to this period.

The mixed materials include the top 30 cmbs in TPs 1 and 3 and from 0 to 140 cmbs in TP 2. The upper parts were mixed through plowing and vandalism, whereas the 50 to 140 cmbs in TP 2, including what is identified as F 3, appears to contain mostly colluvially derived cultural material in younger sediments and is thus considered mixed deposits. The charcoal date of 970 BP from 100 to 110 cmbs, the apparent top of F 3, associated with dart points is indicative of this mixing. Each of these groups is discussed below.

5.12.3.2 Middle Archaic Materials

These materials include Fs 1, 2, and 4, 4,962 specimens of lithic debitage, 13 projectile points, 133 stone tools, three mussel shell umbos, 862 burned rocks, charcoal and many snail shells. Most materials were from the burned rock features and probably represent multiple events.

The 4,962 specimens of lithic debitage represent nine types each of identified and unidentified cherts with 62.3% of the materials identifiable (Table H-104). Gray/Brown/Green clearly dominates the identified materials at 73%, while the miscellaneous category dominates among the indeterminates (57%). The overwhelming presence of Gray/Brown/Green along with other North Fort types positions this chert province as the most preferred materials present. Only West Fort materials are not represented, and although Cowhouse cherts are present there are less than 1% of the identified portion. A large number of Southeast Range cherts are present, but are insignificant even compared to the presence of Fort Hood Yellow alone. Gray/Brown/Green and the combined indeterminates occur in higher than expected frequencies, while all others occur in less than expected amounts (Table H-105). The exclusion of the indeterminates results Owl Creek Black occurring in expected amounts and no change for any other type.

The modal peak for size is the 0.5-0.9 category (36%). There is a significant decrease above 1.8 cm in size resulting in 88.1% of the materials

smaller than 1.8 cm. The size data coupled with the cortex data suggests a large amount of biface reduction, potentially with some tool resharpening (Table H-106).

The 12 projectile points consist of eight Pedernales points (four proximal ends, one blade and stem fragment, and three complete), three untyped sections of dart points (two distal, one of which has been refitted to a medial section, and a stem section), and one complete Almagre point (Table H-107). Three of the Pedernales points were made of Heiner Late Tan chert, two of Gray/Brown/green chert, and two of Owl creek Black, whereas the three fragments were of Gray/Brown/Green, Heiner Lake Tan, and Fort Hood Yellow. The Almagre is of Gray/Brown/Green chert.

The 133 stone tools include 97 utilized flakes, ten late stage biface fragments, six early stage bifaces, four middle stage bifaces, two finished stage bifaces, four edge modified flakes, three gravers, three Type B Choppers, two hammerstones, one stone awl, and one spokeshave (Table H-108). These were made from mostly Gray/Brown/Green cherts (n=48) and Fort Hood Yellow chert (n=28), with moderate frequencies of Heiner Lake Tan (n=14), indeterminate miscellaneous (n=10), indeterminate light brown (n=9), and Fort Hood Gray (n=8), with low frequencies of many other colors and chert types. Gray/Brown/Green chert dominates both the tools (36%) and the lithic debitage (73%) and Fort Hood Yellow represents 10% and 21%, respectively.

The 85 bone fragments represent mostly (85%) large to very large mammals (bison size), with deer and an unknown carnivore identified (Table H-109). This would indicate that bison was probably the primary resource supplemented by deer and other small unidentified animals. Seventy-nine percent of these fragments are unidentifiable long bones pieces plus two teeth, two metatarsals, a rib, one ulna, a vertebrae, a calcaneous and three humerus pieces. Of the 85 pieces only 12 displayed good spiral fractures, whereas 41% had angular breaks, and 45% had indeterminate breaks. Only 7% were burned with nearly all revealing marked weathering. The three umbos included two unknowns, and an *Amblema plicata*. The latter umbo from the lower part of F 2.

The 862 burned rocks weighed 195.6 kg. Feature 1 yielded at least 13%, F 2 yielded 45%, F 3 yielded 20%, and F 4 yielded 16%. A 2.0 g charcoal sample from the middle part of F 4 in TP 2 was identified as juniper wood and provided a $\delta^{13}C$ (-24.2‰) corrected assay of 3510 ± 40 BP (Beta-83421). A 0.1 g charcoal sample from the lowest part of F 1 in TP 1 (60 to 70 cmbs) was of indeterminate wood but provided a $\delta^{13}C$ (-26.0‰) corrected assay of 3790 ± 50 BP (Beta 83342). This same level also yielded a Pedernales and an untypable dart point. The obtained ages and its association with this point type support Prewitt's 1985 chronology.

Middle Archaic sites are relatively well represented at Fort Hood and this period is known for its burned rock features in Central Texas in general (Prewitt 1981; 1985). These features appear to contain mostly points identified as Pedernales and thus correlate with Prewitt's Round Rock phase (1981; 1985). Although the top parts of Fs 1 and 2 are disturbed they still only represent a single period of time. Feature 4 appears totally intact and could yield significant information on this feature type.

5.12.3.3 Mixed Materials

These materials include questionable F 3, 6,646 specimens of lithic debitage, 13 projectile points, 169 stone tools, 114 bone fragments, nine ceramic sherds, two mussel shell umbos, one modified bivalve, 275 burned rocks, charcoal and snail shells all from TP 2, 0 to 140 cmbs.

The 6,646 specimens of lithic debitage represent ten identified and nine unidentified chert types with 47% of the materials identifiable (Table H-110). Gray/Brown/Green and Owl Creek Black

dominate the identified materials with 43% each, while the miscellaneous dominates the indeterminates (59%). The overwhelming presence of the two identified cherts result in the commanding presence of North Fort cherts. As might be anticipated, Gray/Brown/Green and Owl Creek Black occur in statistically higher than expected frequencies along with the combined indeterminates (Table H-111). The exclusion of the indeterminates results in no changes.

The modal peak for size is the 0.5-0.9 cm category with 95% of the materials smaller than 1.8 cm in size. The drop off in frequency of the size categories can not be seen since there is only one size category below the frequency peak. The large numbers of small flakes indicates a strong reliance on bifacing as a technology and is supported by the very high numbers of tertiary debitage at 92% (Table H-112).

The 13 points consist of five Pedernales (two complete), one complete Cliffton, two Scallorn (1 complete), one proximal Morrill, two untyped distal arrow fragments, a proximal Lange, and one untyped distal dart point (Table H-113). These were made of three Owl Creek Black chert, two Heiner Lake Tan, two indeterminate miscellaneous, one indeterminate light brown, one indeterminate light gray, one indeterminate dark brown, one Cowhouse Mottled, one Heiner Lake Translucent Brown, and one Fort Hood Yellow.

The 169 stone tools represent mostly utilized flakes (n=122, 72%), with a variety of biface fragments - early stages (n=1), middle stages (n=1), late stages (n=8), and finished (n=12), three Type B choppers, one Type A chopper, a drill, an endscraper, seven spokeshaves, six gravers, three edge modified flakes, and three side scrapers (Table H-114). These were made from cherts dominated by Gray/Brown/Green (n=44), and Fort Hood Yellow (n=32), with moderate frequencies of indeterminate light brown (n=17), Owl Creek Black (n=14), indeterminate miscellaneous (n=14), Heiner Lake Tan (n=11), and indeterminate light gray (n=10), and Fort Hood Gray (n=8) and lesser amounts of other colors and chert varieties. It again appears that the tools were both on- and off-site.

The 114 bone fragments represent mostly large to very large mammals (bison size), 15 pieces representing medium to large animals, six are definitely deer, one is a rabbit, and seven pieces represent small mammals (Table H-115). Sixty-seven percent are unidentifiable long bone pieces, and another 16% are indeterminate fragments, leaving only 17% identifiable. The latter include a rabbit mandible and deer teeth and mandible with a few other identifiable elements. Only 28% revealed spiral fractures indicating green bone breaks and probable human alteration. Nearly 40% are burned and again supporting human alteration. The two umbos were identified as *Lampsilis sp.* and an unknown piece.

The one modified bivalve is of an unknown taxon and appears to be a pendant fragment with approximately half of its drilled hole remaining. It tapers from thicker at the center drill hole toward the outside; the actual shape can not be determined.

The nine ceramic sherds are body parts, small (less than 2 cm in diameter), and represent at least two different vessels based on the observed exterior surface modifications and the paste additives. One sherd has a plain burnished exterior and is classified as Leon Plain. The other eight sherds exhibit lightly brushed exterior with different additives and are not presently classified. One sherd from each vessel group underwent petrographic analysis. The Leon Plain sherd contained 50% bone and 42% quartz additive whereas the brushed sherd (possibly Boothe Brushed) (Suhm 1955) (Figure 5.56) had 58% grog and 35% quartz additives indicating two different origins for these two vessels. Two different groups of people may have utilized this area, possibly Toyah phase peoples from Central Texas who are known to have similar Leon Plain ceramics, as well as peoples from Northeastern Texas who made brushed ceramics with grog additives. Alternatively, the latter may have been

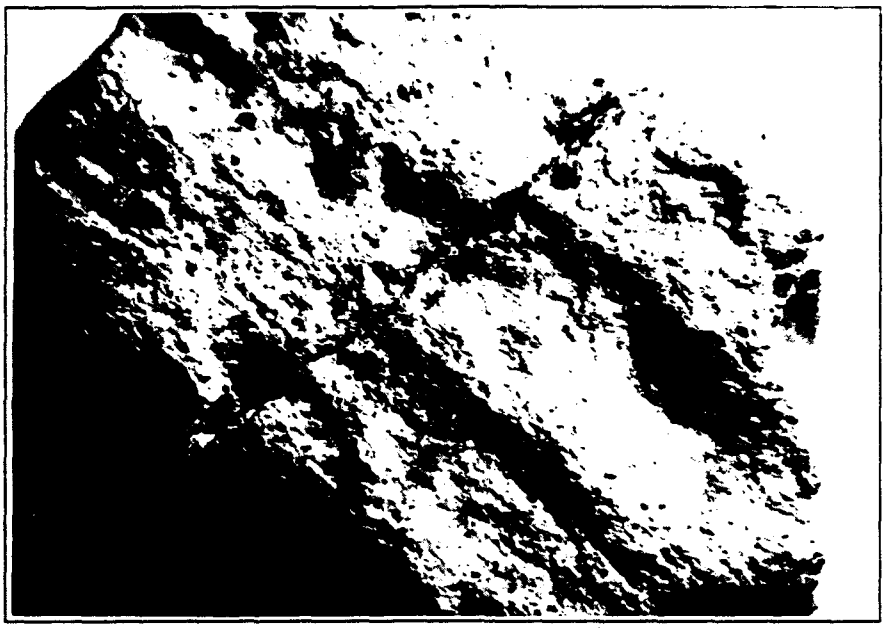


Figure 5.56 Close Up of Brushed Exterior on Ceramic Sherd from Test Pit 2, 41CV48.

a trade vessel as there is no other indication of peoples from the northeastern region.

The 275 burned rocks weighed 66.2 kg and were mostly from what was called F 3. A 1.1 g charcoal sample from 100 to 110 cmbs in TP 2 identified as indeterminate porous wood and provided a $\delta^{13}C$ (-24.8‰) corrected assay of 970 ± 100 BP (Beta-83341). As stated above, this feature may be mostly redeposited materials from other locations and, as such, mostly still represents Middle Archaic materials based on the age of other deposits. However, the charcoal date suggests that this level has been mixed with younger carbon. This date may be associated with the arrow points above.

5.12.4 Conclusions

This site exhibits extremely complex stratigraphy. The oldest unit encountered was above the fan deposit on the T_{1A} surface, and consists of a thick, silty alluvium exhibiting stage II carbonate development. This unit is interpreted as of late Pleistocene or early Holocene age. Most cultural material was associated with the upper part of the thick alluvial fan deposits. Although the fan is of early-middle Holocene (Fort Hood equivalent) age, almost all of the cultural material is associated with a drape of more recent West Range sediments that mantle the fan surface. Younger deposits, of probable recent (i.e., Ford) age, were detected beneath thick historic slopewash on the T_{1B} surface and beneath a narrow, inset terrace associated with the incised tributary that marks the former axis of the fan. Finally, a buried, inset deposit of West Range alluvium of roughly the same age as the drape mantling the fan surface was detected beneath the Ford alluvium on the tributary terrace.

The cultural deposits of the two burned rock middens visible on the surface (Fs 1 and 2) on either side of the small tributary have been thoroughly mixed by multiple generations of vandalism and plowing. The ground surface of F 2 is a "moonscape" of pits and spoil piles. The upper 30 cm of both middens have been thoroughly mixed by plowing, and mottled soil profiles and evidence of vandalism were noted to 50 cmbs. As a result, the integrity of *any* portion

of these features must be viewed with caution, even below 50 cmbs. Despite this disturbance, the deeper deposits in TP 2, below 140 cmbs, show no evidence of disturbance. Although the horizontal extent of these deposits are not currently known, they contain at least one vertically stratified occupation between 140 and 190 cmbs as evidenced by burned rock midden F 4 assigned to the Middle Archaic based on a charcoal date of 3510 BP.

On the basis of the above, site 41CV48 is evaluated as containing intact archeological deposits with potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel and minimize the impact of traffic on the alluvial surfaces.

5.13 SITE 41CV71

In January 1995, we conducted archeological formal test excavations at the sinkhole known as "Bat Cave" and as "Shell Mountain Bat Cave" within prehistoric cultural resource site 41CV71. Testing was designed to evaluate eligibility of the sinkhole for inclusion to the NRHP. One test pit and three unscreened exploratory trenches were manually excavated in the cave, with a total screened volume of 0.3 m^3. The test excavations and exploratory trenches demonstrate that no significant cultural deposits are present in the sinkhole. As a result, this part of the site is evaluated as ineligible for inclusion to the NRHP and no further management of cultural resources is recommended.

5.13.1 Introduction

5.13.1.1 Site Location and Description

Site 41CV71 is in Fort Hood Training Area 45. It is on the upland surface above the east side of the Two Year Old Creek drainage basin, with the cave on the northern end. The overall site dimensions, as defined in 1993, measured 800 m long and 200 to 250 m wide with a north-south long axis, covering about 16 hectares (39.5 acres). The exploitable part of the sinkhole/cave measured about 76 to 91 m long and ranges from 2 to 9 m wide (Figure 5.57). At least two other archeological sites with sinkholes are on Shell Mountain; 41CV1165 has a small sinkhole with human remains, and 41CV408 is a series of four connecting sinkholes and limestone bridge overhangs, each containing cultural material.

5.13.1.2 Previous Work

Bat Cave is well known by the Fort Hood military and local citizens and has been visited in historic and modern times at least since the early 1900s. The cave is an active bat home, although the bat population has apparently declined in recent years. In the early 1940s, it was mined for bat guano by several small scale mining operations prior to the establishment of Fort Hood. Human remains, including a human tooth, were reported from the cave and were supposedly replaced by the discoverer, although the location of the remains in the cave were not discussed. Another story relates a man once trapped in the cave piled stones almost up to the main entrance, but was rescued before he made it out on his own. Graffiti on the cave walls reveal dates from as early as 1911 to as recent as 1989. Fort Hood troops utilized the cave for guerrilla warfare in the 1940s until 1958, when several military personnel contracted histoplasmosis from the bat guano, at which time formal use by the military use discontinued. All of the above information suggests that any prehistoric material may have little integrity because of the extensive recent human activity.

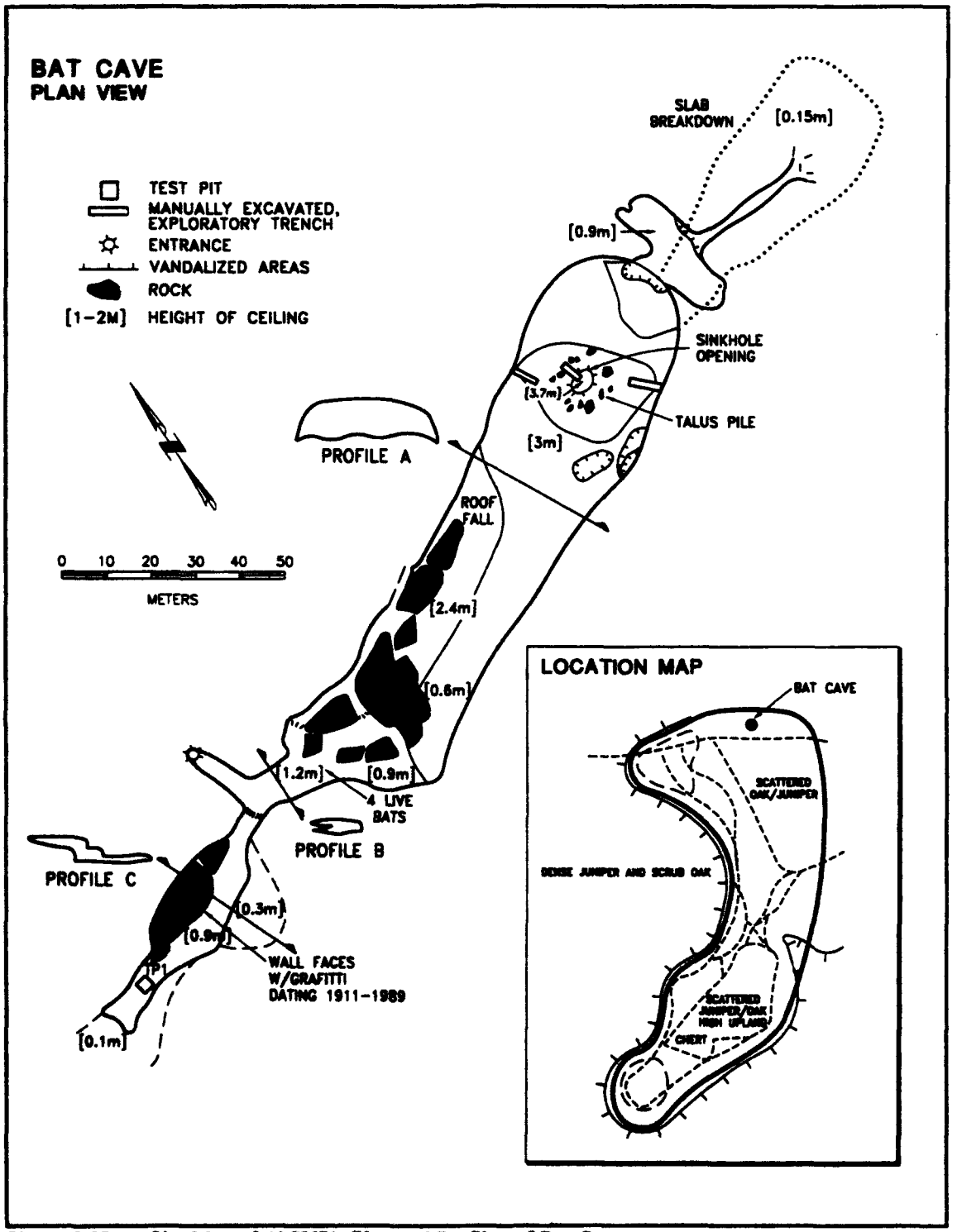


Figure 5.57 Site Map of 41CV71, Plan and Profiles of Bat Cave.

In February 1963, the cave was mapped by David McKenzie and Blake Travis of the Texas Speleological Association, creating the only known formal map (McKenzie and Reddell 1964). The map yielded information on the main entrance and a smaller entrance approximately 45 to 53 m to the southwest.

The area was first recorded as an archeological site by Herring and others on 25 January 1975, as a large, vaguely defined lithic scatter, also encompassing Bat Cave and a small "cavelet" on the western bluff edge. The small cavelet was said to contain some lithics, but no record of these occurred on the original site forms. McCabe visited the site on 31 January 1986, and recorded it as a 325 x 950 m "quarry" and seasonal camp that was 92% disturbed by vehicle traffic; he also included the cave and rockshelter/cavelet (Kock et al. 1988). A sketch plan of the cavelet and main cave were drawn at that time. McCabe also noted other shelters might be present on the bluff edge, but identification was hindered by dense brush.

On 26 January 1993, Turpin and Abbott revisited and reevaluated the site (by then classified as a lithic resource procurement site) based on archeological potential and geomorphic context. The site was divided into Subarea A (the large upland surface) and Subarea B (Bat Cave). The upland surface consisted of a relatively narrow, elongate ridge, and had been very heavily impacted by sheet erosion. The ridge was surrounded by an abrupt scarp formed by the outcrop of thick beds of Edwards limestone. The upper surface was vegetated with an open oak/juniper woodland and sparse bunch grasses and mantled with a thin, discontinuous soil less than 5 cm thick. The southern third of the site, on the end of the promontory, was mantled with a thick lag of residual chert cobbles, while the remainder of the upland surface appeared to lack readily available lithic raw material. Since Subarea A was strongly erosional and had little potential to contain buried material, shovel testing was not warranted. However, on 6 April 1993, Abbott and Kleinbach revisited the upland subarea to evaluate its potential to address questions of lithic resource procurement and reduction. Chert and impact zones were identified and mapped, and on 12 April 1993 the unimpacted portions of the upland were resurveyed. On this basis, the upland was judged to have limited potential to contribute to lithic procurement research and further management was not recommended (Trierweiler 1994:A660-A664).

Subarea B consisted of the Bat Cave sinkhole. The mouth of the sinkhole was roughly 1 m in diameter (Figure 5.58), but the underground chamber below flared out considerably. Directly below the entrance was a talus cone with greater than 2 m between the top of the cone and the opening above.

On 7 July 1993, a crew mapped and explored the interior of the sinkhole, and excavated one shovel test. No prehistoric cultural remains were on the surface within the sinkhole. The shovel test was under the western side of the opening in a small wet depression and excavated to apparent bedrock at 30 cmbs. Only one flake each, from the upper two levels were recovered. Shovel testing results indicated that the sinkhole had limited archeological potential, but formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include two square meters of manually excavated test pits (Trierweiler 1994:A660-664).

5.13.1.3 New Work

A crew returned to the sinkhole on 17 January 1995 and conducted a spelunking reconnaissance of the entire cave. Using respirators, hard hats, and high beam flashlights the crew carefully examined the entire cave using the 1963 map as a guide. All crevices, overhangs, and openings were visually investigated for exposed cultural material such as human remains and for depositional areas that could contain buried cultural deposits. A testing unit was placed in the center of the extreme southwest chamber of the cave in an area of undisturbed deposits.

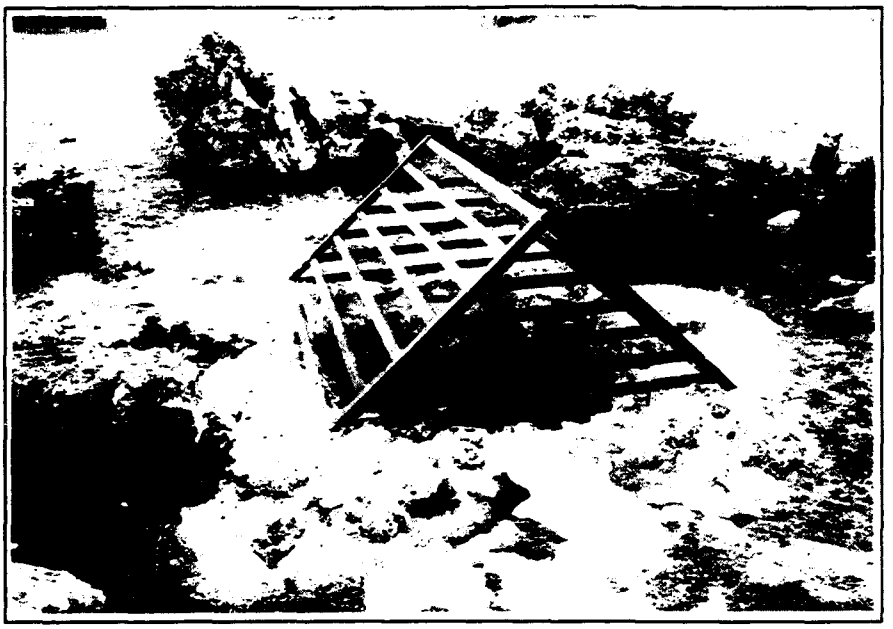


Figure 5.58 Entrance to Bat Cave, 41CV71.

In addition, on 23 January 1995 a team from the Fort Hood Environmental Management Office, Natural Resources Branch, was on site to clean the cave of modern trash, to seal the sinkhole opening with a "bat-friendly" device, and to install a locking trap door for human access over the side entrance. Together, this spelunking team and the archeological team cleaned the cave of modern trash and removed talus rocks in the main entrance chamber. After the removal of the upper part of the talus rocks, three non-screened excavation trenches were dug with a pick around the talus pile area until reaching the tops of the large immovable roof fall slabs. The trenches were all approximately 50 cm wide and 300 cm in length.

5.13.2 Results

The majority of the floor of the main chamber away from the opening is covered with 10 to 15 cm of bat guano, which also extends into the area between the two entrances. However, the area of the talus pile directly below the main entrance and the area inside the side entrance and southwest chamber are relatively free of guano. Active seepage drips from the ceiling of the main chamber and moss covers much of the floor. Live winter bats were observed on the ceiling in several places of the cave during this investigation, some flying around when disturbed by the archeologist's presence.

The upper part of the talus pile at the main entrance revealed several slabs resting on top of a 15 to 20 cm deep sediment deposit. The height of the pile does not correlate with the projected volume of rock fallen from the opening, indicating (as historical accounts suggested) that someone may have been stacking the rocks to create an easier entrance, perhaps during the guano mining days. Southeast of the talus pile are two 1 to 1.5 m deep depressions against the sidewall of the chamber and are thought to be looters pits or perhaps old guano mining pits. The Fort Hood personnel cleaning the cave indicated these depressions were seen in several caves they had

explored, all relating to looting episodes. The majority of the surface of the guano covered area is undulating, perhaps also the result of mining activities.

Test pit 1 was excavated 30 cmbs until limestone bedrock was encountered. One middle stage biface fragment, two wire nails, and numerous small rodent bones were recovered from 0 to 10 cmbs (Table 5.24). Two chert flakes and some bone fragments were recovered from 10 to 20 cmbs, while only small rodent bones were recovered from 20 to 30 cmbs. The unit profile revealed a dark brown loose silt clay from 0 to 25 cmbs and a dark reddish-brown silt clay from 25 cmbs to bedrock at 30 cmbs. A small 10 cm high stalagmite was uncovered in the unit.

At the talus pile the larger rocks and slabs were removed with a winch. A pick was used to scrape away the sediment and guano deposits to determine the potential for excavating a test pit in the talus area. Three exploratory trenches were hand dug around the talus and all were scraped down to the top of the larger roof fall slabs at the bottom of the guano and sediment deposits. Historic and modern trash were found in all three trenches down to the base of these sediment deposits.

5.13.3 Analysis and Interpretation

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences from the site are grouped together as a single Analytical Unit. The single test pit in Bat Cave yielded only three pieces of lithic debitage, 50 bone fragments, and one biface fragment. Historic wire nails were present in the top level as well. No other prehistoric materials were observed or recovered in the talus deposits.

All three specimens of lithic debitage were identified as indeterminate light brown chert and are tertiary in nature. Two specimens fall into the 0.9 to 1.2 cm size range, while the third is between 1.2 and 1.8 cm. The biface was of Heiner Lake Tan and thus thought to have been brought in as a finished piece from the opposite end of the Fort.

The bones included elements of *Sylvilagus* sp. (n=9), *Canis* sp. (n=4), serpents (n=50), as well as 30 otherwise unidentifiable specimens of small to large mammals, undifferentiated vertebrates, and small rodents (Table H-116). Many of these are interpreted as non-human in origin and reflect use of the cave by various birds and animals. However, one rabbit calcaneum was burned and four medium mammals bones revealed spiral

Table 5.24 Artifact Recovery by Test Pit, 41CV71.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	19	0	0	1	0	1	-	unspec.
	2	-	0	0.0	0	19	0	0	2	0	0	-	unspec.
	3	-	0	0.0	0	12	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	50	0	0	3	0	1		

fractures, suggesting prehistoric cultural activity in the cave. These elements were relatively evenly distributed throughout the three levels.

5.13.4 Conclusions

Bat Cave/sinkhole has been protected by the newly installed gates at the entrances, thus restricting access. The sparse prehistoric material from the shallow deposits in the southwestern part of the cave reveals limited archeological potential, and modern and historic trash throughout the talus deposits suggest that no intact prehistoric cultural deposits are present. Most of the cave lacks integrity for subsurface cultural material. We conclude that the sinkhole at site 41CV71 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further cultural resource management.

5.14 SITE 41CV88

In December 1994, we conducted formal test excavations at prehistoric archeological site 41CV88 to evaluate eligibility for inclusion to the NRHP. Four trenches were mechanically dug and two test pits (3.5 m^3) were manually excavated. Formal test excavations demonstrate the presence of intact, buried, and stratified cultural components dating to the Late Archaic period which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.14.1 Introduction

5.14.1.1 Site Location and Description

Site 41CV88 is in west-central Fort Hood, Training Area 36. This open campsite lies on a complex alluvial surface upstream from the confluence of Cowhouse and Cottonwood Creeks (Figure 5.59).

A vandalized burned rock midden, F 1, has minimum dimensions of 50 m east-west x 25 m north-south. At least 50% of the midden deposit appears disturbed. In addition to looting, east-west oriented tank trails, and subsequent erosion, impact the site (Figure 5.60). Maximum site dimensions, as defined in 1993, measure 240 x 75 m with a northwest-southeast axis covering 1.8 hectares (4.4 acres). Site elevation is 210 m above sea level. For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.14.1.2 Previous Work

On 22 February 1976, Thomas first recorded the site as a temporary camp. A light to moderate lithic scatter was noted, with scrapers, cores, utilized flakes, a burin, and point fragments collected. A road and erosion had disturbed the site. Bement and Trawick again recorded the site on 8 April 1981. Lithics, burned rocks, mussel shell, and a mano (collected) were observed on vandal's backdirt piles. Depth of deposit was estimated at greater than 30 cm and the site was thought to have been 75% impacted by vandalism and erosion. On 23 January 1986, Moore and Strychalski monitored the site and considered it one of the better sites they had monitored, but disturbance was estimated at 85% destroyed by vandalism, erosion, roads, and military activity. Moore and Strychalski concluded that "We don't believe enough remains to warrant protection, but that can only be determined through subsurface testing."

On 22 September 1992, Abbott and Kleinbach revisited and reevaluated this site based on geomorphic context and archeological potential. Three distinct alluvial fills (A-C), each forming subtle terrace surfaces were present. The core of the terrace, Fill A, rose about 11 to 12 m above the modern streams and probably represents an early to middle Holocene fill (the Fort Hood alluvium of Nordt 1992); Fill B probably

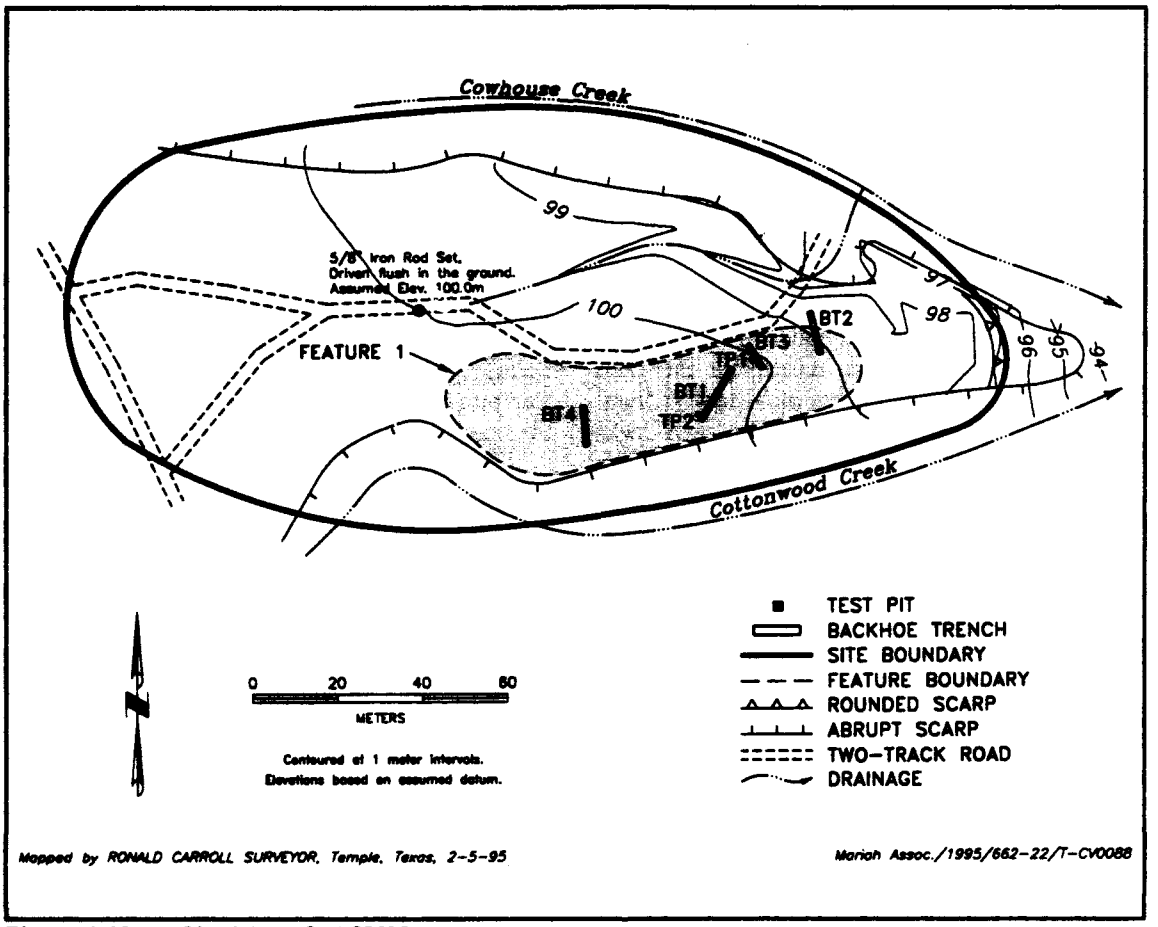


Figure 5.59 Site Map of 41CV88.

represented a late Holocene fill (West Range Alluvium of Nordt 1992); Fill C was a distinctly lower surface 6 to 8 m above the stream on the northern side and probably represented the Ford alluvium (Nordt 1992). Archaeological materials, consisting of relatively massive accumulations of burned rock, with associated lithics and mussel shell, were present in Fill B at depths of at least 100 cmbs and at the contact between Fill A and the Fill B drape. This latter context appeared to be relatively concentrated, and had been subject to extensive looting in the past decade. No cultural manifestations were detected associated with the Fill C. A burned rock midden was exposed from vandalism and road construction and burned rocks, mussel shell, bone fragments, lithic debitage, carbon-stained soil, and one untyped projectile point base were observed in road cuts and vandalized areas. A crew excavated five shovel tests (STs 1 through 5), to depths between 40 and 70 cmbs, across these fills and feature. Shovel tests 1, 3, and 4 were positive with the STs 1 and 3 adjacent to the midden. Recovery included burned rocks, shell, flakes, bone, and charcoal flecking to a maximum depth of 60 cmbs. Although no cultural material was observed within the Fill A, deep testing of the T3 surface was warranted given its apparent Holocene age, and formal testing was recommended to determine NRHP eligibility (Trierweiler 1994:A674-677). A



Figure 5.60 Feature 2 at 50 cmbs in Test Pit 2, 41CV88.

minimum testing effort was recommended to include four square meters of manually excavated test pits and one to two trenches.

5.14.1.3 New Work

Formal testing was completed in mid-December 1994 through the excavation of four mechanical trenches and two test pits. Unit sizes and depths are presented in Table 5.25.

5.14.2 Results

The site is on a narrow triangular terrace wedge at the confluence of Cottonwood and Cowhouse Creeks. Cowhouse forms the northern site boundary, and Cottonwood forms the southern boundary. The highest part of the terrace (equivalent to the T_{1A} surface of Nordt 1992) flanks the Cottonwood Creek cutbank, and the site steps down onto two lower alluvial surfaces (T_{1B} and T_0) underlain by successive inset alluvial fills. Trench 1 was on the T_{1A} surface just south of a tank trail and through a section of the vandalized midden above Cottonwood Creek. It revealed an Ap-A2-AB-2Bk-2BCk profile developed in the upper and lower West Range fills, or possibly the West Range and Fort Hood fills, of Nordt (1992). The Ap horizon consisted of spoil from adjacent vandal pits and was 15 cm thick (Figure 5.61). The A2 horizon was 25 cm thick and consisted of very dark brown (10YR 2/2), fine blocky loam which contained abundant burned rock, flakes, and

Table 5.25 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	15	0.8	3.1	alluvial terrace
BT 2	10	1.5	1.5	alluvial terrace
BT 3	8	0.8	2.0	alluvial terrace
BT 4	12	0.8	2.0	alluvial terrace
TP 1	1.00	1.00	1.60	alluvial terrace
TP 2	1.00	1.00	1.90	alluvial terrace

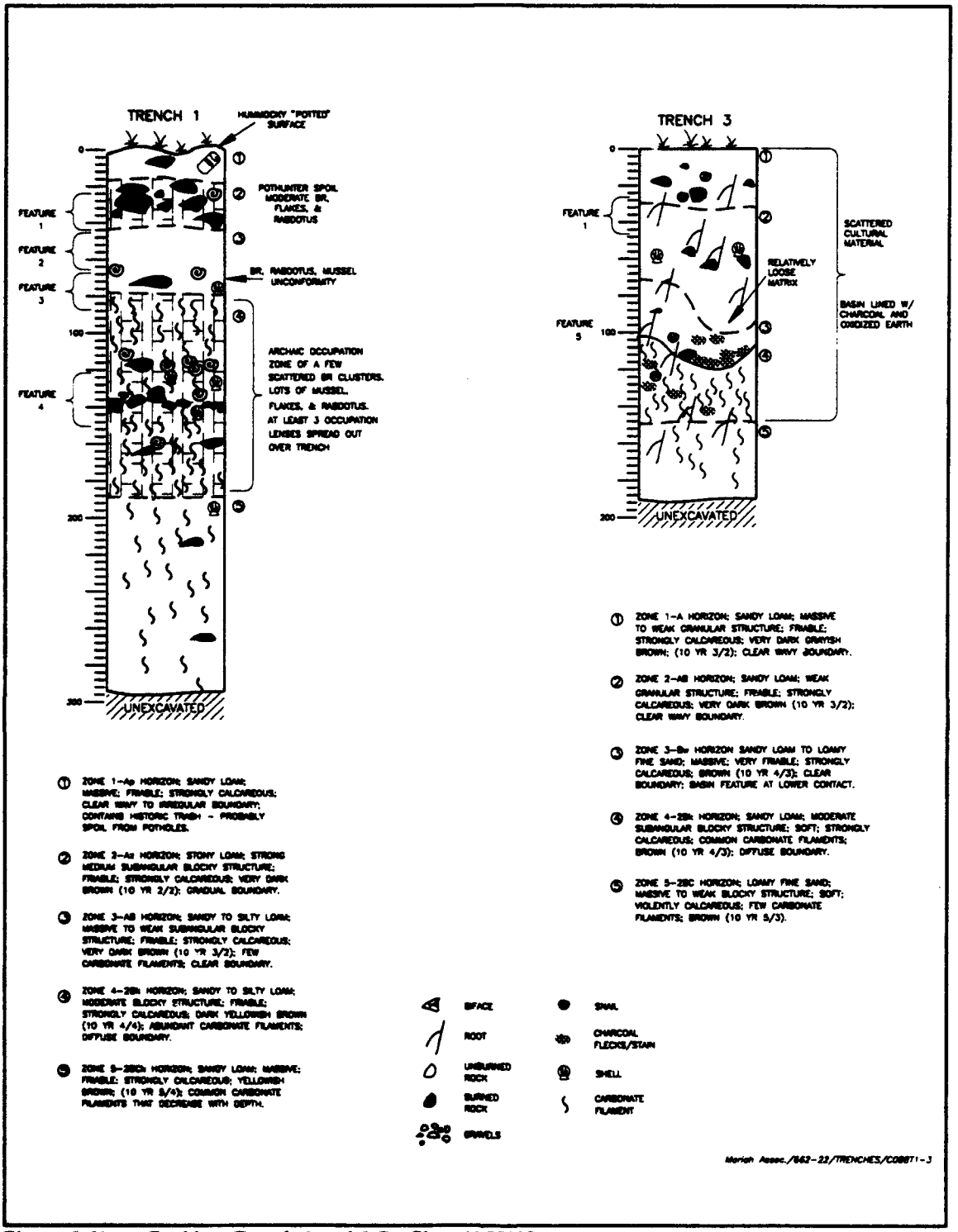


Figure 5.61 Backhoe Trench 1 and 3 Profiles, 41CV88.

snails. It graded abruptly down into Zone 3, which consisted of a weak blocky to massive, very dark grayish brown (10YR 3/2) sandy to silty loam that contained some cultural material. This AB horizon was roughly 40 cm thick and consisted of weakly blocky, very dark grayish brown (10YR 3/2) fine sandy to silty loam. It rested disconformably on a 2Bk horizon composed of blocky, dark yellowish brown (10YR 4/4) sandy to silty loam that contained abundant fine filaments of carbonate. This horizon was slightly more than 1 m thick and contained at least three stratified occupation zones that contained scattered burned rock, mussel shell, flakes, and snails. It graded into a massive, yellowish brown (10YR 5/4) sandy loam BCk horizon that extended past the base of the trench at 3 m bgs. This zone contained a few scattered burned rocks, but no identifiable cultural strata. Carbonate filaments were common at the top of the zone, but decreased with depth, while the sand content increased.

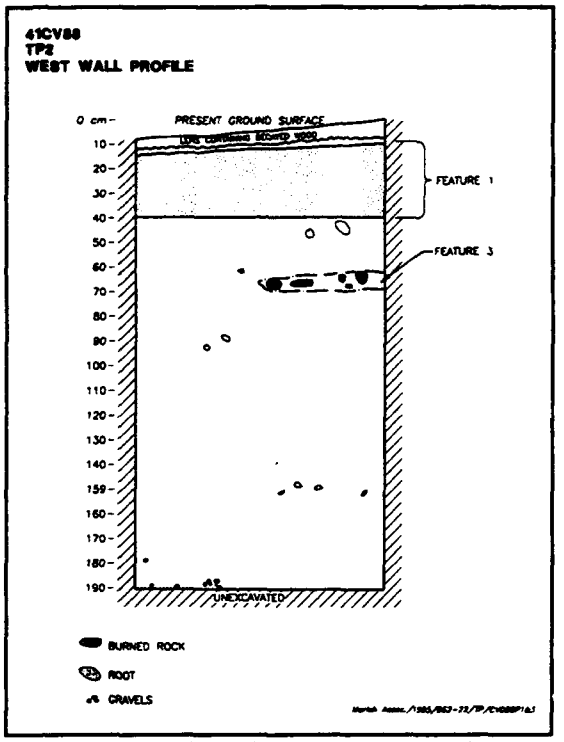


Figure 5.62 Test Pit 2 Profile, 41CV88.

Offset from the southwest corner of BT 1, TP 2 was above Feature 1 (the midden) and the buried burned rocks exposed in profile in the trench's west and south walls (Figure 5.62). Three flakes and nine burned rocks came from 0 to 10 cmbs, however, this level was disturbed as evidenced by shotgun shells. Feature 1 was encountered from 10 to 40 cmbs, but was somewhat disturbed by bioturbation (a large number of earthworms were present in levels 2 and 3). High artifact counts, particularly burned rocks and lithic debitage came from the midden (Table 5.26). Below the midden in level 5, scattered lithic debitage, burned rock, bone fragments, and mussel shell umbos, were present, with the top of F 2 just exposed at 49 cmbs. Feature 2 was a circular basin shaped hearth filled with two layers of burned limestone rock and confined to the east, central part of TP 2 (Figures 5.63 and 5.64). Maximum dimensions were 63 cm north-south x 57 cm east-west x 11 cm thick. The hearth perimeter was constructed of a single rock layer with rocks (two layers thick) superimposed towards the center. Burned rocks (n=48, 9.5 kg) ranged in size from 3 x 3 x 3 cm to 15 x 10 x 5 cm. About 10% were tabular and the remainder were angular. A biface fragment, an Edgewood dart point, and charcoal flecking were inside the hearth. No evidence of disturbance was observed. A float sample from F 2 yielded 25 very small pieces of carbonized wood. A small (0.1 g) charcoal sample from this float sample was identified as White Oak wood and provided a $\delta^{13}C$ (-29.1‰) corrected assay of 2660 ± 50 BP (Beta-83258). The surrounding non-feature fill, included some small scattered burned rocks, and a bone fragment, a mussel shell umbo, and nine flakes. Below this, F 3 was encountered from 64 to 70 cmbs. Feature 3 was a burned rock concentration restricted to the northwest and north-central parts of the unit (Figure 5.65), and extended beyond the limits of the west wall. This concentration consisted of a single, horizontal layer of burned rocks (n=24, 4 kg), 60 cm north-south x 41 cm east-west. Rocks averaged 5 to 10 cm in size and nearly equally divided between angular and tabular pieces. No evidence of disturbance was apparent.

Table 5.26 Artifact Recovery by Test Pit, 41CV88.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	12	0.8	1	0	0	0	6	0	0	-	mixed
	2	F1	59	5.5	4	3	0	0	13	0	0	-	mixed
	3	F1	83	6.5	5	6	0	0	51	1	2	Bonham	mixed
	4	F1	124	11.0	17	28	0	0	63	0	2	-	mixed
	5	F1	74	7.5	17	22	0	0	38	1	1	?arrow	mixed
	6	F1	49	4.5	2	21	0	0	36	0	1	1740±60	LA
	7	-	18	3.0	24	13	0	0	12	0	0	-	LA
	8	-	4	0.3	4	9	0	0	9	0	0	-	LA
	9	-	9	0.5	3	12	0	0	7	0	0	-	LA
	10	-	6	1.0	2	16	0	0	5	0	0	-	LA
	11	F5	14	0.8	1	5	0	0	3	0	0	2230±60	LA
	12	F5	2	0.2	1	7	0	0	2	0	0	-	LA
	13	-	14	1.3	1	10	0	0	7	0	0	-	unspec.
	14	-	5	0.3	0	6	0	0	8	0	0	-	unspec.
	15	-	0	0.0	1	1	0	0	7	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	Total		473	43.2	83	159	0	0	273	2	6		
2	1	-	9	1.0	0	0	0	0	3	0	0	-	mixed
	2	F1	61	4.0	0	2	0	0	105	0	0	-	LA
	3	F1	43	3.0	3	6	0	0	60	0	0	-	LA
	4	F1	23	2.0	3	1	0	0	21	0	0	-	LA
	5	-	18	2.0	2	1	0	0	9	0	0	-	LA
	6	F2	58	10.5	1	1	0	0	11	1	1	Edgewood, 2660±50	LA
	7	F3	37	5.0	3	1	0	0	16	0	1	-	LA
	8	-	4	0.5	3	1	0	0	8	0	0	-	unspec.
	9	-	8	1.0	3	0	0	0	9	0	0	-	unspec.
	10	-	4	0.5	6	9	0	0	7	0	0	-	unspec.
	11	-	2	0.2	9	0	0	0	4	0	0	-	unspec.
	12	-	4	0.3	2	3	0	0	3	0	0	-	unspec.
	13	F4	18	3.0	1	3	0	0	8	0	1	-	unspec.
	14	-	0	0.0	1	0	0	0	0	0	0	-	unspec.
	15	-	2	0.2	4	0	0	0	6	0	0	-	unspec.
	16	-	5	0.2	2	1	0	0	1	0	0	-	unspec.
	17	-	0	0.0	0	2	0	0	2	0	0	-	unspec.
	18	-	2	0.1	0	1	0	0	1	0	0	-	unspec.
	19	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		298	33.5	43	32	0	0	274	1	3		

Thirteen flakes, one bone fragment, three mussel shell umbos, a biface fragment, and tiny burned rock pieces were recovered in the surrounding non-feature matrix. Based on morphology and spatial relation to F 2, F 3 appears to be a dump associated with the F 2 hearths. Below F 3, from 70 to 120 cmbs, a relatively low density of cultural material included 37 flakes, 13 bone fragments, 26 mussel shell umbos, and 35 burned rocks. At 122 cmbs, F 4, a burned rock concentration visible in the trench profile, was exposed (Figure 5.66). This single layer of slightly overlapping burned rocks (n=12, 2.5 kg) was along the southeast edge of TP 2, and had maximum excavated dimensions of 47 cm north-south x 14 cm east-west x 7 cm thick, and terminated at 129 cmbs. As evidenced by some rocks still exposed in the south wall profile of BT 2, F 4 extended at least 10 more cm to the east and an unknown distance south. Burned rocks averaged 5 to 10 cm in size with 75% tabular and the remainder angular. One biface, eight flakes, three bone fragments, and a mussel shell fragment were observed in the feature fill. No disturbances were noted except for

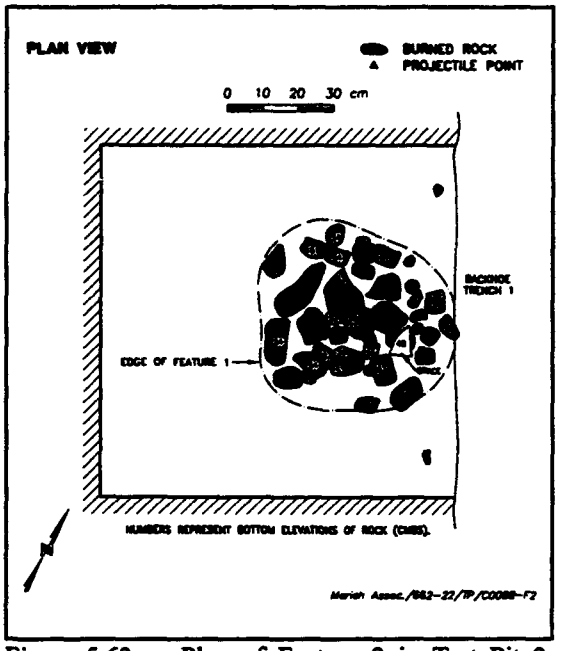


Figure 5.63 Plan of Feature 2 in Test Pit 2, 41CV88.



Figure 5.64 Tank Road Along South Margin of Burned Rock Midden Feature 1, 41CV88.

bisection by the trench. A dense snail shell deposit (95% *Rabdotus* sp.) was west-southwest of F 4. About 600 snail shells were in an area that measured 60 x 20 cm, and 6 to 12 cm thick. The remaining non-feature matrix from level 13 contained a few lithics, bone, burned rocks, and one shell umbo. Levels 14 through 18 yielded limited cultural material (ten flakes, four bones, seven umbos, and nine burned rocks). No artifacts were recovered from 180 to 190 cmbs and excavation was terminated.

Trench 2 was 15 m north-northeast of BT 1, spanning the riser from the T_{1B} to the T_{1A} surface. It revealed dipping, rhythmically bedded deposits interpreted as the Ford alluvium, although it is possible that the West Range alluvium was present at depth. Overall, the trench exhibited an A-C-BCk profile. The A horizon was 75 cm thick and consisted of massive, very dark brown loam. It was underlain by 15 to 20 cm of a massive, gray brown loamy sand that contained some dispersed cultural material in probable secondary context. The underlying zones were tentatively interpreted as Ford alluvium although they could represent the older West Range fill. They consisted of thick, rhythmically bedded packets of very dark grayish brown (10YR 3/2) loam and brown (10YR 4/3) sandy loam. Both sediments contained common carbonate filaments, and were considered a thick BCk horizon. Dispersed cultural material was present to depths of at least 275 cm.

Trench 3 was between BTs 1 and 2 and revealed an A-AB-Bw-2Bk-2BCk profile developed in two stacked depositional units tentatively interpreted as the West Range and Fort Hood, or upper and lower West Range, fills (chronometric data suggests that the latter scenario is more likely). The A horizon was 30 cm thick and consisted of very dark grayish brown (10YR 3/2), massive sandy loam. It contained some burned rock, flakes, and snails in probable secondary context. The AB horizon was 40 cm thick and consisted of weak granular, very dark grayish brown (10YR 3/2) sandy loam. It also contained some dispersed cultural material. Zone 3 (Bw horizon) consisted

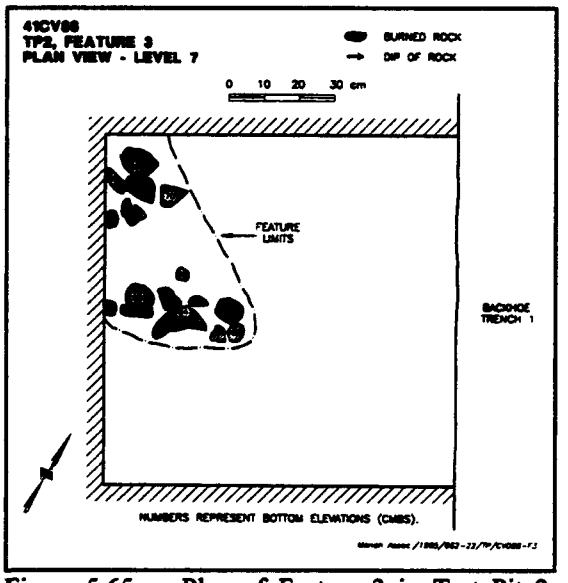


Figure 5.65 Plan of Feature 3 in Test Pit 2, 41CV88.

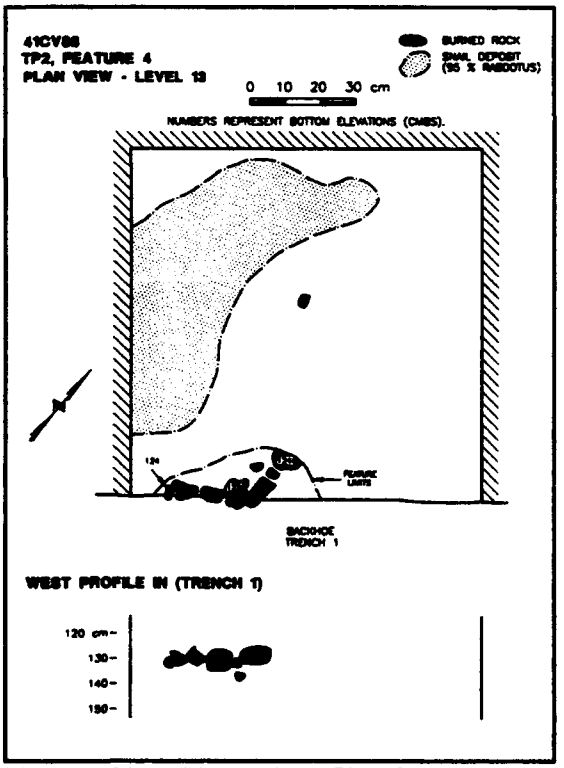


Figure 5.66 Plan and Profile of Feature 4 in Test Pit 2, 41CV88.

of a 30 cm thick brown (10YR 4/3), massive loam to loamy fine sand, and represented the lowest horizon developed in the West Range veneer. At the contact between the two fills, a shallow basin-shaped feature (F 5) with a charcoal-flecked fill and an oxidized substrate was noted. This feature was inset into the surface of the lower fill. The upper zone consisted of a 2Bk horizon composed of blocky, dark brown (10YR 4/3) sandy loam that contained common fine filaments of carbonate and scattered burned rock, mussel shell, flakes, and snails. It graded into a massive, brown (10YR 5/3) loamy sand BCk horizon that extended to the base of the trench at 200 cmbs. This zone contained carbonate filaments and a few scattered burned rocks, but no identifiable cultural strata.

Test pit 1, offset from the west wall of BT 3, was above the midden deposit (F 1) and the apparent basin hearth (F 5) exposed in the profile (Figure 5.67). The burned rock midden, Feature 1, extended from the surface to 60 cmbs. The upper 40 cm was disturbed as evidenced by an unconsolidated matrix and military shell casings in levels 2 and 4. Feature 1 appeared intact in levels 5 and 6 (Figure 5.68), with high to moderate amounts of burned rocks (n=123), lithic debitage (n=50), a medial arrow point fragment, a proximal drill, bone (n=44), mussel shell umbos (n=19), and charcoal flecking noted. A float sample from the bottom of F 1 (50 to 60 cmbs) yielded a charcoal sample that produced a $\delta^{13}C$ (-29.3‰) corrected assay of 1740 ± 60 BP (Beta-83259). Artifact frequencies decreased in levels 7 through 9, with charcoal and oxidized soil noted in level 10. Feature 5 was at 100 cmbs and continued to 119 cmbs. At 100 cmbs, the maximum feature dimensions were 100 cm north-south x 92 cm east-west, with an amorphous, irregular boundary outlining the western edge of the feature. From 100 to 110 cmbs, small charcoal stains, slightly oxidized areas, and discrete, ash pockets were noted in the ashy feature fill. At 110 cmbs and extending to 119 cmbs, diffuse ash and charcoal covered the entire unit with no internal patterning evident. The base of the feature was flat despite its appearance in the trench profile. Therefore, it

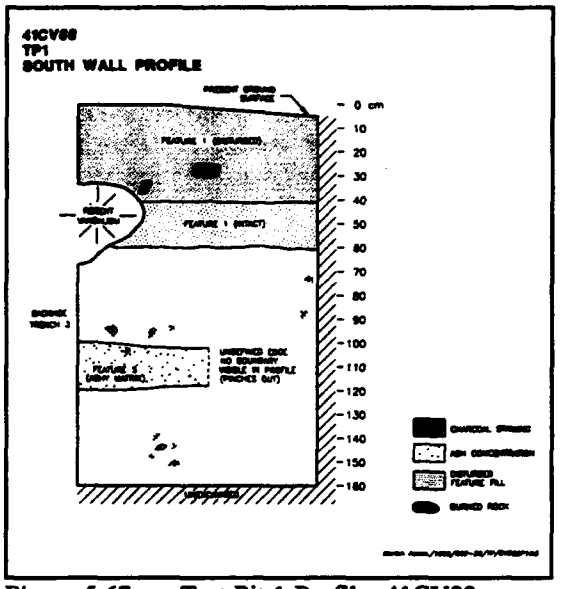


Figure 5.67 Test Pit 1 Profile, 41CV88.

is not a basin hearth and it could represent a diffuse hearth or a "rake-out" from an adjacent hearth. Artifacts associated with Feature 5 included small burned rocks (n=20), bone fragments (n=21), a few mussel shells (n=3), and

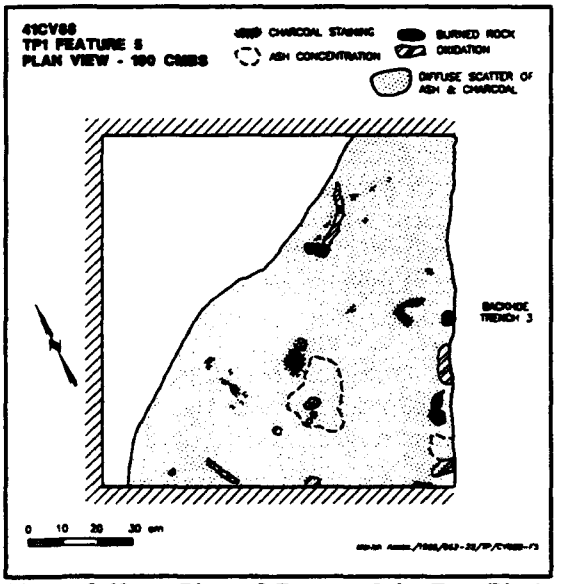


Figure 5.68 Plan of Feature 5 in Test Pit 1, 41CV88.

sparse lithic debitage (n=8). A small 4.8 g charcoal sample from F 5 was identified as Live Oak wood and provided a $\delta^{13}C$ (-26.1‰) corrected assay of 2232 ± 60 BP (Tx-8417). Levels 12 through 16 yielded moderate to light densities of cultural material, with artifact counts gradually decreasing with depth. Excavation was terminated at 160 cmbs.

Trench 4 was 30 m west of BT 3 and exhibited a similar profile to BTs 1 and 3, but with minimal evidence of cultural material. Following excavations and prior to backfilling, parts of exposed test pits walls and backhoe trenches were vandalized. The vandalism may be related to military maneuvers which occurred in the area during the period the units remained opened.

5.14.3 Analysis and Interpretation

5.14.3.1 Definition of Analytical Units

The two test pits yielded five recognizable features and a total of 574 pieces of debitage, three points, nine stone tools, 191 bone fragments, 126 mussel shell umbos, 771 burned rocks, sparse charcoal, and snail shells. These were assigned to one identifiable time period - the Late Archaic, with mixed and a temporally unclassifiable groups. The Late Archaic association is based on three charcoal dates of 1740, 2232 BP, and 2660 BP, an Edgewood point, and includes burned rock midden F 1, a buried occupation zone with two associated features (Fs 2 and 3), buried F 5, plus associated artifacts. These materials occurred in TP 1, 50 to 120 cmbs and in TP 2, 10 to 70 cmbs. The mixed materials were from the top 50 cm in TP 1 and the top 10 cm in TP 2 and probably originally part of the Late Archaic midden deposit. Subsequently, they underwent disturbances from vandalism with some recent historic items mixed in. Materials that are temporally unclassifiable included those from the TP 1, 120 to 160 cmbs, and TP 2, 70 to 190 cmbs. These latter zones contained relatively few artifacts and no features or diagnostic artifacts.

5.14.3.2 Late Archaic Materials

These materials include, the surface burned rock midden F 1, the circular basin hearth and adjacent burned Fs 2 and 3, a buried ash lens F 5, 296 specimens of lithic debitage, one projectile point, three stone tools, 95 bone fragments, 49 mussel shell fragments, 270 burned rocks, sparse charcoal, and few snail shells.

The 296 specimens of lithic debitage represent nine types each identified and unidentified cherts with 18% identifiable (Table H-117). Although Cowhouse Mottled has the highest number of specimens, Fort Hood Yellow and Fort Hood Gray only have four and three less specimens. Among the indeterminates, light brown and light gray cherts are the dominating types at 27% each. The relative high number of Fort Hood Yellow and Fort Hood Gray results in North Fort cherts (49%) having a slight edge over the Cowhouse province materials (38%). Only the combined indeterminates occur in higher than expected frequency, while all other types occur in less than expected amounts (Table H-118). The exclusion of the indeterminates results in Cowhouse Mottled and Fort Hood Gray occurring in higher than expected amounts, Heiner Lake Tan, Fort Hood Yellow, Owl Creek Black, Cowhouse Dark Gray and Cowhouse Mottled with Flecks occurring in expected amounts, and all other cherts remain unchanged.

The modal peak for size occurs in the 0.9-1.2 cm size category (31%) while 75.6% of the debitage is less than 1.8 cm in size and 92.3% is smaller than 2.6 cm. The rather even distribution of the debitage among the size categories and the relative low percentage of tertiary materials (Table H-119) suggests that large partially decortified, as well as small completely decortified tools were being produced. However, not only does the debitage not match the tools in terms of materials types but the tools are not what would have been expected from the debitage size and cortex data.

The single point is classified as an Edgewood, made of indeterminate light gray chert associated with Feature 2 and 3 in TP 2. The stone tools (Table H-120) include a Gray/Brown/Green spokeshave from TP 1, 50 to 60 cmbs, which is the lowest part of F 1 midden. A medial section of a late stage biface of Gray/Brown/Green chert and a longitudinal section of a finished biface of Gray/Brown/Green. The latter two bifaces were also associated with Fs 2 and 3 in TP 2.

The 95 bone fragments represent mostly large to very large (44%) and medium to large (21%) mammals the size of deer/bison (Table H-121). Deer (n=8), turtle (n=5), beaver (n=1), and fish (n=2) were all identified. This is the only site out this 56 tested sites to contain fish elements. It is unclear if these served as human food resources or were brought in by other agents. Only 22% fragments are burned, whereas 14% reveal spiral fractures. Thirty-one percent were associated with F 1, whereas only 13% were associated with F 5. Apparently large game was utilized almost extensively as the human food resource here.

The 49 mussel shells umbos were dominated by *Amblema plicata* (51%) followed by *Lampsilis* sp. (16%), *Lampsilis hydina* (10%), *Cyrtonaias* sp. (2%), with nine unidentified (20%). Only 4.7% were associated with F 5, 8% were associated with Fs 2 and 3, another 14% were associated with F 1, whereas 56% were directly below F 1 in TP 1, 60 to 70 cmbs. It is unclear if mussels served as human food resources or were derived from some other means. The high frequency in the lower part of F 1 in TP 1 would support their use by humans.

The 270 burned rocks weighed 23.3 kg with 77% from F 1 midden, 27% from Fs 2 and 3, and 7% from burned rock concentration F 5. A float sample from the bottom of F 1, TP 1, 50 to 60 cmbs yielded 21.6 g of light fraction with less than 25 pieces of carbonized wood. A 0.1 g charcoal sample from this same light fraction was of indeterminate wood and provided a $\delta^{13}C$ (-29.3‰) corrected assay of 1740 ± 60 BP (Beta-83259). A tiny (0.1 g) charcoal sample from F 2 was identified as White Oak wood and provided a $\delta^{13}C$ (-29.1‰) corrected assay of 2660 ± 50 BP (Beta-83258). A light fraction sample from F 2 yielded no carbonized plant remains. A 4.8 g charcoal sample from F 5 identified as Live Oak wood and provided a $\delta^{13}C$ (-26.1‰) corrected assay of 2232 ± 60 BP (Tx-8417).

The 1740 date for the lower F 1 midden deposit indicates a Twin Sisters phase (Prewitt 1981; 1985) association, although it is unclear if the top part was used by subsequent groups. The use of this midden at this time is consistent with many other dated burned rock middens at Fort Hood. Lack of stone tools and diagnostics are also consistent with other Late Archaic middens investigated. Like other burned rock middens, this one is very badly vandalized near the surface, but intact Late Archaic deposits occur stratigraphically below F 1. Features 2 and 3 appear to represent a separate, well defined buried Late Archaic occupation that contained an Edgewood point and a charcoal date of 2660 BP. The latter age is accepted for the Late Archaic as "old wood" was assumed to have been used in the fire. The 2223 BP age for F 5 places this material into the Uvalde phase (Prewitt 1981; 1985). Few sites/components of this phase exist and/or are poorly reported in the literature, therefore this site has the potential to significantly contribute to our understanding concerning this phase.

5.14.3.3 Mixed Materials

These materials include parts of midden F 1, 114 pieces of debitage, two points, five stone tools, 59 bone fragments, 44 mussel shell umbos, 361 burned rocks, and snail shells.

The 174 specimens of lithic debitage represent 11 identified and nine unidentified chert types with approximately 25% of the materials identifiable (Table H-122). Fort Hood Yellow stands out among the identified materials at 28%, while four color types: dark gray (27%), light brown (15%) and by a smaller amount miscellaneous and mottled (both 12%) are dominant colors among the indeterminates. The highest percentage at 13%

originate from the North Fort province with four types; Cowhouse province materials are the second highest in frequency at 8% with three types. As would be anticipated, the combined indeterminates occur in higher than expected frequencies, Fort Hood Yellow, Fort Hood Gray, and Cowhouse Mottled occur in expected frequencies, while all others occur in less than expected frequencies (Table H-123). The exclusion of the indeterminate types results in Fort Hood Yellow and Cowhouse Mottled occurring in higher than expected frequencies with all other types occurring at expected rates.

The modal peak in the size category occurs between 1.2 to 1.8 cm with slow drop off to either side of the scale. However, a plateau in size frequency occurs from about 0.9 cm through the 5.2 cm size category indicating a broad range and near equal representation of numerous tasks. Given these size ranges, one might expect a fairly low number of tertiary flakes and a moderately high percentage of partially cortex materials. The cortex data (Table H-124) reveals just that. Sixty-six percent of the materials are tertiary flakes and an additional 32% have partial cortex with evidence of abrasion.

The two arrow points, a Bonham and a untyped medial section, were made of Heiner Lake Tan chert. The five tools consist of three late stage bifaces, a proximal drill and a complete crushing/abrading stone (Table H-125). The latter was made of indeterminate dark brown, while the bifaces were of Owl Creek Black, indeterminate light brown, and Gray/Brown/Green, and the drill of Gray/Brown/Green. All these tools were from the midden deposit in TP 1.

The 59 bone fragments represent mostly (54%) large to very large mammals in the deer to bison size range (Table H-126). Small mammals (7%) including rabbits (n=3), beaver (n=1), and turtles (n=2) were identified. All bones were from the mixed midden deposit in TP 1. Just over 30% of the fragments were burned. Deer/bison size animals appear to have been the principal food resource.

Sixty-four percent of the umbos were identified as *Amblema plicata*, and 14% were unidentifiable as to species with *Lampsilis* sp., *Lampsilis teres*, *Tritigonia verrucosa* all represented. Only three umbos are burned and all came from the midden deposits in TP 1. Their present indicates another food resource but it appears it was only supplementing the larger game resources

The 361 burned rocks weighed 32.2 kg and were primarily from the midden deposit in TP 1. Sparse charcoal was mixed in with the burned rocks, and a tiny (0.1 g) fleck from TP 1, level 5 was identified as unidentified diffuse porous wood.

It is unclear if the midden deposit was a continuation of the Late Archaic midden below or if the arrow fragment and Bonham point indicate a Late Prehistoric II event on top of the earlier midden. The vandalism prevents a clear understanding and association.

5.14.3.4 Unspecified Materials

These include 77 specimens of debitage, one stone tool, 37 bone fragments, 33 mussel shell umbos, and 56 burned rocks from at least three different proveniences. The lack of diagnostics from these levels prevents identification or assignment to a particular period, although they may represent the Late Archaic occupations.

The 77 specimens of lithic debitage represent ten each of identified and unidentified chert types with 22% of the materials identifiable (Table H-127). No one chert type dominates any other among the identified portion, while dark gray chert predominates among the indeterminates. Although North Fort materials appear to dominate with eight specimens, Southeast Range and Cowhouse materials are not that far off (4 and 5, respectively). Only the indeterminates occur in higher than expected amounts and Cowhouse Dark Gray occurs in expected amounts, while all others

occur in less than expected amounts (Table H-128). The exclusion of the indeterminates results in all types occurring in expected frequency. The relative amount of dark gray indeterminate cherts coupled with an expected amount in the binomial results strongly suggest that these unidentified specimens are probably small specimens of Cowhouse Dark Gray.

The modal peak for size occurs at the 1.2-1.8 cm category; however, the next smallest category has only four less specimens. Seventy-one percent of the materials are less than 1.8 cm in size and the drop off in frequency is gradual to both ends of the size spectrum. A moderately sized category as a modal peak indicates the manufacture of both large and small tools which is supported by the moderate amount of tertiary debitage (Table H-129).

The 37 bone fragments are mostly unidentifiable fragments, dominated by large to very large mammals (bison size) and medium to large mammals (deer size) with snake (n=1), turtle (n=2), beaver, (n=1), and rodent (n=1) elements identified (Table H-130). Fourteen pieces are burned. Large game appears to have been the principal food source.

The 33 umbos included mostly unidentifiable pieces (33%), with *Lampsilis hydiana*, *Lampsilis* sp. (15%), *Quadrula apiculata* (3%), *Tritigonia verrucosa* (3%), and *Amblema plicata* (46%) all identified. Not a single specimen was burned or other wise modified. Twenty-one percent were from TP 2, 3% were with F 4, with 70% above F 4. The 56 burned rocks weighed 5.1 kg and were mostly from TP 2 and undoubtedly represent a number of occupations.

5.14.3.5 Epimerization Ratios

Although no charcoal was recovered from F 4, a suite of eight *Rabdotus* shells were selected from the snail assemblage and submitted for epimerization analysis. The resulting ratios ranged between 0.0547 and 0.079, with five specimens forming a loose cluster between 0.0547 and 0.0604. These five specimens are interpreted as best representing the approximate age of the feature, and equate to approximate radiocarbon-equivalent ages of 1700 BP and 2200 BP using the methods of Ellis et al. (1995) and Abbott et al. (1995), respectively. Given that these specimens represent the only type of quasi-chronometric data from beneath the clear disconformity at the site, and radiocarbon ages of 2660 and 2230 BP were obtained from features above the contact, it is likely that these estimates are too young. However, the clear clustering of the epimerization values implies that the shells are in good context. Moreover, because it is unlikely that the rate of epimerization is off by more than a factor of two, it strongly implies that the lower fill is the lower West Range, and not the Fort Hood.

5.14.4 Conclusions

The site is on a terrace promontory at the confluence of Cowhouse and Cottonwood Creeks. The fills consists of probable lower West Range alluvium, which underlies the T_{1A} surface, where it is draped by up to a meter of upper West Range alluvium. A series of two lower alluvial surfaces (T_{1B} and T_0) are present adjacent to Cowhouse Creek. These surfaces are underlain by Ford Alluvium and possibly West Range alluvium. Intact cultural features, including a variety of buried and intact features, were observed in primarily the upper West Range fills.

The large burned rock midden exposed on the surface has been vandalized but appears to represent mostly a Late Archaic feature dating back to 2232 BP. These age features are quite common at Fort Hood and most are similar to F 1 as they lack diagnostics and other formed tools. Below this lies a series of stacked occupations represented by Fs 2 and 3 60 cm above F 4 all dating to the Middle Archaic period starting at 2660 BP for F 2. Intact Middle Archaic occupations are relatively rare, especially with intact well defined features. These occupations

should contribute significantly to our understanding of this period.

On the above basis, site 41CV88 is evaluated as containing intact and stratified archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because several of the eligible components are relatively shallowly buried and have already been looted, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.15 SITE 41CV90

In December 1994 and January 1995, we conducted formal test excavations at prehistoric archeological site 41CV90. Testing was designed to evaluate eligibility for inclusion to the NRHP. Ten trenches were mechanically excavated and four test pits totaling 7.7 m^3 were hand excavated. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.15.1 Introduction

5.15.1.1 Site Location and Description

Site 41CV90 is a large site in Fort Hood Training Area 36. It is on the upland surface and terraces overlooking Cottonwood Creek to the north (Figure 5.69). A few minor swales and numerous tank trails criss-cross the site. Maximum site dimensions, as defined in 1993, measure 600 x 200 m with a northeast-southwest long axis, covering an area of about 12 hectares (29.6 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.15.1.2 Previous Work

The site was initially recorded by Thomas on 22 February 1976 and considered a probable occupation site. Site dimensions were estimated as 100 x 50 m. A scatter of burned rocks, hammerstones, lithic debitage, in addition to four burned rock and/or shell middens, were noted. No disturbance was noted but historic artifacts were observed.

On 16 May 1985, Masson and Dureka recorded the site again. Based on the newly prepared site map, dimensions were expanded to about 300 x 200 m (although dimensions noted on the site form were not compatible with these figures). The area was considered an extensive campsite, with locales of hunting/gathering exploitation due to the presence of shell in burned rock middens and lithic working areas (Carlson et al. 1988. Bifaces, retouched flakes, cores, flakes, scrapers, burned rock, and a mano were scattered across the surface, with Angostura and Bulverde points collected. The site had been impacted an estimated 40% by bulldozing, erosion, and vehicular traffic.

Strychalski monitored the site on 23 January 1986. The 1976 site dimensions were confirmed with flakes and chert noted on the surface, and Pedernales and Lange points collected. Strychalski believed 41CV90 may be associated with 41CV89 and further investigation was recommended. Again the site was monitored on 1 February 1988 by Callum and Dureka. Shell, lithics, and burned rocks were primarily observed on the terrace top. It was their belief that 41CV89 and 41CV90 were separate sites based on landform and inferred site function.

On 24 February 1993, Mehalchick and Frederick reevaluated the site and divided it into two subareas. Subarea B included the large area previously designated as 41CV90 and largely consisted of the limestone upland. At the northeast edge of this landform a thin veneer of Pleistocene alluvium, presumably the Jackson alluvium (Nordt 1992), was present. No soil was associated with

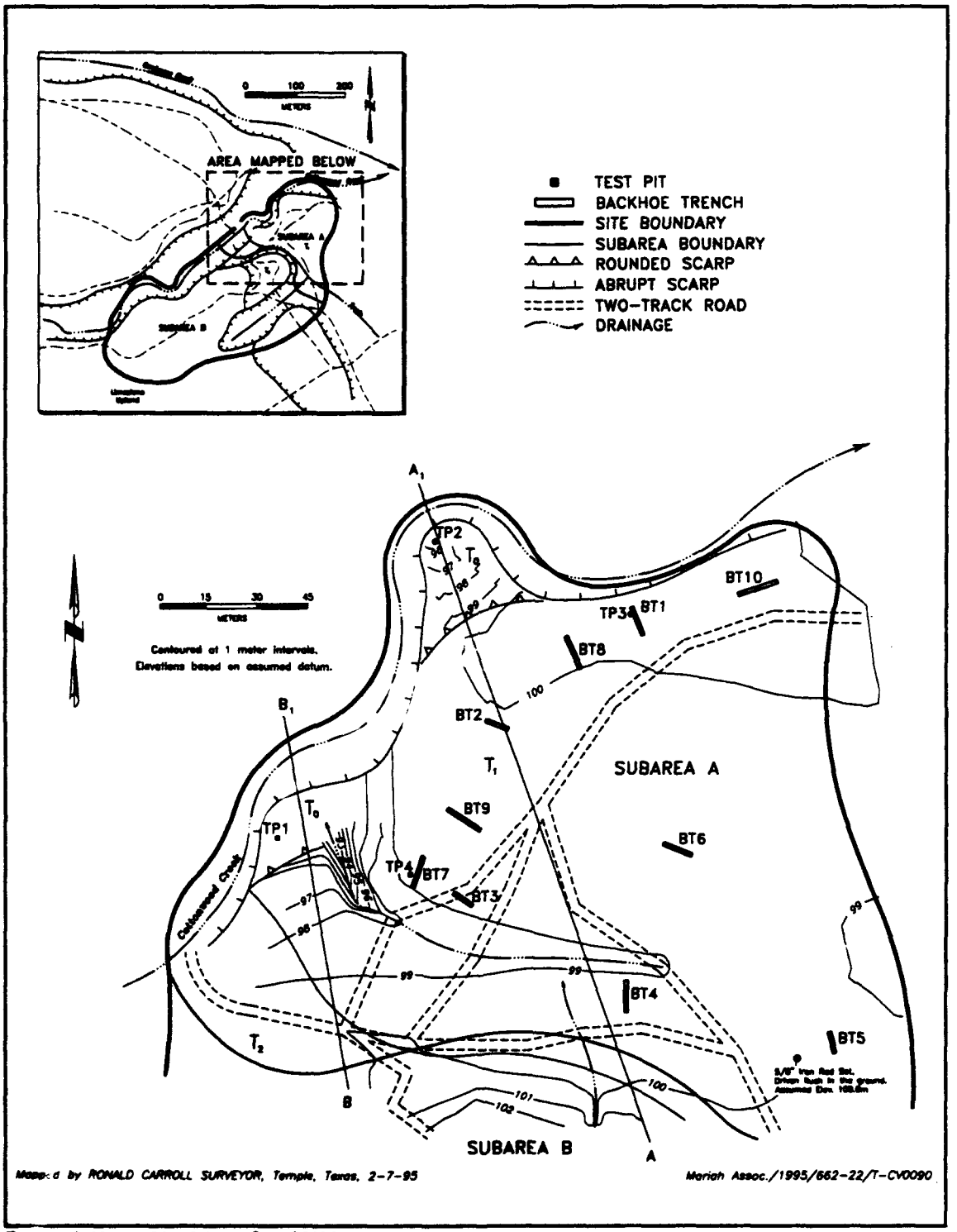


Figure 5.69 Site Map of 41CV90.

this terrace remnant, perhaps because of intense military disturbance of the surface. A moderate density of flakes, burned rocks, mussel shells, and bifaces were scattered across the surface and five to eight burned rock concentrations were observed in and along tank trails. These concentrations averaged 5 m in diameter, had flakes and shell in association, and all were heavily disturbed. Subarea B was substantially and negatively impacted by sheet erosion caused by natural and human agencies. The possibility of encountering in situ cultural deposits was considered to be practically nonexistent, and no further work was recommended for Subarea B (Trierweiler 1994:A678-680).

Subarea A included the area previously designated as 41CV89 and subsumed the T_1 surface of Cowhouse Creek, in addition to the T_0/T_1 surface of Cottonwood Creek which was inset against the Cowhouse Creek terrace deposits (Figure 5.70). Although this area is relatively small in comparison to Subarea B, it was stratigraphically more complex, with at least three different alluvial fills. A light scatter of burned rocks, flakes, and bifaces were observed along the road and the terrace edge and burned rock was buried about 40 cmbs in the Cottonwood Creek cut bank. Erosion, possible cultivation, roads, land clearing, and military activity have impacted the area. Based on the potential for buried cultural deposits, a crew excavated nine shovel tests in Subarea A. Only one test contained cultural material, a total of three burned rock and mussel shell fragments recovered from 20 to 50 cmbs. Nonetheless, it was recognized that below the limits of shovel testing deeper Holocene deposits may contain cultural deposits, and formal testing was recommended to determine NRHP eligibility. Recommended minimum testing effort included six to eight square meters of manually excavated test pits and six trenches (Trierweiler 1994:A678-680).

5.15.1.3 New Work

Formal testing of Subarea A was completed in January 1995. Ten backhoe trenches were excavated to examine the alluvial stratigraphy and prospect for buried cultural materials and four test pits were excavated to recover representative artifacts and samples. Unit sizes and depths are presented in Table 5.27.

5.15.2 Results

5.15.2.1 Excavations in the Cowhouse Creek T_1 Terrace

A series of five trenches (BTs 1, 2, 8-10) were excavated along the front margin of the terrace. Trench 1 was excavated near the northeast margin of this subarea just above Cottonwood Creek; BT 2 was 40 m southwest of BT 1; BT 8 was roughly midway between BT 1 and BT 2; BT 9 was about 40 m southwest of BT 2; BT 10 was about 30 m east of BT 1. Additionally, BT 6 was excavated into the middle of this broad terrace tread. Each of these six trenches exhibited a similar profile tentatively interpreted as the Fort Hood alluvial fill overlain by a possible thin, welded drape of the subsequent West Range fill (Figure 5.71). The landscape setting suggests that the Fort Hood fill, in particular, was deposited by Cowhouse Creek rather than Cottonwood Creek. Overall, these six trenches exhibited an Ap (or A)-Bwk-Bk-BC profile greater than 300 cm thick. The A horizon, which may represent a more recent (e.g., West Range) fill, was about 60 cm thick and consisted of very dark grayish brown (10YR 3/2), massive to weakly platy sandy loam. It graded rather abruptly into a weak blocky, dark brown (10YR 4/3) sandy silt loam Bwk horizon containing common fine carbonate filaments. This horizon was also about 60 cm thick, and graded with depth into a 75 cm thick Bk horizon. The Bk was very similar to the Bwk, but contained less sand and slightly better developed filaments. The deepest zone encountered was a thick (about 1 to 1.5 m), weakly blocky to massive BC horizon that graded from dark brown (10YR 4/3) to brown (10YR 5/3) with

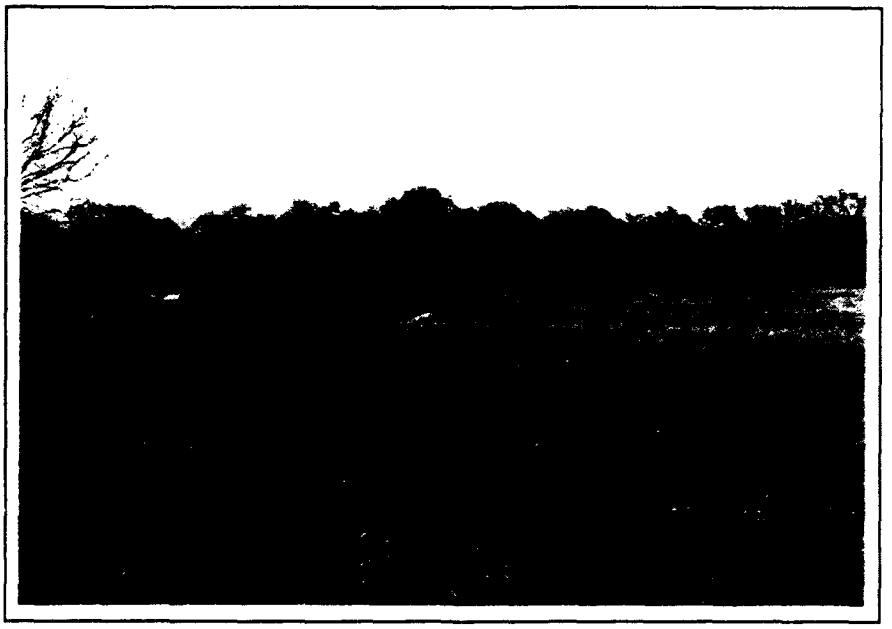


Figure 5.70 View Northwest Across 41CV90.

depth. It also contained carbonate filaments, but they diminished in number and definition with depth. Observations of the cutbank suggest that the BC horizon is underlain by a silt loam C horizon that extends to at least 600 cmbs. A few mussel shells and isolated burned rocks were noted in the various profiles to depths of up to 300 cm, and a mussel shell lens was present at about 160 cmbs in the lower part of the Bt horizon in trench BT 1.

Two additional trenches (BTs 3 and 7) also encountered this same fill. Trench 3 was about 30 m south of BT 9; BT 7 was 30 m northwest of BT 3. These two trenches were at the base of the T_2 terrace scarp, and were capped by a fairly clear, thick wedge of later alluvium and/or slopewash (Figure 5.72). Overall, these two trenches exhibited an A (or Ap)-Bk-2Btk profile over a sloping bedrock surface. The A horizon was roughly 35 cm thick and consisted of dark brown (10YR 3/3), weak blocky to platy silty clay loam. It graded into a dark yellowish brown (10YR 4/4), medium blocky silt loam containing carbonate filaments. These two upper zones contained a moderate amount of dispersed cultural material (principally burned rock and mussel shell) and are

Table 5.27 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	9	0.8	3.4	alluvial terrace
BT 2	7	0.8	2.8	alluvial terrace
BT 3	6	0.8	2.4	alluvial terrace
BT 4	10	0.8	1.6	alluvial terrace
BT 5	6	0.8	1.3	alluvial terrace
BT 6	8	0.8	2.9	alluvial terrace
BT 7	8	0.8	1.7	alluvial terrace
BT 8	10	1.5	3.0	alluvial terrace
BT 9	10	1.5	2.8	alluvial terrace
BT 10	13	1.5	2.9	alluvial terrace
TP 1	1.00	1.00	2.00	alluvial terrace
TP 2	1.00	1.00	2.00	alluvial terrace
TP 3	1.00	1.00	2.30	alluvial terrace
TP 4	1.00	1.00	1.40	alluvial terrace

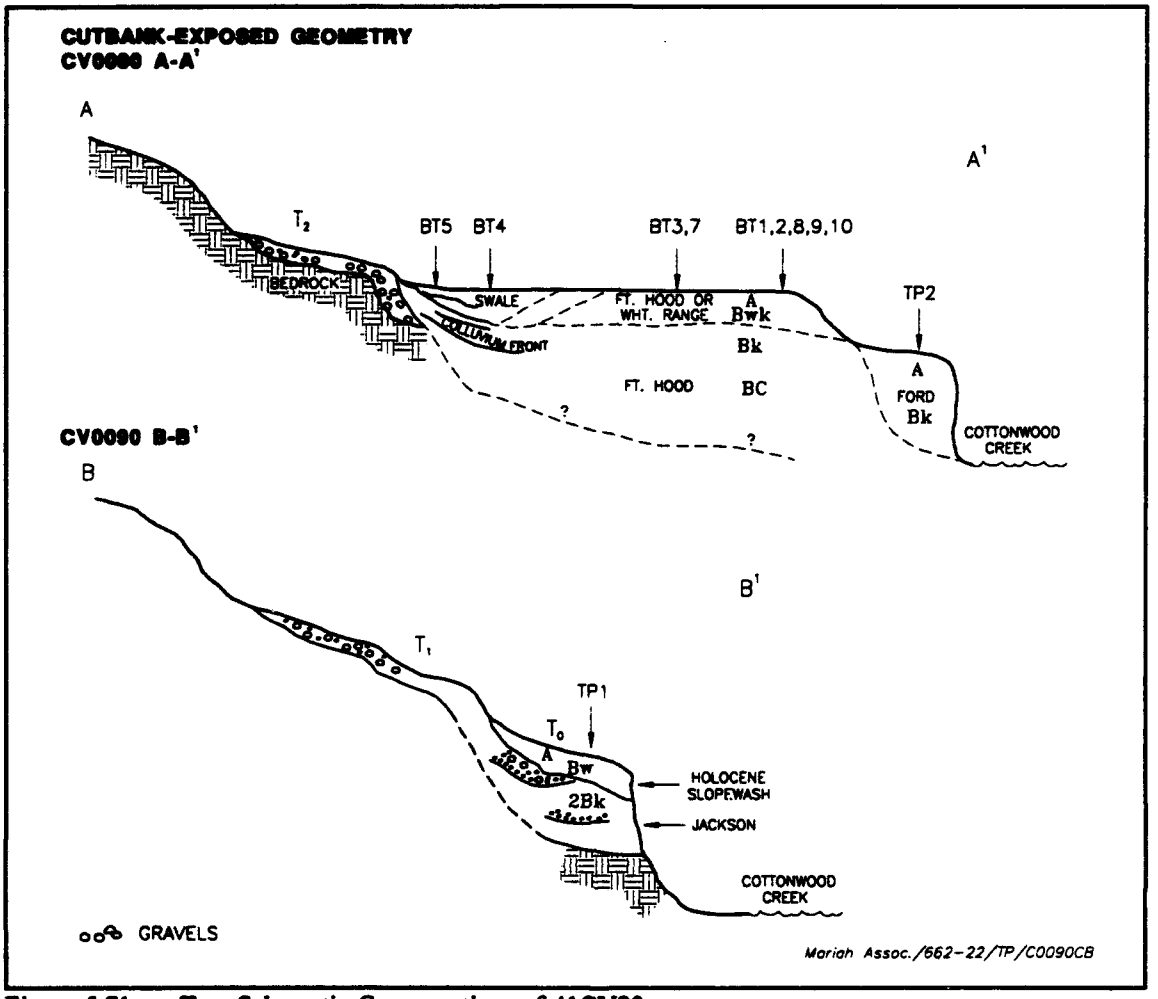


Figure 5.71 Two Schematic Cross-sections of 41CV90.

tentatively interpreted as alluvium or mixed alluvium/slopewash of late Holocene age. The Bk horizon graded rather abruptly into a strong blocky, dark brown clay loam Btk horizon interpreted as a distal facies of the Fort Hood fill. The unit contained dispersed, matrix-supported colluvial rock, a few fine soft carbonate nodules, occasional thin carbonate filaments, and a few thin, weakly expressed argillans on the ped faces. In both trenches, it rested on a dipping bedrock surface.

Finally, two trenches (BTs 4 and 5) were excavated in a swale at the rear of the T_1 terrace. Trench 4 was about 50 m southeast of BT 3; BT 5 was about 40 m south of BT 4. While very different in character, both of these trenches evidenced a combination of alluvial and slopewash sedimentation. Backhoe trench 4 was excavated to bedrock at 140 cm and exhibited an AC-2Ab-2Bkgb profile. The AC horizon was about 70 cm thick and consisted of stratified, slightly gravelly sandy loam that appears to represent recent (i.e., Historic period) slopewash. It was separated from the lower unit by an abrupt, irregular contact. The

lower unit appears to represent a hydromorphic swale fill with a substantial colluvial component. The 2Ab horizon was 40 cm thick and consisted of strong blocky structured, black (10YR 2/0) gravelly sandy clay. It contained a few fine, shapeless masses of carbonate and a mix of burned and unburned colluvial clasts. The 2Bkgb horizon was texturally and structurally similar, but was gleyed to a mottled light brownish gray (2.5Y 6/2) and contained common fine nodules. Other than the dispersed burned rock in the 2Ab horizon, no cultural material was detected in trench 4. Trench 5 consisted of a weakly rubified accumulation of gravelly sandy clay loam. It is tentatively interpreted as a dominantly colluvial sequence derived primarily from erosional beveling of a former deposit of the Jackson Alluvium on the T_2 terrace (which is largely absent at present) above the trench with some possible alluvial additions from the stream. The trench exhibited an A-Bw-C profile developed in dark brown (7.5YR 3/2 to 7.5YR 3/4) weak to moderately blocky clay loam. No cultural material was detected.

Test pit 3 was offset from the west wall of BT 1 over a mussel shell lens exposed in the trench profile. Sparse but continuous cultural material was found from the surface to 100 to 120 cmbs, with a total of 49 pieces of debitage, 35 (9.9 kg) pieces of small burned rocks, and two biface fragments (Table 5.28). In these upper levels, the highest artifact frequencies were noted between 20 to 50 cmbs; however, this portion of the deposit has probably been disturbed by cultivation. Few items were recovered below 100 cmbs, but included five pieces of debitage from levels 14 and 20, three burned rocks (2.7 kg) at 170 to 200 cmbs, and 22 mussel shells with 18 between 160 ot 170 cmbs. The top of the shell lens was encountered near 158 cmbs and extended to about 165 cmbs. Most shells were concentrated along the southeastern edge of the unit, in an area measuring 50 cm north-south x 20 cm east-west (maximum excavated dimensions); but one shell was noted at the same elevation in the opposite trench wall 150 cm east of this test pit. Of the 18 shells recovered, all were horizontally laid and no

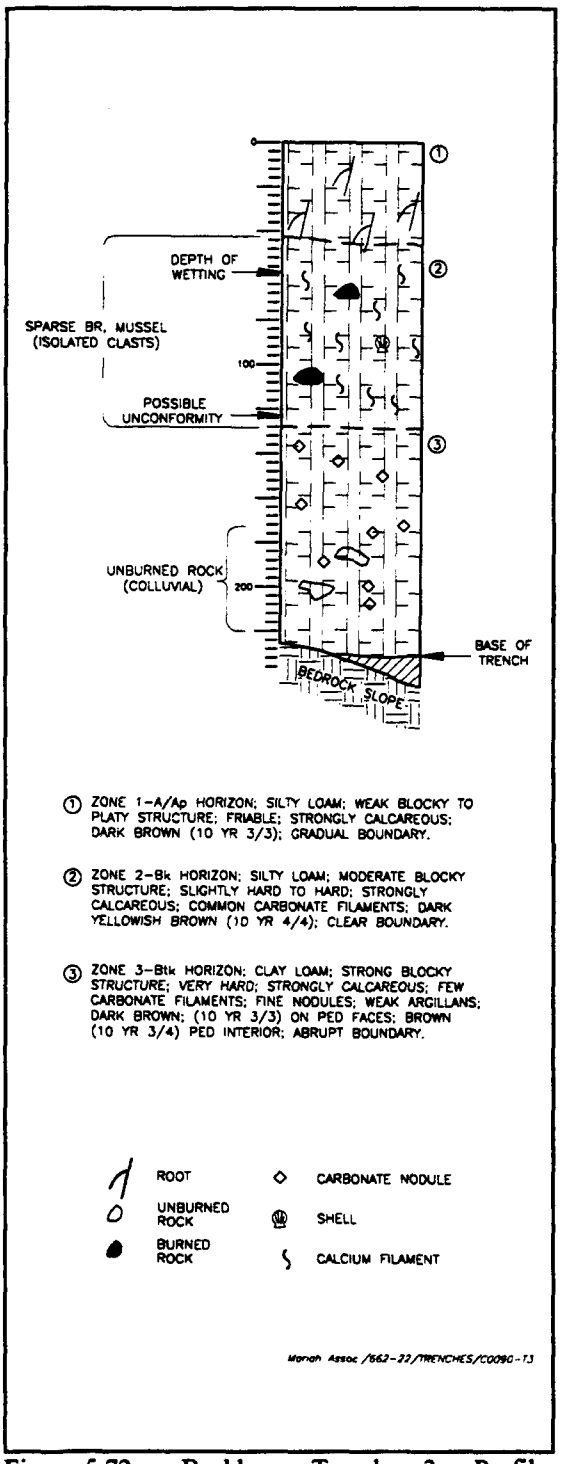


Figure 5.72 Backhoe Trench 3 Profile, 41CV90.

cultural material was recovered in association. Aside from the trench bisection, no other disturbances were apparent. The unit was sterile below 200 cmbs; excavation terminated at 230 cmbs.

Test pit 4 was offset from the west wall of BT 7, over a few burned rocks exposed in the trench profile and dug to 140 cmbs. Very sparse (n=6) and patchy lithics and burned rocks (n=17; 5.5 kg) came from five of the 14 levels. Cultural items were concentrated between 10 to 40 cmbs and between 70 to 110 cmbs.

5.15.2.2 Excavations in the Cottonwood Creek T_0 Terrace

Test pit 1 was an isolated unit excavated to 200 cmbs on the low T_0 surface along Cottonwood Creek. It revealed a thick deposit of grayish-brown loam that exhibited an A-Bk profile, overlying a reddish brown sandy loam that either represents beveled Pleistocene terrace deposits (Jackson alluvium) or colluvial deposits derived from the Jackson fill. Two pieces of debitage, one from 40 to 50 cmbs and one from 130 to 140 cmbs; plus 17 burned rocks including 15 (1.2 kg) between 30 to 70 cmbs and one (0.3 kg) between 140 to 150 cmbs were recovered.

Test Pit 2 was situated on a narrow peninsula of the T_0 surface that jutted out into a meander bend of Cottonwood Creek and excavated to 200 cmbs. It revealed a thick A-Bk in gray-brown loam and is interpreted as an inset of Ford alluvium derived from Cottonwood Creek. Only six pieces of debitage, one bone fragment, one dart point fragment, and eight burned rocks (3.6 kg) were recovered, all between 100 and 170 cmbs. The single bone fragment was from 90 to 100 cmbs. The burned rock appeared in two concentrations; three pieces (2.1 kg) between 70 to 100 cmbs and five pieces (1.5 kg) between 140 to 170 cmbs. The medial section of an unidentified dart point was from 160 to 170 cmbs.

Table 5.28 Artifact Recovery by Test Pit, 41CV90.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	3	0.3	0	0	0	0	0	0	0	-	unspec.
	5	-	5	0.3	1	0	0	0	0	0	0	-	unspec.
	6	-	3	0.3	0	0	0	0	0	0	0	-	unspec.
	7	-	4	0.3	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9-13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	15	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	16-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		16	1.5	1	0	0	0	2	0	0		
2	1-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	9	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	10	-	1	0.3	0	1	0	0	0	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	16	-	3	0.3	0	0	0	0	4	0	0	-	unspec.
	17	-	1	0.3	0	0	0	0	0	1	0	?dart	unspec.
	18-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		8	3.6	0	1	0	0	6	1	0		
3	1	-	1	0.9	0	0	0	0	5	0	0	-	unspec.
	2	-	5	0.9	0	0	0	0	3	0	0	-	unspec.
	3	-	4	0.9	0	1	0	0	13	0	0	-	unspec.
	4	-	6	0.9	0	0	0	0	4	0	1	-	unspec.
	5	-	9	0.9	0	0	0	0	11	0	0	-	unspec.
	6	-	1	0.9	0	0	0	0	2	0	0	-	unspec.
	7	-	1	0.9	0	0	0	0	2	0	0	-	unspec.
	8	-	1	0.9	1	0	0	0	3	0	0	-	unspec.
	9	-	4	0.9	1	0	0	0	1	0	1	-	unspec.
	10	-	2	0.9	0	0	0	0	5	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	16	-	0	0.0	3	0	0	0	0	0	0	-	unspec.
	17	-	0	0.0	18	0	0	0	0	0	0	-	unspec.
	18	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	19	-	1	0.9	1	0	0	0	0	0	0	-	unspec.
	20	-	1	0.9	1	0	0	0	3	0	0	-	unspec.
	21-23	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		38	12.6	25	1	0	0	54	0	2		
4	1	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	2	-	2	0.3	0	0	0	0	1	0	0	-	unspec.
	3	-	3	0.9	0	0	0	0	0	0	0	-	unspec.
	4	-	1	0.3	0	0	0	0	2	0	0	-	unspec.
	5	-	0	0.0	1	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	0	0.0	5	0	0	0	0	0	0	-	unspec.
	8	-	4	1.5	3	0	0	0	1	0	0	-	unspec.
	9	-	4	1.5	0	0	0	0	0	0	0	-	unspec.
	10	-	3	1.0	1	0	0	0	0	0	0	-	unspec.
	11	-	0	0.0	1	0	0	0	1	0	0	-	unspec.
	12	-	0	0.0	1	0	0	0	0	0	0	-	unspec.
	13-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		17	5.5	12	0	0	0	6	0	0		

5.15.3 Analysis and Interpretation

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, the excavation proveniences from the T_0 surface and T_1 surface are grouped together as a single Analytical Unit. The 10 backhoe trenches did not yielded obvious cultural features, although a mussel shell lens was detected in BT 1 at 160 cmbs. The four test pits yielded 68 pieces of debitage, two bone fragments, 38 mussel shells, two biface fragments, and one dart point fragment.

The 68 specimens of lithic debitage represent seven identified and seven unidentified chert types with 24% of the materials identifiable (Table H-131). The most abundant chert types are the indeterminate light brown and light gray types which represent more than twice any other chert type. The North Fort materials dominate with five types and 81% of the debitage. In total, the indeterminates occur in higher than expected frequencies, Fort Hood Yellow and Gray/Brown Green occur in expected frequencies, while the other cherts occur in less than expected amounts (Table H-132). Seventy percent of the debitage is tertiary in nature with the highest frequency of these specimens found in the indeterminate light gray chert category (Table H-133). Only the smallest size category is not represented, and the highest frequency is in the 1.2 to 1.8 cm size category.

The finished biface was manufactured out of an indeterminate mottle chert, the late stage biface was of Anderson Mountain Gray, and the medial point section was of Heiner Lake Tan. The latter two material types from the other side of the base and near of these materials were prominent in the recovered debitage. This implies these tools came into the site as finished tools and not manufactured at this locality.

5.15.4 Conclusions

The majority of Subarea A appears to be underlain by Fort Hood alluvium deposited by Cowhouse Creek, although a thin, welded drape of West Range alluvium may overlie it in places. The rear of the terrace, adjacent to the colluvial slope and T_2, consists of a variety of colluvial and swale fill sediments. A discontinuous, inset T_0 surface is present adjacent to Cottonwood Creek, and appears to be underlain by Ford alluvium. Cultural deposits are sparse, lack features, do not appear to be strongly stratified, and have little promise for providing sizable data sets.

On this basis, we conclude that site 41CV90 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

5.16 SITE 41CV98

In mid-December 1994, we conducted formal test excavations at prehistoric archeological site 41CV98. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two trenches were mechanically excavated and two test pits totaling 2.9 m^3 were hand excavated. Test excavations demonstrate the presence of intact, buried, and stratified Late Archaic and Late Prehistoric I components which have significant potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.16.1 Introduction

5.16.1.1 Site Location and Description

Site 41CV98 is in west central Fort Hood, Training Area 36. The site is bounded on the west, north, and east by a meander of Cottonwood Creek and by a colluvial toeslope on the south (Figure 5.73). It is a small prehistoric open camp measuring 40 x 25 m in 1993, with a east-west long axis and covering an area of only 0.1 hectare (0.3 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.16.1.2 Previous Work

The site was first recorded by Herring, Baskin, and Tucker on 13 March 1976 as a burned rock midden. Mussell shell, burned rock, flakes, snails, and bone were observed. Thomas and Tucker revisited the site on 6 November 1976, observed the same types of cultural materials and collected two projectile points, a complete Castroville and a complete Ensor, and a 5 cm stone with scratched cross hatching. Mesrobian and Michaels re-recorded the site on 24 March 1985 as a burned rock concentration with lithics (Carlson et al. 1988). One unnotched dart point resembling a Kinney point was collected and burned rock, mussel shell, and debitage were noted. All surveys noted vandalism and erosion as site disturbances. Abbott and Kleinbach revisited the site on 21 September 1992 and completed archeological and geomorphological assessment forms and revised the site map. This site consists of a Holocene alluvial terrace on the inside of a looping incised meander (Figure 5.74). The terrace is separated from the valley wall by a relatively straight chute channel, now largely infilled with dark, fine grained deposits. Three burned rock concentrations (Fs 1, 2, and 3), all associated with an erosional cutoff chute channel, were identified on the surface and mapped in. A few flakes, mussel shell, and bone fragments were associated with these features. Vandalism, military vehicles, and erosion had impacted the site. Because this terrace site had potential for intact cultural deposits, five shovel tests (STs 1 through 5) were excavated to between 60 and 90 cmbs. Shovel tests 1, 3, 4, and 5 yielded seven pieces of cultural material, with the majority from 40 to 60 cmbs. Based on positive shovel testing results, the site was determined to contain subsurface cultural deposits and potentially eligible for NRHP inclusion. A minimum testing effort of 2 to 4 m^2 of manually excavated test pits and at least one backhoe trench were recommended to determine NRHP eligibility (Trierweiler 1994:A707-709).

5.16.1.3 New Work

On 17 November 1994, G. Mehalchick (TRC Mariah Associates) and Gil Eckrich (Fort Hood, Fish and Wildlife) field checked the site because it was possibly within the endangered species habitat. Upon inspecting the areas in which excavations were to be undertaken, Eckrich granted permission for work to proceed. Formal testing was completed in late mid-December, 1994 through excavation of two backhoe trenches and two test pits manually excavated offset from each trench. Unit sizes and depths are presented in Table 5.29.

5.16.2 Results

5.16.2.1 Excavations in the Alluvial Terrace

Backhoe trench 1 was on the west side adjacent to one of the previously recorded burned rock concentrations (F 3). This trench revealed a 2.5 m thick accumulation of loamy sediments over sandy gravel, and exhibited an A-Bk-BC-C profile (Figure 5.75). The A horizon was about 40 cm thick and consisted of massive, very dark grayish brown (10YR 3/2) sandy loam. Tree roots were common in this horizon, very weak carbonate filaments occurred occasionally, and a few dispersed burned rock clasts were present in the matrix. Zone 2 consisted of dark grayish brown (10YR 4/2), blocky, slightly gravelly sandy loam containing abundant carbonate films and filaments, and was 170 cm thick. Dispersed burned rock and mussel shell were noted to depths of about 130 cmbs, and a large burned rock hearth (F 4) was

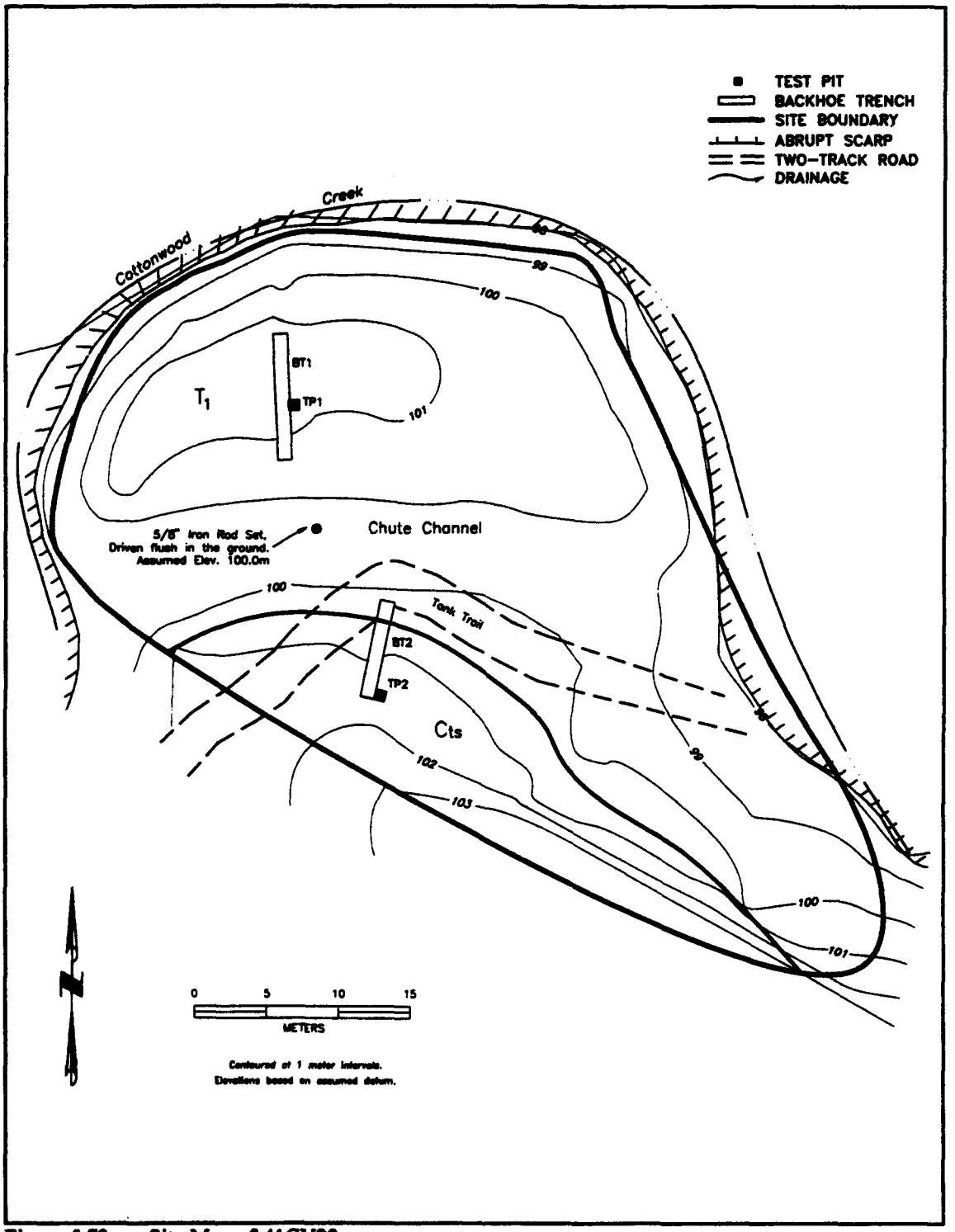


Figure 5.73 Site Map of 41CV98.



Figure 5.74 View Southwest with Cottonwood Creek in Foreground, 41CV98.

exposed in both walls of the trench at about 60 cmbs. Zone 3 consisted of 55 cm of brown (10YR 4/3), massive sandy loam, and graded into sandy channel gravels at the base of the trench.

Test Pit 1, offset from the east wall of BT 1, was above the eastern part of the F 4 hearth, and excavated to 120 cmbs. A few small burned rocks were recovered from the upper 20 cm. From 20 to 33 cmbs, a hearth (F 5) was in the western side. Feature 5 was composed of one to two layers of 129 horizontally laid, 5 to 10 cm thick, angular burned rocks (29 kg) and a single large unburned limestone slab (Figure 5.76). This large unmodified slab measured about 60 cm long x 30 cm wide x 7 cm thick and was amongst the pile of burned rock. No sign of a pit was below the rocks and no other cultural material was found in association. Feature 5 yielded very little charcoal, but a small (0.15 g) sample provided a $\delta^{13}C$ (-26.2‰) corrected assay of 1220 ± 60 BP (Beta-83344). The dated material was identified as Live Oak wood. The following two levels contained a few small burned rocks, a flake, and a mussel shell. The top of F 4 was encountered at 62 cmbs and the base was at 98 cmbs (Figure 5.77). Feature 4 represented the remains of a circular to oval, basin-shaped, rock lined hearth with a diameter of at least 120 cm and a depth of at least 35 cm (Figures 5.78 and 5.79). About 166 angular and tabular burned rocks (50 kg), charcoal chunks, and 19 mussel shells were recovered from this hearth. Ten flakes were found in the matrix adjacent to this feature. Feature 4 yielded nearly 300 g of charcoal with one 99 g sample providing a $\delta^{13}C$ (-24.0‰) corrected assay of 1430 ± 70 BP

Table 5.29 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	0.8	2.9	T1 terrace
BT 2	10	0.8	2.9	toeslope
TP 1	1.00	1.00	1.20	T1 terrace
TP 2	1.00	1.00	1.70	toeslope

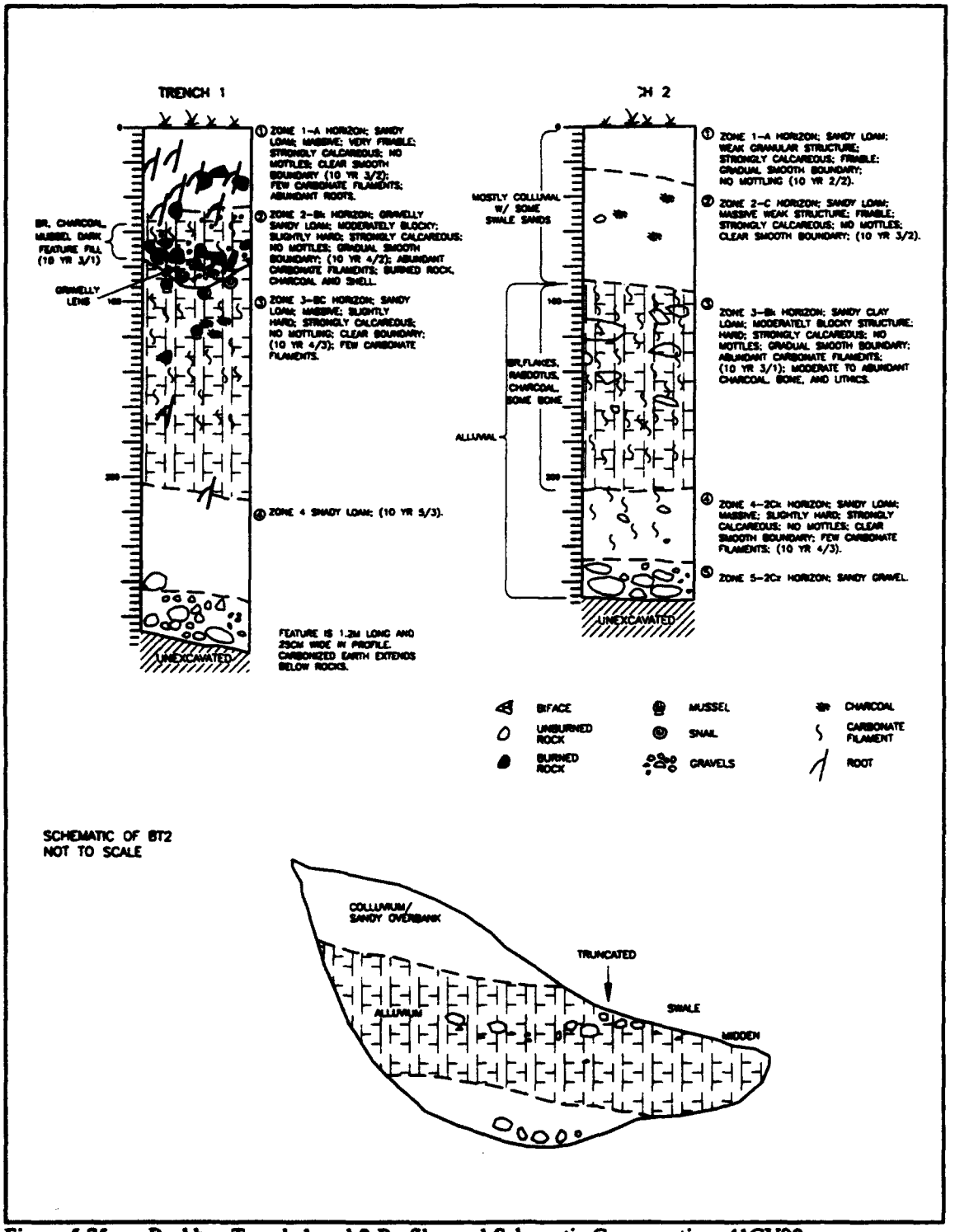


Figure 5.75 Backhoe Trench 1 and 2 Profiles and Schematic Cross-section, 41CV98.

(Beta-83427). The sample was again identified as Live Oak wood. From 100 to 120 cmbs, a single flake and several mussel shells were found, directly below F 4 and in an apparent animal burrow. The part of F 4 in the west wall of BT 1 was profiled but not excavated.

5.16.2.2 Excavations in the Toeslope

Trench 2 was excavated on the toeslope and adjacent to a previously recorded burned rock concentration (F 2). The trench revealed two stacked depositional units consisting of about 85 cm of colluvial sandy loam resting on a buried, truncated alluvial paleosol. The upper colluvial deposit consisted of very dark brown to very dark grayish brown (10YR 2/2 to 10YR 3/2) granular to weak blocky sandy loam, and exhibited an A-C profile 85 cm thick. This deposit was present at the upslope end of the trench only; its wedge morphology was accentuated by erosional scour in the meander cutoff chute at the downslope end of the trench. The truncated alluvial deposit beneath the colluvium consisted of about 160 cm of fine-grained sediments over basal gravels, and exhibited a Bk-Ck-C2 profile. The Bk horizon was 125 cm thick and consisted of very dark gray (10YR 3/1), blocky, sandy clay loam. It contained abundant carbonate films and filaments and relatively abundant burned rock, flakes, charcoal and bone. Trench profiles revealed that F 2 is actually a 25 to 35 cm thick burned rock midden. The midden extended from the surface at the north end of the trench to about 120 to 155 cmbs at the mid-point of the trench. At the south end of the trench, separated lenses of burned rocks were exposed. The lower part of the trench revealed a massive, brown (10YR 4/3) sandy loam over sandy gravel.

Test Pit 2 was at the south end of BT 2, above the lenses of burned rock, and excavated to a limestone outcrop bench at 170 cmbs. Only a few small burned rocks were recovered from the upper 80 cm of colluvial deposits. An alluvial fill was encountered at 80 cmbs. A few flakes and burned rocks, and a bone fragment were found from 80 to 90 cmbs (Table 5.30). The eastern part of a

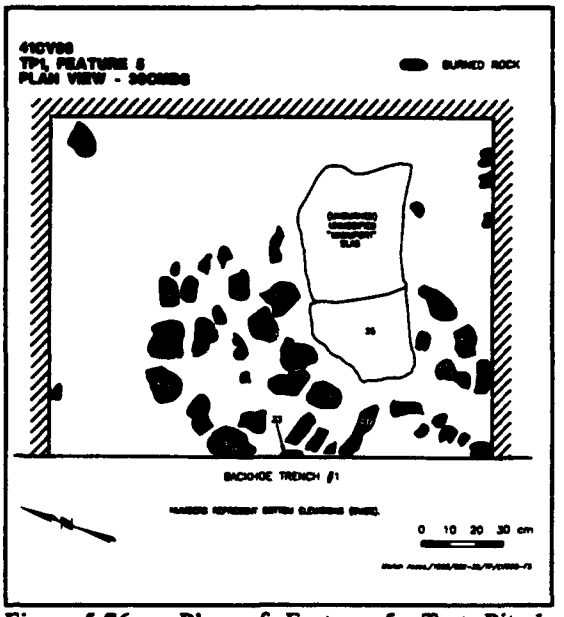


Figure 5.76 Plan of Feature 5, Test Pit 1, 41CV98.

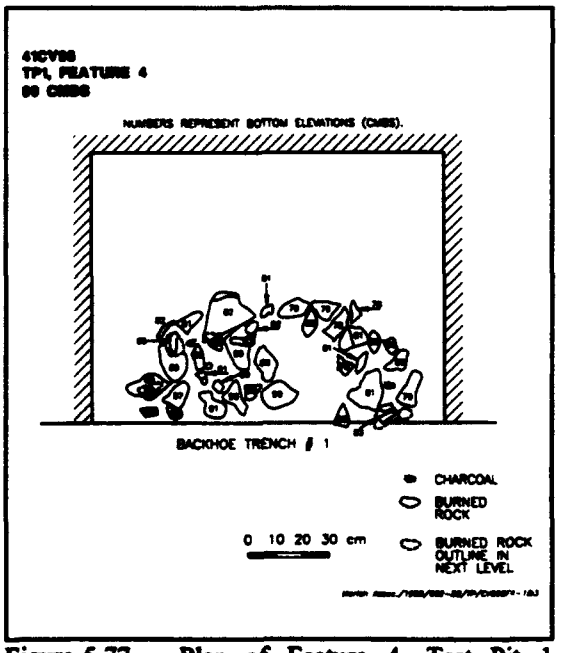


Figure 5.77 Plan of Feature 4, Test Pit 1 Profile, 41CV98.

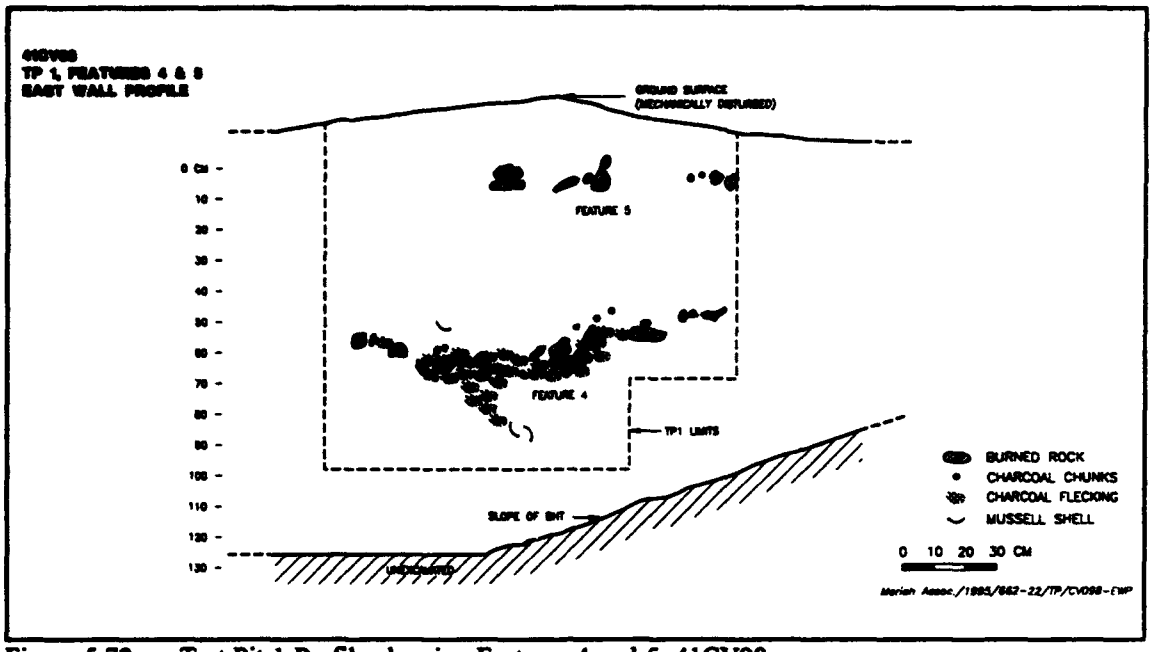


Figure 5.78 Test Pit 1 Profile showing Features 4 and 5, 41CV98.

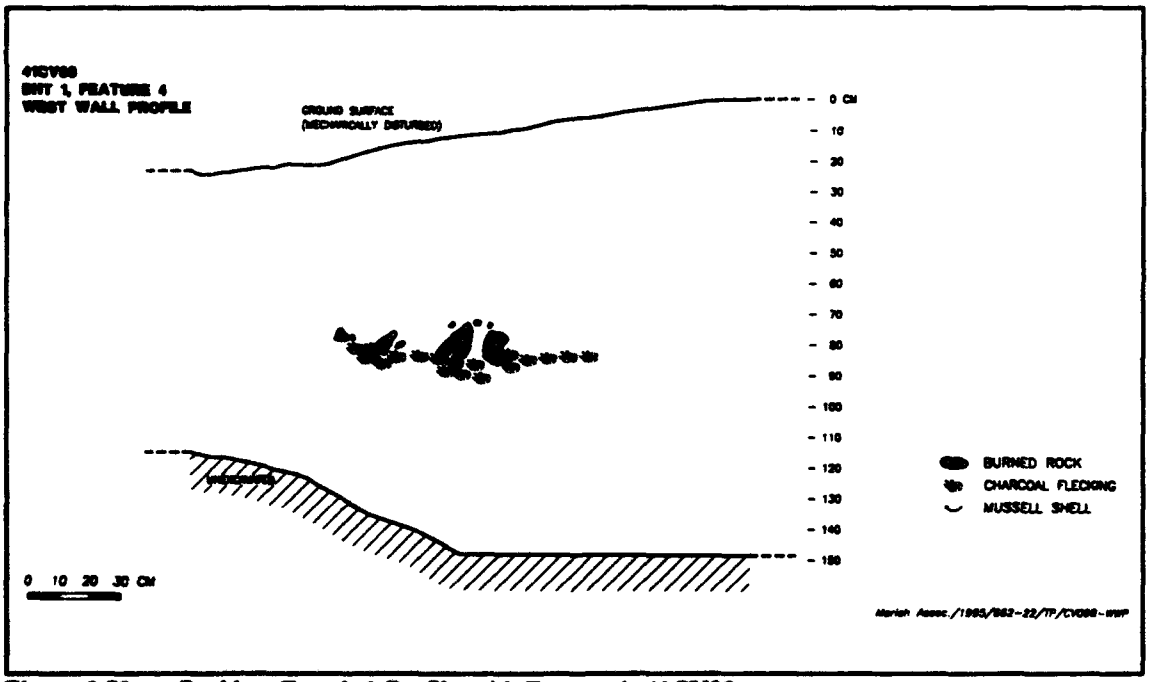


Figure 5.79 Backhoe Trench 1 Profile with Feature 4, 41CV98.

Table 5.30 Artifact Recovery by Test Pit, 41CV98.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	5	1.5	0	0	0	0	0	0	0	-	mixed
	3	F5	0	0.0	0	0	0	0	0	0	0	-	LA
	4	F5	129	29.0	0	0	0	0	0	0	0	1220±60	LA
	5	-	3	0.5	0	0	0	0	0	0	0	-	LA
	6	-	7	1.0	1	0	0	0	1	0	0	-	LA
	7	F4	29	2.3	5	0	0	0	6	0	0	-	LA
	8	F4	0	0.0	7	0	0	0	2	0	0	-	LA
	9	F4	166	50.0	2	0	0	0	2	0	0	-	LA
	10	F4	0	0.0	9	0	0	0	1	0	0	-	LA
	11	F4	0	0.0	11	0	0	0	1	0	0	1430±70	unspec.
	12	-	0	0.0	6	0	0	0	0	0	0	-	unspec.
	Total		339	84.3	41	0	0	0	13	0	0		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	1	0.5	0	0	0	0	0	0	0	-	unspec.
	3	-	1	0.5	0	0	0	0	0	0	0	-	unspec.
	4-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	2	0.5	0	0	0	0	0	0	0	-	unspec.
	8	-	2	1.0	0	0	0	0	0	0	0	-	unspec.
	9	-	5	4.0	0	0	0	0	2	0	2	-	LP-I
	10	F6	52	19.0	0	1	0	0	3	0	0	-	LP-I
	11	F6	3	1.0	0	0	0	0	1	0	0	-	LP-I
	12	-	7	3.0	0	13	0	0	5	0	0	-	LP-I
	13	F7	15	8.5	1	0	0	0	0	0	0	1060±60	LP-I
	14	-	1	0.5	0	0	0	0	0	0	0	-	unspec.
	15	-	2	1.5	0	0	0	0	0	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	17	-	1	26.0	0	0	0	0	0	0	0	-	unspec.
	Total		92	66.0	1	14	0	0	11	0	2		

circular, basin shaped hearth (F 6) was encountered from 94 to 110 cmbs, in the upper rock lens seen in BT 2 profile. The base of the hearth was rock-lined, while the middle part contained dense charcoal, and the top contained a single row of staggered burned rocks (Figure 5.80). In TP 2, the excavated part of the hearth (45 x 35 cm) was composed of 24 blocky and tabular burned rocks (7 kg). Recovery from the matrix adjacent to the hearth included 31 burned rocks, four flakes, and a bone fragment. Below F 6, 14 bone fragments, four flakes, and seven burned rocks were from 110 to 120 cmbs. The eastern part of another circular and basin-shaped hearth (F 7) was encountered from 120 to 128 cmbs (Figure 6.9.8). Feature 7 consisted of a shallow basin filled with two tiers of blocky burned rocks (n=12, 7 kg; A mussel shell and a bone fragment were in the feature fill and three burned rocks were from the matrix adjacent to the hearth. Feature 7 yielded minimal wood charcoal (0.7 g) but which was nonetheless identified as Oak wood and yielded a $\delta^{13}C$ (-26.0‰) corrected assay of 1060 ± 60 BP (Beta-83343). Feature 7 appears to be in the same stratum as burned rock midden F 2 situated downslope, indicating F 2 may be the result of (or is composed of) refuse from the many small hearths. Below F 7, a few burned rocks were found amongst dense gravels from 130 to 170 cmbs.

5.16.3 Analysis and Interpretation

5.16.3.1 Definition of Analytical Units

Test pits 1 and 2 yielded four buried, intact features (Fs 4, 5, 6, and 7) and associated cultural material which represent at least four separate occupation events. These four events were divided into two identifiable time units, the Late Archaic and the Late Prehistoric I based on three charcoal dates of 1060 ± 60, 1220 ± 60, and 1430 ± 70 BP. The Late Archaic material lies between 20 to 120 cmbs in TP 1 and represent at least two events with a feature in both, whereas the Late Prehistoric I lies between 80 and 130 cmbs in TP 2 and also represents two events with a feature in each. In

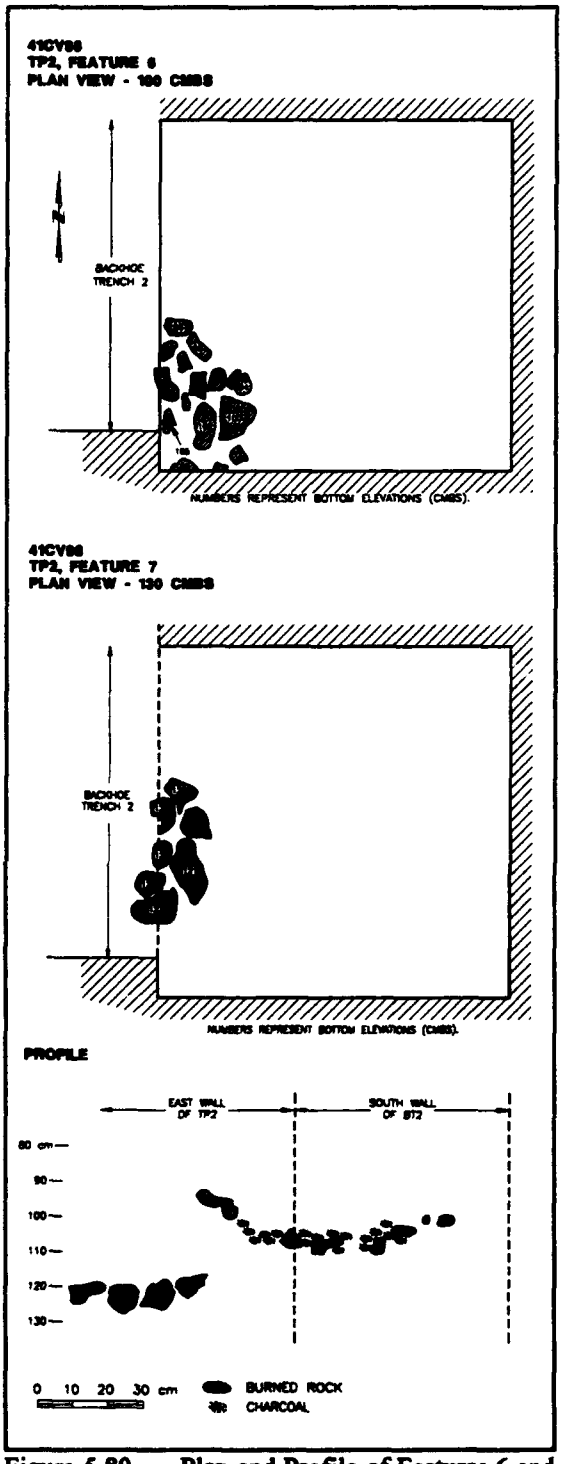


Figure 5.80 Plan and Profile of Features 6 and 7 in Test Pit 2, 41CV98.

the latter test pit the sparse cultural material above and below the Late Prehistoric I materials are unclassifiable to a specific time. A mixed zone of material lies in the top 20 cmbs of TP 1 which has been disturbed.

5.16.3.2 Late Archaic Materials

Test pit 1, 20 to 100 cmbs yielded burned rock hearth Fs 4 and 5, 12 pieces of lithic debitage, 24 identifiable mussel shell umbos, 334 burned rocks, scattered charcoal and many snail shells. No bones, diagnostic artifacts, or stone tools were recovered. Two events are represented, one each by the hearth features, with about 20 cm, 40 to 60 cmbs of sparse materials separating the two events.

The 12 specimens of lithic debitage represent four indeterminate chert types (Table H-134). These chert types are presently from unknown source areas, but may represent identified types without sufficient diagnostic attributes to type or are from separate undocumented source areas. Fifty percent are between 1.8 and 2.6 cm with the other 50% being smaller sizes. Three-quarters of this debitage are tertiary pieces with three having partial cortex (Table H-135). The sizes and cortex data indicate that middle and late stage biface reduction occurred with minimal core reduction.

The 24 umbos were identified as *Lampsilis* sp. (n=17), *Lampsilis hydiana* (n=3), *Lampsilis teres* (n=2), and Unionacea (n=2) (Table H-136). None were burned or show other kinds of cultural modification. All mussel shells were below F 5 and associated with the basin-shaped rock lined hearth, F 4.

The burned rock totaled 334 pieces and weighed 82.8 kg and were mostly (97%) from the two hearth features. Hearth F 4 yielded 195 burned rocks that weighed 52.3 kg whereas the basin-shaped rock lined hearth, F 5 yielded 129 pieces that weighed 29 kg.

Feature 4 yielded nearly 300 g of charcoal with one 99 g sample providing a $\delta^{13}C$ (-24.0‰) corrected assay of 1430 ± 70 BP (Beta-83427). A float sample yielded uncarbonized seeds and less than 25 flecks of carbonized wood. Feature 5 yielded very little charcoal with a tiny (0.15 g) sample providing a $\delta^{13}C$ (-26.2‰) corrected assay of 1220 ± 60 BP (Beta-83344).

The upper occupation appears to represent a Driftwood phase (Prewitt 1981; 1985) event which is not well documented through excavations in central Texas. The lower event is probably associated with the Twin Sisters phase (Prewitt 1981; 1985) which is also poorly represented in the central Texas archeological literature. These stacked and well stratified occupations are in rare context and therefore extremely important.

5.16.3.3 Late Prehistoric I Materials

Test pit 2, 80 to 130 cmbs, yielded two hearth features, 11 pieces of lithic debitage, two late stage bifaces, 14 bone pieces, one mussel shell umbo, 82 burned rocks and charcoal pieces. Two events are present and distinguished by hearth Fs 6 and 7, but there is little vertical space between the two events on this toe slope.

The 11 specimens of lithic debitage represent one identified (Fort Hood Yellow) and four unidentified chert types (Table H-137). The debitage ranges from 0.9 cm to 5.2 cm in size with no clear dominance of any one category. Just over half these pieces lack cortex (Table H-138) and therefore indicate multiple stages of reduction. The various stages are reflected in the different sizes of flakes present.

The two late stage bifaces are of indeterminate white chert and Gray/Brown/Green chert. The later is from the North Fort chert province. The lack of debitage of these two colors indicate these tools were brought in as finished products.

The bones were all of deer size fragments with light weathering (Table H-139). Thirty-five percent were burned and were from just below hearth F 6. The one mussel shell umbo was

identified as the left hinge of a *Cyrtonaias* species which was not represented in the Late Archaic period. This specimen was unburned but associated with basin hearth F 7. The 82 burned rocks weighed 35.5 kg and were mostly (85%) associated with the hearth features. Hearth F 6 yielded 55 burned rocks that weighed 20 kg whereas hearth F 7 yielded 15 pieces that weighed 8.5 kg.

Feature 6 yielded 34.2 g of charcoal but was not dated and the wood was not identified. A float sample from inside the hearth contained tiny uncarbonized seeds. F 7, the deeper of the two features, yielded minimal charcoal (0.7 g). This latter sample yielded a $\delta^{13}C$ (-26.0‰) corrected assay of 1060 ± 60 BP (Beta-83343). A float sample from this hearth contained only tiny (smaller than 3 mm) pieces of charcoal and no carbonized seeds or other plant materials.

Both the apparent occupations represented in this alluvial fill represent the Austin phase (Prewitt 1981; 1985). This phase has not been well documented through excavations although it is well represented here in Fort Hood. This appears to represent one of the best stratified occurrences and intact events of this period.

5.16.3.4 Mixed Materials

Only TP 1, 0 to 20 cmbs, contained materials considered mixed and these were limited to five burned rocks (2.0 kg) and no other cultural materials. These few burned rocks may have been displaced from the Late Archaic occupation immediately below or washed in with the alluvium deposits.

5.16.3.5 Temporally Unspecified Materials

Test pit 1, 100 to 120 cmbs (below the Late Archaic materials), and TP 2, 0 to 80 cmbs (above the Late Prehistoric I material) and 130 to 170 cmbs (below the Late Prehistoric I material) yielded cultural materials that were otherwise unclassifiable to a period of time and included one piece of debitage, 17 mussel shell umbos, and nine burned rocks.

The single piece of debitage was of indeterminate dark gray chert, between 1.8 and 2.6 cm in size, with partial cortex remaining. It may have been displaced from the Late Archaic occupation immediately above it in TP 1.

The 17 umbos were identified as *Lampsilis hydiana* (n=5) and *Lampsilis* sp. (n=9), and *Lampsilis teres* (n=3) (Table H-140). None of these were burned or showed other signs of human modification. All these came from just below the Late Archaic occupation in TP 1.

The 10 burned rocks weighed 30.5 kg and were from a variety of proveniences including six from above the Early Late Prehistoric occupation in TP 2, and four from below Feature 7 in TP 2.

5.16.4 Conclusions

The two backhoe trenches in different geomorphic settings revealed two depositional units: a loamy alluvial fill exhibiting an A-Bk-BC-C profile in BT 1, and a subsequent sandy to loamy colluvial unit exhibiting an A-C profile over a truncated alluvial fill deposit in BT 2. Minor recent surficial deposits are also present in the chute channel, but for the most part this channel is erosional. All cultural material was associated with the alluvial fill deposits in both trenches, which is interpreted as the West Range alluvium of Nordt (1992).

The two test pits off the side of each backhoe trench revealed at least four intact and stratified occupations, two each in each TP, with each occupation containing a burned rock feature and low artifact frequencies. No evidence of disturbance was noted in these buried occupations. Test pit 1 revealed two well separated Late Archaic occupations, presumably of the Driftwood and the Twin Sisters phases (Prewitt 1981; 1985). Test pit 2 revealed two closely spaced Early Late Prehistoric occupations probably of the Austin phase (Prewitt 1981; 1985).

On the basis of the above, site 41CV98 is evaluated as containing significant intact archeological deposits with good potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.17 SITE 41CV99

In March 1995 we conducted formal test excavations at prehistoric archeological site 41CV99. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 3.2 m^3 were manually excavated. These tests demonstrate the presence of intact, buried, and stratified cultural components dating to the Middle Archaic period which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.17.1 Introduction

5.17.1.1 Site Location and Description

Site 41CV99 is in Fort Hood Training Area 36. This small open campsite is bounded by Cottonwood Creek to the north, an unnamed tributary of Cottonwood Creek to the west, and a colluvial toeslope to the south (Figure 5.81). Several vandal holes have exposed burned rock midden debris along the western and northern sides. Maximum site dimensions, as defined in 1993, measure 45 x 30 m, with a north-south long axis. For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.17.1.2 Previous Work

The site was initially recorded by Herring, Tucker, and Baskin on 3 March 1976 as a burned rock midden. Burned rock, debitage, bifaces, shell, and animal bone were observed on the surface, resulting from vandalism. Masson and Michaels again recorded the site on 15 March 1985 as a campsite containing a burned rock midden (Carlson et al. 1988). In addition to the cultural material observed on the previous survey, a few manos and metates were observed. The site was again noted as being heavily vandalized.

Abbott and Kleinbach revisited the site on 21 September 1992. Archeological and geomorphological forms were completed and the site map was revised. Abbott and Kleinbach noted that Cottonwood Creek enters the Cowhouse Creek valley more than 1 km to the west, but turns and parallels the Cowhouse channel for several kilometers, hugging the valley margin, before flowing into the larger stream several kilometers to the east. At the site, the smaller stream is bounded by the valley wall to the south and the extensive Cowhouse terrace complex to the north. The site occupies a small landform on the south side of the Cottonwood Creek channel, across from the extensive Cowhouse terrace. Two geomorphic surfaces, tentatively identified as T_1 and T_2 terraces associated with Cottonwood Creek, were identified. Because the site had potential for intact cultural deposits in these terrace deposits, a crew returned and excavated two shovel tests (STs 1 and 2) to 60 and 50 cmbs on 29 September 1992. No disturbance was apparent in either test. Shovel tests yielded 141 specimens, including 123 pieces of debitage, three tools, an untyped dart point, and 14 bone fragments. Generally, the cultural material was distributed from 0 to 60 cmbs, with the highest frequencies from 30 to 50 cmbs. Based on these positive testing results, parts of the upper 60 cm were thought to be possibly intact, and the potential for deeply buried deposits remained

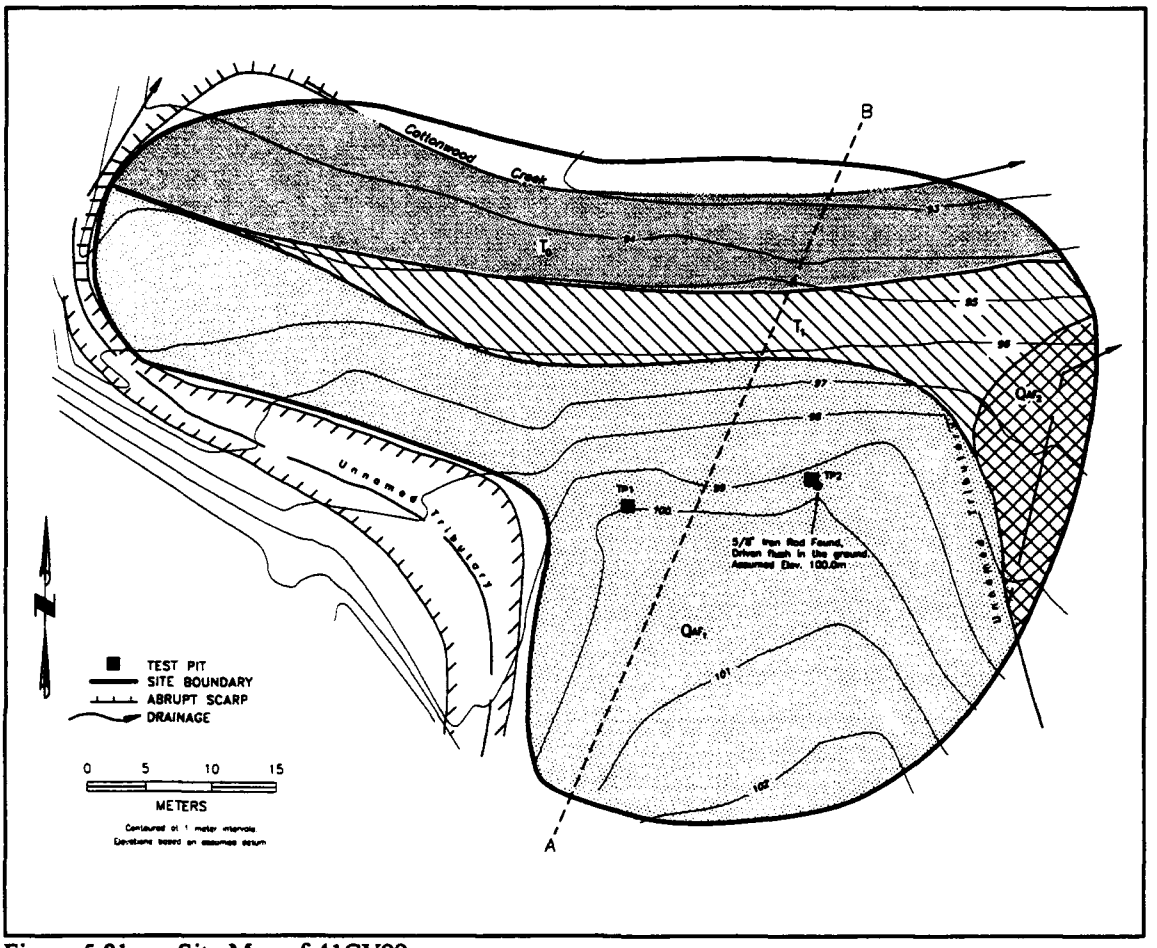


Figure 5.81 Site Map of 41CV99.

unknown. A minimum formal testing effort of one backhoe trench and 2 to 4 m^2 of manually excavated test pits was recommended to determine NRHP eligibility (Trierweiler 1994:A710-714).

5.17.1.3 New Work

On 17 November 1994, Gil Eckrich (Fort Hood, Fish and Wildlife) and Mehalchick field checked the site, since it was possibly in the endangered species habitat (Figure 5.82). Upon inspecting the areas in which excavations were to be undertaken, Eckrich granted permission for manual excavation work to proceed. Although backhoe trenching had been recommended, none could be dug because no access route could be found that would not have involved significant adverse environmental impacts, including new and deep cuts through the stream bank. To avoid these environmental impacts, testing was limited to two manually excavated test pits. Unit sizes and depths are presented in Table 5.31. Formal testing was completed in early March 1995.

5.17.2 Results

Examination of the test pit profiles and careful reexamination of surface topography revealed that the surface originally interpreted as a T_2 terrace is in fact a dissected fan (Qaf) issuing into the



Figure 5.82 Tree growth on 41CV99.

Cowhouse/Cottonwood valley from an unnamed intermittent tributary (Figure 5.83). This fan post-dates incision of the Cottonwood Creek channel into the thick early-middle Holocene (Fort Hood) Cowhouse Creek terrace, suggesting that it is predominantly late Holocene in age (i.e., West Range equivalent). The fan sediments exhibit an A-Bk profile developed in slightly gravelly, very dark brown (10YR 2/2) to brown (10YR 4/3), sandy to silty loam. The two test pits revealed a series of gently streamward-dipping, stacked cultural strata in the body of the fan. Although not tested, the previously identified T_1 surface was also revised to a T_0 surface on the basis of elevation and weak soil development.

Test pit 1 was on the Qaf surface at the northwest extremity of the site and excavated to dense gravels at 130 cmbs. The upper 10 cm yielded three flakes and six small burned rocks; however this level is interpreted as reworked vandals' spoil. The following level appeared to contain an intact occupation lens (F 1). In this 10 cm level, a single level yielded 74 small, angular, burned rocks (8 kg); over 50 flakes, 26 bone fragments, and a mussel shell umbo (Table 5.32). A small (1.6 g) sample from F 1 was identified as Oak wood and provided a $\delta^{13}C$ (-24.9‰) corrected assay of 2810 ± 110 BP (Beta-83422). Below F 1, from 20 to 30 cmbs, only three flakes and two burned rocks were recovered. The level from 30 to 40 cmbs was sterile. The top of a burned rock midden (F 2), that had been partially exposed by vandals, was at 50 cmbs and the base at 115 cmbs. Both the upper and lower boundaries were abrupt, with extremely dense burned rock defining the vertical extent. Burned rock midden F 2 yielded a total of 2,487

Table 5.31 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	1.30	alluvial fan
TP 2	1.00	1.00	1.90	alluvial fan

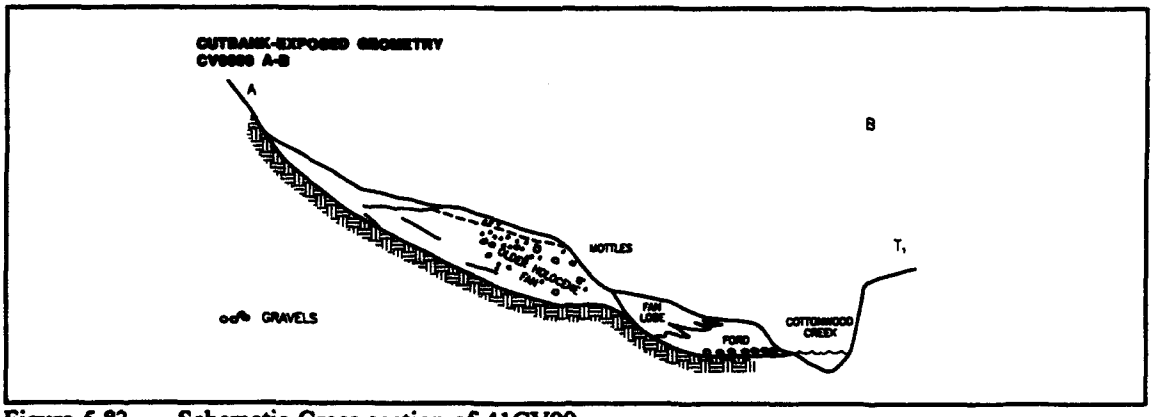


Figure 5.83 Schematic Cross-section of 41CV99.

burned rocks (313 kg), about 100 flakes, 557 bone fragments, and 64 mussel shell umbos. In addition to these materials, a Bulverde dart point base was from 90 to 100 cmbs. Blacktail jackrabbit bones from level 12, TP 1 near the bottom of F 2, yielded a $\delta^{13}C$ (-18.6‰) corrected assay of 3950 ± 50 BP (Beta-84200). Although artifact recovery was relatively high throughout the midden, levels 7 through 9 yielded the greatest frequencies of burned rock. Below the midden, gravel content increased rapidly with depth. From 115 to 130 cmbs, an unusually large number of rabbit bones (n=518), many partially burned, were among these gravels. Field notes suggest a krotovina below F 2.

Test pit 2 was at the northeast edge of the site in an apparently undisturbed area, and excavated to 190 cmbs (Figure 5.84). No evidence of disturbance was observed. The upper 10 cm was sterile. The following level contained 12 small burned rocks and a bone fragment. Recovery increased substantially at 20 to 30 cmbs, with 54 small burned rocks (2.5 kg), 3 flakes, two bone fragments, and a Ensor dart found. Below this, 12 burned rocks were from 30 to 40 cmbs. The cultural material recovered from 10 to 40 cmbs was very similar to, and probably correlates with, the discrete occupation lens (F 1) in TP 1. The following three levels were virtually devoid of cultural material. From 70 to 100 cmbs, 14 few flakes, six mussel shell umbos, and 37 burned rocks were recovered. Recovery increased markedly at 100 to 110 cmbs, where 26 flakes, 21 burned rocks, nine mussel shell umbos, and four bone fragments were found. Artifact frequencies peaked from 110 to 130 cmbs, where 232 burned rocks, over 200 flakes, 67 mussel shell umbos, and 67 bone fragments were recovered from a burned rock midden deposit (F 3). This midden continued and from 130 to 160 cmbs, recovery decreased in each consecutive level, although total return from each level remained relatively high. A small (0.6 g) charcoal sample from F 3 provided a $\delta^{13}C$ (-27.0‰) corrected assay of 3960 ± 60 BP (Beta-83345). Although the test pits were in close proximity to one another, and it was expected that the burned rock midden (F 2) would be encountered in both units, the content of the midden in TP 2 was substantially different from that of F 2, and so the context was designated as F 3. The matrix below this, from 160 to 190 cmbs, yielded few artifacts. The dense gravels encountered at the base of TP 1 were not in TP 2 and that pit was terminated at 170 cmbs.

5.17.3 Analysis and Interpretation

5.17.3.1 Definition of Analytical Units

The two TPs yielded 684 pieces of lithic debitage, 17 stone tools, six points, 702 bone fragments, 169 mussel shell umbos, 3,122 burned rocks, charcoal and snail shells. These were assigned to one time

Table 5.32 Artifact Recovery by Test Pit, 41CV99.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	6	1.0	0	0	0	0	2	0	0	-	mixed
	2	F1	74	8.0	1	26	0	0	116	0	2	2810±110	MA
	3	-	2	0.1	0	0	0	0	0	0	0	-	MA
	4	-	0	0.0	0	0	0	0	0	0	0	-	MA
	5	-	1	0.1	0	0	0	0	0	0	0	-	MA
	6	F2	165	19.0	1	1	0	0	6	0	2	-	MA
	7	F2	690	78.0	7	2	0	0	14	0	1	-	MA
	8	F2	720	92.0	5	0	0	0	4	0	0	-	MA
	9	F2	584	80.0	16	9	0	0	28	0	1	-	MA
	10	F2	208	28.0	15	12	0	0	31	1	0	Bulverde	MA
	11	F2	95	12.0	16	15	0	0	28	1	1	?dart	MA
	12	F2	25	4.0	4	141	0	0	8	0	0	3950±50	MA
	13	F2	5	0.7	0	375	0	0	2	0	0	-	MA
	Total		2575	322.9	65	581	0	0	239	2	7		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	12	0.9	0	1	0	0	0	0	0	-	MA
	3	F1	34	2.5	0	2	0	0	3	1	1	Ensor	MA
	4	-	10	2.0	0	0	0	0	0	0	0	-	MA
	5	-	1	0.3	0	0	0	0	0	0	0	-	MA
	6	-	0	0.0	2	0	0	0	0	0	0	-	MA
	7	-	0	0.0	0	2	0	0	0	0	0	-	MA
	8	-	0	0.0	0	0	0	0	3	0	0	-	MA
	9	-	16	1.7	3	0	0	0	6	0	1	-	MA
	10	F3	21	2.0	3	1	0	0	2	0	0	-	MA
	11	F3	21	2.0	9	4	0	0	26	1	0	?dart	MA
	12	F3	110	16.5	39	29	0	0	137	0	3	-	MA
	13	F3	122	13.0	28	38	0	0	131	1	2	?dart	MA
	14	F3	98	26.0	9	11	0	0	57	0	1	3960±-60	MA
	15	F3	53	12.5	7	29	0	0	57	0	2	-	MA
	16	F3	19	3.0	2	1	0	0	9	0	0	-	MA
	17	-	11	4.0	1	0	0	0	6	1	0	?dart	unspec.
	18	F4	15	3.5	1	0	0	0	6	0	0	-	unspec.
	19	-	4	0.2	0	1	0	0	2	0	0	-	unspec.
	Total		547	90.1	104	119	0	0	445	4	10		

period, Middle Archaic, based on two charcoal dates of 2810 and 3940 BP and one bone date of 3950 BP, plus a Bulverde dart point. These occurred from 10 to 160 cmbs in both TPs. The materials in the top 10 cm of each pit were assigned to a mixed category based on disturbances. The sparse material below 160 cmbs in TP 2 was not identified to a particular time period because it lacked diagnostics and dates. It may well be material moving downward from the midden above but without direct evidence it was conservatively separated out to unclassifiable.

5.17.3.2 Middle Archaic Materials

The Middle Archaic materials include 668 pieces of debitage, 5 projectile points, 17 stone tools, 701 bone fragments, 167 mussel shell umbos, 3,086 burned rocks charcoal and snail shells. These represent at least two and probably more events and include three features.

The 668 specimens of lithic debitage represent 14 identified and nine unidentified chert types of which only 22% of the materials were identified (Table H-141). Indeterminate light brown debitage contributes the most of any chert type (25%); however, the numbers of different types present make the distribution more even than in other sites. The Southeast Range, North Fort and Cowhouse materials are almost evenly represented with 33.3% (three types), 31.3% (five types), and 35% (five types), respectively. The combined unidentified cherts occur in higher than expected frequencies, while Heiner Lake Tan occur in expected frequencies, and all other cherts occur in less than expected amounts (Table H-142). The exclusion of the indeterminates results in Heiner Lake Tan, Fort Hood Yellow, Cowhouse Mottled with Flecks occurring in higher than expected frequencies, Gray/Brown/Green, Owl Creek Black, Cowhouse Mottled, and Cowhouse dark gray occurring in expected frequencies, and all other cherts are found in less than expected amounts.

The modal peak for size is 0.9 to 1.2 cm category with a more gradual drop off to the larger sizes.

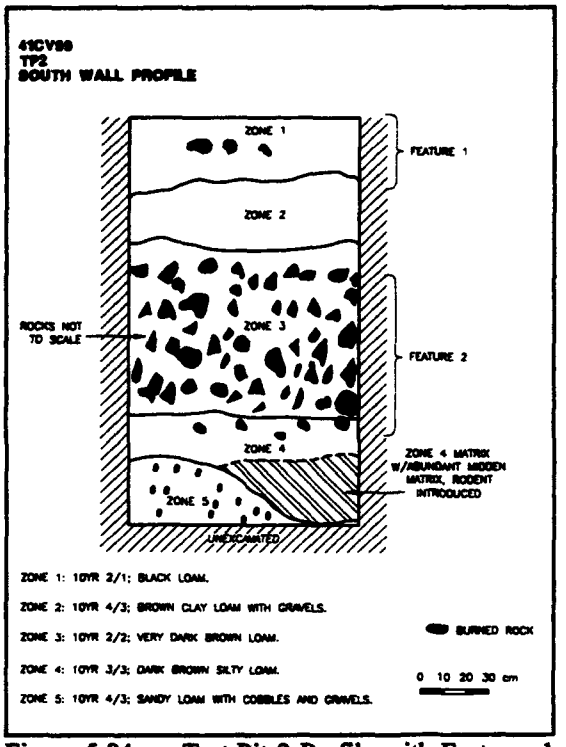


Figure 5.84 Test Pit 2 Profile with Features 1 and 2, 41CV99.

Overall, 78% of the debitage is less than 1.8 cm in size. The cortex data shows that 73% of the debitage is tertiary with a rather large amount of partially cortexed materials (26%) (Table H-143). The materials having partial cortex are the highest in the 1.2 to 1.8 cm size category; experimental work (Tomka 1990:222) indicates this is a dominate size for debitage produced during biface reduction.

The five points include a proximal Bulverde of Gray/Brown/Green from F 2, a complete Heiner Lake Tan Ensor from F 1, and three untyped dart point fragments made of indeterminate mottled (n=2), and one indeterminate light brown chert, two from F 3 and one just below F 3 (Table H-144).

The 17 stone tools consist of five utilized flakes, five edge modified flakes, one medial side scraper,

two middle stage bifaces fragments, two late stage biface fragments, a complete Type A chopper, and a complete crushing/abrading stone (Table H-145). These were made of 53% indeterminate materials of various colors, and eight identifiable types including Heiner Lake Translucent Brown (n=1), Heiner Lake Tan (n=3), Cowhouse Mottled (n=1), Cowhouse Gray (n=1), Cowhouse Mottled/flecked (n=2). The two major known chert provinces, North Fort and Southeast range were utilized nearly equally. This is roughly similar to the debitage frequencies without the color range. These tools were generally split between Features 2 (29%) and 3 (47%), whereas F 1 yielded two edge modified pieces (12%).

The 701 bone fragments represent Leporidae (n=227), canis (n=2), *Antilocapra americanus* (n=1), *Odocoileus sp.* (n=10) *Lepus californicus* (n=186), *Sylvilagus sp* (n=58), Testudinata (n=4), Emydidae (n=1), small mammals (n=4), small to medium mammals (n=48), medium mammals (n=3), medium to large mammals (n=22) large to very large mammals (n=106) and a few unclassifiable (n=28) (Table H-146). The majority (67%) of these remains represent rabbits whereas another 24% represent deer size animals. A total of 31% specimens are burned with 28% exhibiting spiral fractures. About 52% of all rabbit elements were burned and therefore indicate cultural exploitation and modification. These rabbit elements conservatively indicate at least 15 individuals present with twice as many black-tailed jackrabbits as cottontails. Deer and deer size elements were the only bones recovered in F 1. Deer and deer size elements dominated F 3, although at least two rabbit elements were identified. This is by far the most rabbits encountered at any site of any age at Fort Hood. Rabbits and deer size animals served as the principle meat resources while other species supplemented these.

The umbos represent eight different bivalve species including *Amblema* sp. (63%), *Lampsilinae* sp. (7%), *Quadrula* sp. (3%), *Megalonaias nervosa* (1%), *Cyrtonaias* sp., *Lampsilis hydiana*, *Potamilus purpuratus*, and *Toxolasma* sp. (each less than 1%) with numerous unknown - Unionacea (21%) specimens (Table H-146). Only three specimens were burned. Left and right valves were nearly equally represented. None of the umbos were in the discrete occupation zone, F 1, near the surface which dated to 2810 BP. About 37% were in F 2, whereas F 3 yielded about 62% and dated to 3940 BP. Each of these later two features yielded about the same percentages of the two dominate groups, *Amblema* sp. and Unionacea.

The 3,086 burned rocks weighed 404.3 kg and were in each of the three features. Feature 1, the occupation zone in both TPs, yielded 108 burned rocks that weighed 10.5 kg. Feature 2, the buried burned midden deposit in TP 1, yielded 2,492 burned rocks that weighed 421.7 kg. Feature 3, the hearth buried in TP 2 yielded 444 burned rocks that weighed 75 kg. The burned rock in F 1 averaged 10.3 kg, nearly twice the size of that in Fs 2 (5.9 kg) and 3 (5.9 kg).

Charcoal samples from these deposits totaled 2.3 g. A 1.6 g sample from F 1 was identified as Oak wood and provided a $\delta^{13}C$ (-24.9‰) corrected assay of 2810 ± 110 BP (Beta-83422). Blacktail jackrabbit bones from level 12, TP 1 near the bottom of F 2, yielded a $\delta^{13}C$ (-18.6‰) corrected assay of 3950 ± 50 BP (Beta-84200). Two float samples from near the top and bottom of F 2 yielded tiny charred wood fragments and two uncarbonized seeds and a 0.6 g sample from F 3 was of indeterminate wood and provided a $\delta^{13}C$ (-27.0‰) corrected assay of 3960 ± 60 BP (Beta-83345). Two float samples from near the top and bottom of F 3 yielded no carbonized plant remains.

Feature 1, dating to 2810 BP, places this intact buried occupation zone into the Round Rock phase (Prewitt 1981; 1985) associated with Pedernales points. However, an Ensor point was recovered from this occupation in TP 2 and therefore appears out of context. Features 2 and 3 appear to be nearly the same age and could represent the same buried occupation zone. The obtained ages place this event in the Marshall Ford phase (Prewitt

1981; 1985) associated with Bulverde points. Test pit 1, between 90 to 100 cmbs and near the middle of the midden, yielded a Bulverde point, whereas other point fragments were unidentifiable.

5.17.3.3 Mixed Materials

The mixed material from the top 10 cmbs of each test pit includes only two pieces of lithic debitage, and no other cultural material. The two specimens, both tertiary flakes, are indeterminate dark brown chert in the 0.9 to 1.2 cm in size category, whereas the second is indeterminate light brown chert, 1.2 to 1.8 cm in size.

5.17.3.4 Temporally Unspecified Materials

These materials include 14 pieces of lithic debitage, one dart point fragment, one bone fragment, two mussel shell umbos, and one burned rock. These may not represent a single occupation and may be disturbed materials below the Middle Archaic occupations immediately above.

The 14 specimens of lithic debitage represent three identified and five unidentified chert types with just under half of the assemblage identifiable (Table H-147). Only Heiner Lake Tan has more than two specimens represented. All types were in expected quantities when the indeterminates were included. When the indeterminates were excluded, Heiner Lake Tan occurs in higher than expected frequencies, and the other two types occur in expected amounts (Table H-148). The highest frequency of debitage is in the 1.2 to 1.8 cm size category. Sixty-four percent of the debitage is tertiary (Table H-149). The sample size for this component is too small to make any meaningful conclusions. These specimens were below F 3.

The one point fragment is a medial section of a Fort Hood Yellow dart point. It was recovered in level 17 of TP 2 immediately below F 3.

The one bone was an unidentifiable, burned long bone with a spiral fracture that represented a large to very large mammal, probably of deer size (Table H-150). The two umbos were identified as *Amblema* sp. and Unionacea. Neither were burned or showed other evidence of human alterations.

5.17.4 Conclusions

This site is developed in a dissected alluvial fan of late Holocene age. Although much of the upper surface has been vandalized, cultural strata extend to depths of almost 200 cmbs, and are largely intact. The two test pits revealed at least two intact and stratified Middle Archaic occupations containing multiple burned rock features and abundant artifacts and ecofacts. A near surface occupation zone (F 1) dated to 2810 BP indicates a probable Round Rock phase event, although no diagnostic tools were recovered. Feature 2, a burned rock midden with a Bulverde point and F 3, a hearth, may represent the same 3950 BP occupation of the Marshall Ford phase (Prewitt 1981; 1985). Middle Archaic occupations are not well represented at Fort Hood and this intact, multiple event, and well stratified site is one of the best defined. The bone preservation is exceptional and could make significant contributions to the subsistence pattern and seasonality.

On this basis, site 41CV99 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.18 SITE 41CV115

In November 1994 we conducted formal test excavations at prehistoric archeological site 41CV115. Testing was designed to evaluate eligibility of a rockshelter for inclusion to the NRHP. Two test pits totaling 1.3 m^3 were manually excavated. The test excavations demonstrate the presence of buried stratified cultural components in good context with Late Prehistoric II materials directly above Late Prehistoric I materials. These deposits have high potential to inform on key research questions including prehistoric technological and economic systems. As a result, the rockshelter is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.18.1 Introduction

5.18.1.1 Site Location and Description

Site 41CV115 is in northwestern Fort Hood, Training Area 52. This very large lithic resource procurement site and associated rockshelter site is on the uplands between the heads of Turnover Creek and Shoal Creek. Maximum site dimensions, as defined in 1993, measure 1,500 x 1,200 m, with an east-west long axis, and covering an area of about 180 hectares (445 acres). For purposes of analysis, the site is considered a member of the Shoal/Turnover site group.

5.18.1.2 Previous Work

This site was first recorded by Thomas on 23 October 1976 as a 500 x 400 m secondary lithic workshop. A high frequency of debitage and bifaces was observed. Erosion on the slopes was the only noted site disturbance. From 30 October through 4 November 1986, Dureka and Strychalski recorded the site as an extremely large (1,350 x 1,100 m) lithic procurement area, with twelve sterile overhangs and a 22 x 8 m rockshelter (Mueller-Wille and Carlson 1990a). Natural chert, debitage, hammerstones, scrapers, bifaces, and scattered burned rock was observed in high frequencies. Two dart point fragments and a mano were collected. No artifacts were observed in the rockshelter, but scattered burned rock was in a small drainage just below the shelter. The procurement area was estimated to be 55% disturbed by vehicular traffic and erosion, and the rockshelter was estimated to be 80% disturbed by roof fall and erosion. On 19 January 1988, Pry and Peterson monitored 41CV115 and lumped it with site 41CV114 immediately to the south, to form a 2,590 x 600 m "mega-site." It is not clear which trinomial designation was applied to the new site. The site was estimated to be 95% disturbed by erosion and vehicular traffic.

On 19 May 1993, Kleinbach and Abbott revisited and reevaluated the 41CV114/115 "mega site" and divided the 41CV115 part into two subareas (A and B) based the potential for intact cultural deposits. Field work was conducted under the assumption that 41CV114 and 41CV115 were to be treated as a single site, as indicated by the most recent site records. Following field work however, the data from the 41CV114 and 41CV115 were separated and reported individually.

Subarea A subsumed the upland surface which was mantled with soils that varied from a thin, discontinuous stony clay loam through which much bare bedrock was visible to rubified, residual soils developed in rubified stony clay loam. Sheet erosion was pervasive and was accompanied by some gullying and mass movement. Debitage, hammerstones, and bifaces occurred in abundant numbers throughout this subarea. Subarea A was evaluated for its potential to address questions of chert procurement and reduction. One chert zone was mapped as covering most of the upland surface, and three impact zones were delineated. bOn the western side, Impact Zone 1 was judged more than 75% destroyed by vehicle traffic and was excluded from resurvey. Impact Zones 2 and 3, were less than 50% destroyed and so a survey crew completed 803 observations along 79 transects in Impact Zone 2 and 21 transects in Impact Zone 3.

Subarea B consists of the single north-facing rockshelter (designated shelter A) at the northeast periphery of the site. Figure 5.85 shows the shelter in the background with heavy vegetation in the foreground. It measured roughly 22 x 8 m and had a ceiling 125 cm high. The sediment in the shelter consisted of stony, tan lime silts mixed with roof spall. Little internal stratification was apparent in the relatively poor exposures. Some influx of external sediment was apparent by a deposit of stream cobbles on the southern side of the shelter. A few cultural flakes were observed in the rockshelter and scattered burned rock was in a small drainage just below. The shelter was minimally disturbed by vandalism, with only one small vandal's hole apparent. Because Rockshelter A had the potential for intact deposits, a crew excavated one 50 x 50 test quad (TP 1) to 70 cmbs in June 1993. A total of 416 cultural items were recovered with every level yielding material. A glass fragment at 20 to 30 cmbs was the only evidence of disturbance. The ST results indicate that Rockshelter A has high archeological research potential, with cultural material present in substantial quantities to a depth of at least 70 cmbs.

On the basis of this work, no further management was recommended for most of the upland. A limited portion of the upland demonstrated uncertain potential to yield data for lithic-procurement issues and was recommended for non-excavation testing. Finally, Rockshelter A was recommended for subsurface testing to determine NRHP eligibility (Trierweiler 1994:A733-741).

5.18.1.3 New Work

Formal testing work was conducted exclusively in the Rockshelter A and completed in November 1994. Two test pits, TPs 2 and 3, were dug in Rockshelter A (Figure 5.86). Test Pit 2 was near the back wall dug to 30 cmbs and TP 3 was adjacent to the previously excavated TP 1. The size and depth of these units are presented in Table 5.33.



Figure 5.85 Tree Growth in Front of Rockshelter, 41CV115.

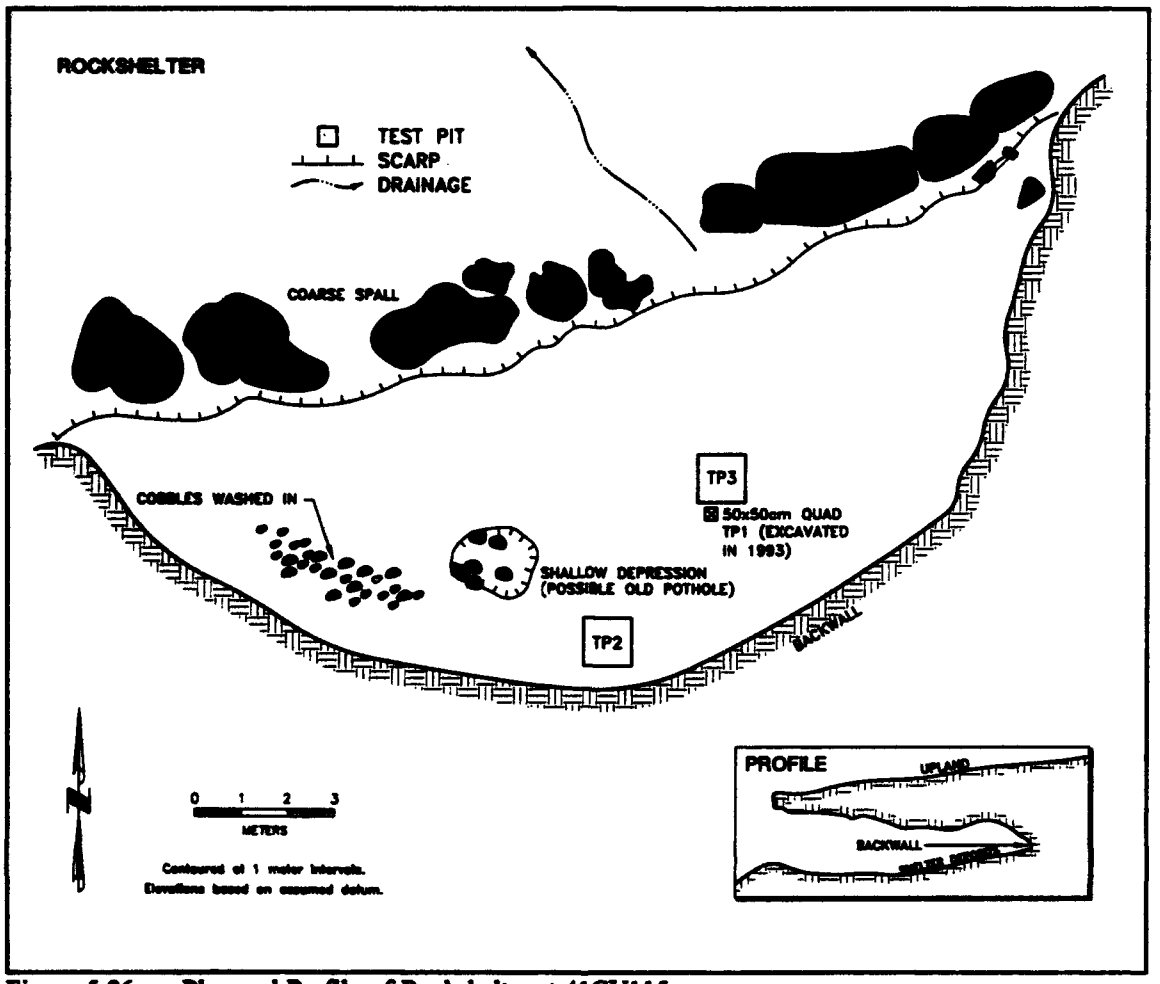


Figure 5.86 Plan and Profile of Rockshelter at 41CV115.

5.18.2 Results

The two test pits dug in Rockshelter A both revealed up to 1 m of tan to grayish brown, internally derived silt (Type 1 sediments of Abbott 1994). The fill evidenced a very strong cultural overprint, particularly in TP 3, where a variety of ashy and dark stained lenses representing features, occupation strata, and ash accumulations were revealed in the profile.

Test pit 2 yielded a piece of lithic debitage and a glass fragment in level 1 and three pieces of debitage from 10 to 30 cmbs. All of the fill in this unit was an extremely loose, tan silt containing variable amounts of eboulis. Bedrock was encountered at 30 cmbs.

Table 5.33 List of Treatment Units.

Treatment Unit*	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 2	1.00	1.00	0.30	rockshelter
TP 3	1.00	1.00	1.02	rockshelter

*Note: test pit 1 was previously excavated.

Test pit 3 yielded an abundance of cultural material from every level with the top 10 cm containing the least material (Table 5.34). Although several flakes and a few bone fragments were recovered from level 1, three pieces of glass were also found, indicating some disturbance. Level 2 contained slightly more debitage and bone from apparently undisturbed context. Level 3 yielded the highest density of artifacts with hundreds of flakes, more than 50 bone fragments, 12 burned rocks, mussels shell fragments, a biface, an arrow tip, and a Perdiz point. From 30 to 45 cmbs, a hearth (F 1) was encountered. When first exposed, this feature appeared to be a tight concentration of jumbled burned rock. Upon removal of the upper rock a circular, slightly basin-shaped pit containing dense charcoal, ash, and oxidized silt was present from 40 to 45 cmbs, thus defining the hearth (Figure 5.87). This feature yielded 145 burned rocks (35 kg). Although the majority of the hearth (80 x 62 cm) was in TP 3, it extended into the south and west walls. All the fill defining the base of the hearth was collected as a flotation sample. A large (16.7 g) sample of charcoal from F 1 was identified as White Oak wood and yielded a $\delta^{13}C$ (-26.0‰) corrected assay of 820 ± 40 BP (Tx-8418). A few mussel shells, flakes, and bone fragments were observed in the hearth itself. Hundreds of flakes, numerous bone fragments, including a deer tine, and a Scallorn point were in the matrix surrounding the feature from 30 to 50 cmbs. Abundant cultural material continued from 50 to 60 cmbs, including well over a 100 flakes, more than 60 bone fragments, 20 scattered burned rocks, six mussel shells, a complete dart, an arrow point, and a bone tool. From 65 to 80 cmbs, F 2 was along the western edge of TP 2 with a maximum

Table 5.34 Artifact Recovery by Test Pit, 41CV115.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1	-	0	0.0	0	0	0	0	1	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	5	0	0		
3	1	-	0	0.0	0	6	0	0	44	0	1	-	mixed
	2	-	0	0.0	0	9	0	0	99	0	1	-	LP-II
	3	-	16	4.0	0	204	0	1	1,400	3	8	Perdiz, ?arrow, ?dart	LP-II
	4	F1	193	46.7	2	70	0	0	466	0	2	820±40	LP-I
	5	F1	24	4.0	2	45	0	0	309	1	1	Scallorn	LP-I
	6	-	27	8.0	8	83	0	0	354	3	5	?arrow, ?dart	LP-I
	7	F2	0	0.0	1	45	0	1	268	0	1	-	LP-I
	8	F2	33	43.3	3	25	1	0	323	0	2	1240±40	LP-I
	9	-	7	1.3	1	2	0	0	211	0	0	1260±50	LP-I
	10	-	0	0.0	1	1	0	0	16	0	0	-	LP-I
	Total		300	107.3	18	490	1	2	3,490	7	21		

excavated dimensions of 100 x 40 cm which was designated a burned rock concentration, but may well be another hearth, as only a small part was exposed (Figure 5.88). Feature 2 yielded of 25 burned rocks (32.5 kg) along the edge with a thick accumulation of ash at the northwest corner. A metate was amongst the burned rocks and a vertically lying large animal scapula was in the ash. A very small (0.4 g) sample of charcoal from F 2 was identified as White Oak wood and yielded a $\delta^{13}C$ (-24.9‰) corrected assay of 1240 ± 40 BP (Beta-83260). This feature also had an abundance of material in association from 60 to 80 cmbs, including hundreds of flakes, numerous bone fragments, another deer tine, and a few mussel shells. Recovery began to diminish from 80 to 90 cmbs with about 50 flakes, five burned rocks, four bone fragments, and a few mussel shell fragments. The basal level contained the fewest items, with recovery consisting of 15 flakes and a few mussel shell fragments. A small (0.4 g) charcoal sample from directly below F 2 was also identified as White Oak wood and provided a $\delta^{13}C$ (-27.4‰) corrected assay of 1260 ± 50 BP (Beta-83261).

In addition to the rockshelter investigations, a previously unrecorded burned rock midden (F 3) was discovered 12 m downslope from the shelter. Dense burned rock and several flakes had been exposed by a small gully that flowed from the front of the shelter. The midden appears to be contained in a 11 x 8 m area on the east side of the gully. Although not investigated with an excavation unit, this feature could likely represent a refuse dumping area associated with occupation(s) of the shelter.

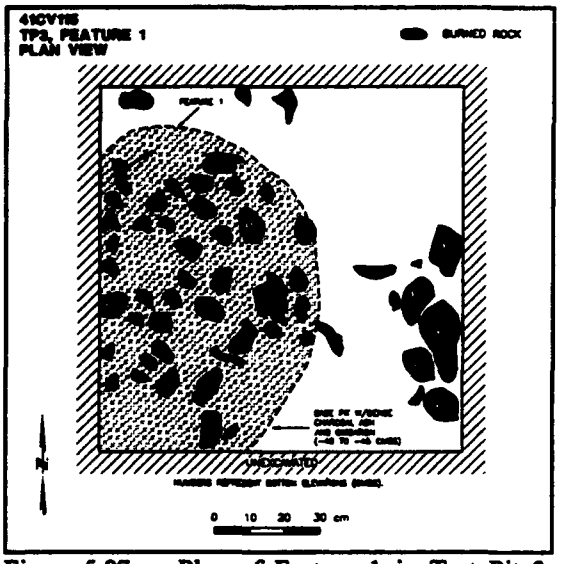


Figure 5.87 Plan of Feature 1 in Test Pit 3, 41CV115.

5.18.3 Analysis and Interpretations

5.18.3.1 Definition of Analytical Units

The two test pits in Rockshelter A yielded a total of 3,495 pieces of lithic debitage, 22 stone tools, seven projectile points, 490 pieces of bone, 19 mussel shell umbos, 225 burned rocks (80.5 kg), scattered charcoal and snail shells. These materials were divided into four analytical units: the Late Prehistoric I, the Late Prehistoric II, mixed, and unclassifiable. The Late Prehistoric II is defined in TP 3 from 10 to 30 cmbs based on a Perdiz, an unclassified arrow point, and a dart point fragment. The latter dart fragment is believed to have been a

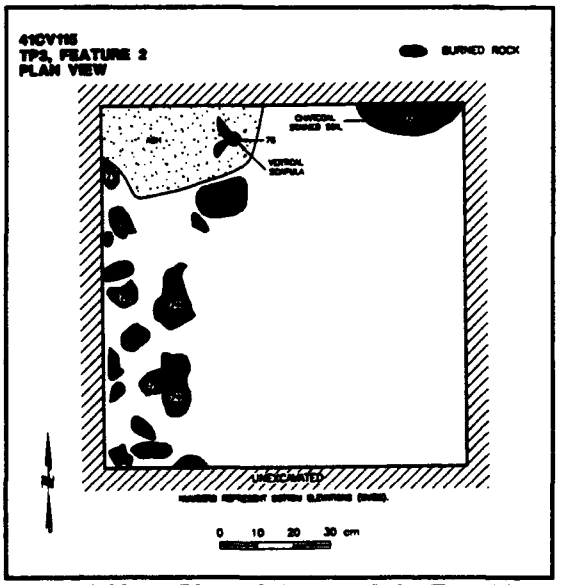


Figure 5.88 Plan of Feature 2 in Test Pit 3, 41CV115.

collected and reused tool. The Late Prehistoric I is defined in TP 3, from 30 to 100 cmbs by a Scallorn, an unclassifiable arrow point and a dart point, plus two charcoal dates of 1240 and 1260 BP. Here again, the dart point fragment is believed to be a collected and reused specimen.

The sparse mixed material was from the top 10 cmbs of each test pit. The material in TP 2 from 10 to 30 is unknown as to its age as it lack diagnostics and absolute ages. Each of these analytical units is discussed below.

5.18.3.2 Late Prehistoric I Materials

This material includes 1,947 pieces of lithic debitage, two arrow and two dart points, 12 stone tools, 271 bone fragments, 18 mussel shell umbos, 213 burned rocks, some charcoal, and abundant snail shells.

The 1,947 specimens of lithic debitage represent 11 identified and nine unidentified chert types and one flake of limestone with 21% of the materials identifiable (Table H-151). Fort Hood Yellow chert stands out among the identified cherts with 92.7% of the materials. The high numbers of Fort Hood Yellow aid the dominance of the North Fort materials with 97%. As would be anticipated, Fort Hood Yellow and the combined indeterminates occur in higher than expected frequencies with all others at less than expected quantities (Table H-152). The exclusion of the indeterminates does not alter the figures: Fort Hood Yellow still occurs at higher than expected ratios and all others at lower than expected.

The modal peak for size occurs at the 1.2-1.8 cm size category with fairly even frequency drop offs to both ends of the size spectrum. Sixty-nine percent of the debitage is less than 1.8 cm in size and all size categories are present. Tertiary debitage is the most prevalent at 71% of the materials with less than one percent primary materials, and an additional 28% partially cortexed debitage (Table H-153).

Four complete projectile points were recovered (Table H-154). The complete Scallorn point was made from indeterminate chert whereas the other arrow point was of Gray/Brown/Green chert. One distal dart fragment was of indeterminate light brown chert and the complete Uvalde point was of Heiner Lake Tan. The 12 stone artifacts consist of one single platform core, three utilized flakes, four edge modified flakes, two late stage biface fragments, the distal end of a middle stage biface, a spokeshave, and a limestone metate fragment (Table H-155). These tools were manufactured from mostly indeterminate cherts (n=7) of various colors, with two Heiner Lake Tan, a Fort Hood Yellow, and a Gray/Brown/Green specimen.

The bone fragments are dominated by medium to large mammals (n=129), with medium (n=46) and small to medium (n=62) mammals present (Table H-156). Identified species include deer, rabbit, turtle, canis, and aves (n=8). The aves include small, medium and large birds. About 55% of the fragments are burned and 70 exhibit spiral fractures which testify to their human use. Apparently deer size animals dominated the food resource supplemented by rabbit, turtles, *Canis* sp., and birds. The umbos were identified as *Amblema* sp. (n=5), Unionacea (n=7), *Tritigonia verrucosa* (n=1), and *Lampsilis hydiana* (n=5). Only one *Lampsilis* sp. was burned and definitely modified by man. These were vertically distributed across the 60 cm of the deposit.

The 213 burned rocks weighed 77.5 kg were mostly (89%) from two recognized burned rock hearths, Fs 1 and 2. Feature 1 had 77% and Feature 2 had 12% of the burned rocks. Sparse charcoal flecks were scattered amongst these features, and charcoal sample yielded an 820 BP date. From within F 2, charcoal gave a date of 1240 BP, with an 1260 BP date from directly below F 2. It is interesting to note that all three charcoal samples were identified as White Oak. All three assays are in proper stratigraphic sequence and from good context, therefore provide acceptable ages for these cultural deposits. These dates reflect the period for the Austin phase

(Prewitt 1981; 1985) which is supported by the presence of the one Scallorn point. It also supports the notion that the dart point fragment and the Uvalde point recovered from this component were collected and reused items. This phase is the most frequently identified phase in the Fort Hood rockshelters and in some components associated with human burials. The stratigraphic nature of these deposits indicate repeated events at this shelter.

5.18.3.3 Late Prehistoric II Materials

These materials include 1,499 pieces of lithic debitage, nine stone tools, two arrow and a dart point, 213 bone fragments, 12 burned rocks, scattered charcoal, snail shells, and burned rock hearth F 1.

The 1,499 specimens of lithic debitage represent four identified and eight unidentified types with 36% of the materials identifiable (Table H-157). Fort Hood Yellow stands out among the identified materials (94%) while the total North Fort materials contribute 99% of the debitage chert sources. As expected Fort Hood Yellow and the combined indeterminates occur in higher than expected amounts, while all others occur in less than expected amounts (Table H-158). The exclusion of the indeterminates does not change the binomial results.

Of importance to note is the modal peak for size occurring at the less than 0.5 cm category; this category contains over 50% of the debitage. The entire distribution of sizes is interesting in that in contrast to other assemblages, the modal peak is not one of the middle size categories and there is not a plateau of high categories with low frequencies on either end. The tertiary rate for the debitage is 81% with most of it due to the 94% rate of noncortical flakes in the less than 0.5 cm category (Table H-159). The high amount of less than 0.5 cm debitage is attributable solely to the recovery from fine screening effort of a quadrant of Test Pit 3 level ˜ This particular provenience produced three chert types with very high counts of less than 0.5 cm debitage: Fort Hood Yellow (n=183), dark gray (n=280), and light brown (n=282). The similar colors of these three chert "types" and the density of the material in one level suggests the discovery of a chipping station where either one or several small nodules or bifaces of the same material where reduced to final form. Based on the tool recovery, it would seem that these tools were removed from the site. The debitage size distribution can be partially explained by the quadrant of fine screening mixed with the standard one-quarter inch mesh recovery. However, since this has been the case for all the sites, the best explanation for the high rate of less than 0.5 cm in size materials and the size distribution is the presence of a chipping station. Either way, the debitage indicates the production of both large and small tools with a great deal of platform preparation and/or resharphening.

The stone tools consist of three projectile points, nine other tools, and one multiple platform core (Tables H-160 and H-161). The proximal Perdiz point was made on Gray/Brown/Green chert, the unclassifiable distal arrow point was of Owl Creek Black, and the distal dart point was of Heiner Lake Tan. The non-point tools consist of four biface fragments, two utilized flakes, a drill, an edge modified flake, and a complete side scraper. These were made of indeterminate cherts (n=5), Fort Hood Yellow chert (n=2), Gray/Brown/Green (n=1), and Heiner Lake Tan (n=1).

The bones were mostly medium to large mammals (n=139) with some small to medium mammals (n=68) with deer and rabbit identified (Table H-162). Turtle carapace was also present. Both small and large mammals bones were burned (n=143) with at least 14 exhibiting spiral fractures. These latter observation testify to the cultural use of these bones. Therefore deer size and rabbit size animals appear to have provided the bulk of the food resources here. The 12 burned rocks weighed 3 kg and were all from level 3 but did not form a recognizable feature. No charcoal from this component was dated. The Perdiz and unclassifiable arrow point indicate this material

belongs to the Toyah phase about 200 to 650 BP (Prewitt 1981; 1985). Johnson (19946) terminates this phase slightly earlier, about 300 years B.P. These occupation are present in the region but not in large numbers and are not often in rockshelters. The presence of a dart fragment in this later component is not surprising as often earlier tools were collected and reused.

5.18.3.4 Mixed Materials

These materials include 45 pieces of lithic debitage, one edge modified flake of indeterminate light brown chert, six bones, but no mussel shells, points, burned rock or other items.

The 45 specimens of lithic debitage represent two identified and six unidentified chert types with 405 of the materials identifiable (Table H-163). The combined indeterminates occur in higher than expected frequency, Fort Hood Yellow occurs in expected amounts, and Gray/Brown/Green occurs in less than expected amount (Table H-164). The exclusion of the indeterminates only changes the Fort Hood Yellow determination from expected quantity to a more than expected quantity. The modal peak for size is the 1.2-1.8 cm category with nearly equal drop offs in frequency to both ends of the size spectrum. The tertiary rate is only 58% of the debitage (Table H-165) with a third of the material having some remaining cortex. The assemblage is too small to make highly supportable judgments; however, it probably represents a mix of core and biface technologies. The six bone fragments indicate deer size animals were present with two pieces exhibiting spiral fractures (Table H-166).

These materials contain a limited number of recent historic items, but it is possible that the prehistoric materials belong to the Late Prehistoric II period. This classification was conservative and does not include this material with the lower component.

5.18.3.5 Temporally Unspecified Materials

These sparse materials include only four pieces of lithic debitage. All four were from TP 1, level 2 and 3. No other cultural material was recovered making it impossible to assign these to an age period.

The four specimens of lithic debitage represent two unidentified chert types: dark brown (n=2) and light brown (n=2). One specimen of each material is present in the 1.2 to 1.8 cm category, while dark brown has a 0.5 to 1.2 cm size specimen and the remaining light brown is 2.6 to 5.2 cm in size. One each of the chert types is tertiary, while the other piece is partially cortexed.

5.18.3.6 Investigation of Amino Acid Epimerization of Rabdotus Shells

As part of the continuing investigation of the utility of amino acid epimerization to questions of chronology and site integrity, a stacked sequence of eight *Rabdotus* shells each were selected and analyzed from Levels 3, 6, and 9 in TP 3. The results of the individual assays are presented in Appendix C. The snail shells analyzed from Level 3, within the Late Prehistoric II component, yielded epimerization ratios between 0.0212 and 0.0533, with seven of the eight shells ranging between 0.0212 and 0.0288. Of these seven specimens, five were determined to best represent the probable time of deposition based on visual clustering. Two different methods were used to obtain approximate radiocarbon-equivalent ages for the snails from the measured A/I ratio. The first method, which consisted of application of the equation presented in Ellis et al. (1995), yielded an approximate equivalent age of 440 years BP, while the method used in the preceding Fort Hood testing report (Abbott et al. 1995) yielded an approximate equivalent age of 590 years BP. Either of these ages are reasonable estimates that fit well with the cultural material and are in stratigraphic agreement with the radiocarbon age of 820 ± 40 from F 1, which was uncovered between 10 to 25 cm below level 3.

The snail shells from Level 6 exhibited a considerably broader spread in epimerization values, which ranged from 0.0293 to 0.289. Two nearly identical assays at the "young" end of this range were determined to best represent the probable age of deposition. These two shells yielded approximate radiocarbon ages of 678 BP and 897 BP using the equation of Ellis et al. (1995) and the equation of Abbott et al. (1995), respectively. In this case, the latter estimate seems closer given the Austin Phase cultural assemblage and the fact that an age of 1240 ± 40 BP was obtained from F 2 in Level 8. Another implication suggested by the large spread of epimerization values obtained from this suite of shells is that many of the specimens were probably heated to varying degrees. For this reason, and because they appeared to be in good stratigraphic context, four of the shells from this level were selected for multiple assays. The three assays from each of these shells exhibited variability that ranged from 9.1% to 28.8% of the mean measured value. This meets or exceeds the previously determined analytical error of approximately ±5%, suggesting that the shells do show some effects of variable heating. However, they do not exhibit extreme variability that could be considered clearly diagnostic of differential heating (see Section 7.4).

The Level 9 sample contained four specimens that clustered between 0.0231 and 0.0292, and four additional specimens that clearly represent heating (ratios from 0.217 to 0.947). The more accurate, low ratio cluster included two subclusters of two shells each whose measurements differed by no more than 0.0006, while the two clusters differed by 0.005. Despite the clustering of the four unheated shells, these samples are anomalous relative to the cultural stratigraphy of the test pit and the radiocarbon ages obtained from interstratified features. The two "youngest" specimens yielded a mean radiocarbon-equivalent age of approximately 460 BP using the equation of Ellis et al. (1995) and 615 BP using the equation of Abbott et al. 1995. Both of these ages are obviously too young, as demonstrated by the Austin Phase cultural assemblage, the stratigraphic inversion from the snail shells in Levels 6 and 3, and the recovery of charcoal from levels 8 and 9 that yielded ages of 1240 ± 40 and 1260 ± 50, respectively. These anomalous values are problematic. However, the most likely explanations for the anomalous values in the level 9 sample are that (1) groundwater saturation cooled the environment of the shells, causing them to racemize more slowly; (2) groundwater caused selective leaching of amino acids in the shells; or (3) that the northern exposure of the shelter caused the shells to racemize more slowly (see Section 7.4).

5.18.4 Conclusions

The fill in this shelter is up to a meter thick and consists of tan to grayish-brown stony silt representing an admixture of coarse and fine sediments derived from disintegration of the shelter walls and roof. The shelter fill is stratified with a variety of lenticular stains, ashy lenses, and two hearth features, in TP 3. Therefore, the cultural deposits, including considerable quantities of ash, form a volumetrically-significant secondary component to the fill. Although the upper 10 cmbs appear to be somewhat disturbed, the majority of cultural levels appear essentially intact. While TP 2 near the back of the shelter was shallow and unrevealing, TP 3 in the middle of the shelter yielded more than 1000 artifacts including abundant lithics and bone.

These cultural materials primarily represent the two identified phases of the Late Prehistoric period, the Austin and Toyah phases (Prewitt 1981; 1985). They appear in good context and indicate sporadic human use over the past 1300 years BP. The Austin phase, with two burned rock hearth features, is well represented at other Fort Hood rockshelters, whereas the Toyah phase is not. The two intact and stratigraphically separated burned rock hearths definite denote at least two separate occupations of this one component.

On the basis of the above, site 41CV115 is evaluated as containing intact archeological

deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a rockshelter setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surface disturbances by military personnel during training exercises.

5.19 SITE 41CV117

In December 1994, we conducted formal test excavations at prehistoric cultural resource site 41CV117. Testing was designed to evaluate eligibility for inclusion to the NRHP. Four manually excavated test pits totaling 3.3 m^3 and 16 mechanically excavated trenches were dug. These test excavations demonstrate the presence of intact, buried cultural components which have high potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.19.1 Introduction

5.19.1.1 Site Location and Description

Site 41CV117 is in western Fort Hood Training Area 34. The site is on the east side of a meander of Clear Creek. Maximum site dimensions, as defined in 1993, measure 500 x 350 m with a northwest to southeast long axis, and covering an area of 17.5 hectares (43.2 acres) (Figure 5.89). The site includes an extensive burned rock midden (Feature 1) that has been extensively vandalized. For purposes of analysis, this site is considered a member of the Turkey Run site group.

5.19.1.2 Previous Work

The site was initially recorded by Thomas and Purificato on 26 March 1977 as a floodplain burned rock midden. The only disturbance noted was one pothole. A metate, two hammerstones, bifacial thinning flakes, cores, and burned rock were observed. One of the hammerstones was noted as being quartzite and it was collected. The site was again recorded by Rodriguez on 30 May 1986 as a burned rock mound and burned rock scatters with lithics (Kock and Mueller-Wille 1989b). A high density of burned rock, a low density of debitage, and some bifaces were observed across a heavily vandalized area at the northern end. The map shows this area to be about 100 m in diameter, but it was remarked that a large percentage of the site may be under the surface. The surface was estimated to be 60% disturbed by vandalism, erosion, and vehicular damage.

Kleinbach and Abbott revisited the site on 2 December 1992 and divided the site into three subareas based on geomorphic context. A bedrock projection at the eastern side was designated Subarea A, a Pleistocene T_2 terrace at the southern end was designated Subarea B, and an extensive Holocene T_1 terrace comprising the remaining area was designated Subarea C.

Subarea A lies in an ancient, rounded upland some 10 to 12 m above the alluvial surface and consists of bare limestone and limestone regolith, although a few areas of thin preserved A horizon are present on top of the projection. A few flakes and chert nodules were observed on this disturbed surface. Extensive erosion, and turbation has occurred across this surface leaving little or no intact deposits.

Subarea B lies on a Pleistocene (T_2) surface and appears largely restricted to the southern side where a shallow Holocene drape covers much of this early terrace (Figure 5.90). Where exposed at the surface, the Pleistocene alluvial fill consists of reddish sandy loam that represents the lower solum

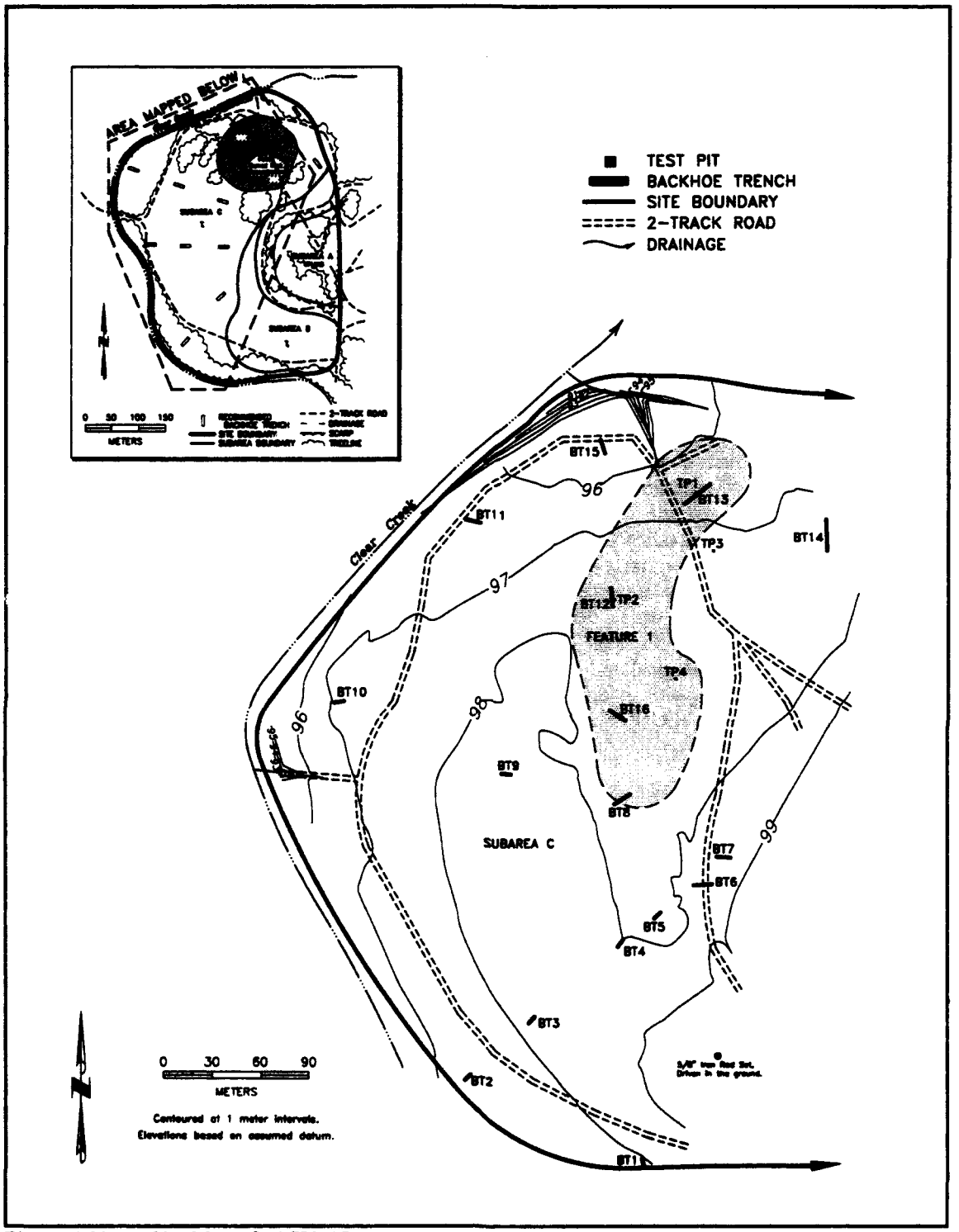


Figure 5.89 Site Map of 41CV117.



Figure 5.90 Looking North Across Southern Part of 41CV117.

of the original soil and evinces an Ap/Bt/Bk/K/2R profile in its maximum expression. In most cases this profile is truncated and the surface is littered with small, hard carbonate nodules resulting from degradation of the Bk horizon. Exposure in the Clear Creek cutbank suggests that the Pleistocene fill is less than a meter thick and consists of fines over a basal gravel resting uncomformably on bedrock. A moderate density of burned rock and low density of flakes are scattered along the southern and eastern edges of this area. A few flakes were observed on small exposures across the remainder of this areas. The area has been plowed causing total disruption to the upper 30 cmbs, leaving no in situ deposits. Because of the lack of potential for buried deposits, no further management of Subareas A and B was recommended.

Subarea C consists of the extensive Holocene (T_1) terrace that is not level, but rather contains a series of low ridges and swales. At least one large swale probably represents an infilled chute channel. A series of linear plow scars, visible on the aerial photograph blueline, are superimposed on this topography. The fill is poorly exposed except at the margins, where up to 8 m of grayish brown sandy loam with surficial Ap/Bw/C or Ap/Bwk/C profile is exposed. This fill appears to represent a late Holocene fill and is probably equivalent to the upper West Range alluvium of Nordt (1992). It is likely that one or more older Holocene fills are also present beneath the terrace. The entire surface is littered with a light to moderate scatter of burned rock, and a very large (100 m diameter) concentrated burned rock (midden) is present on the northern side (Figure 5.91). This midden was probably exposed by plowing, and has since been very heavily impacted by large scale vandalism.

Because this Holocene terrace, Subarea C, had the potential for buried intact deposits, a shovel testing crew returned on 10 December 1992 and excavated 60 shovel tests to depths between 20 and 60 cmbs. Of these, only six (STs 10, 13, 15-17, 20,) contained cultural material from 0 to 50 cmbs



Figure 5.91 Burned Rock Midden Feature 1 Exposed in Road, 41CV117.

(n=20 flakes and several burned rocks). All positive shovel tests were located either on the burned rock midden (F 1) or at its fringes. Based on the shovel testing results, it was determined that Subarea C could contain potentially intact cultural deposits at or below the limits of shovel testing and could be potentially eligible for inclusion to the NRHP. Formal testing was recommended to determine eligibility with testing effort estimated to be 6 to 10 square meters of manual excavation and 10 trenches (Trierweiler 1994:A740-744).

Because of its size, the site had been classified as a lithic resource procurement site. Abbott and Kleinbach again visited the site on 1 April 1993 to evaluate the potential utility for addressing questions of lithic resource procurement and reduction. At that time, the site was judged not to have any significant natural chert resources and it was excluded from further investigations.

5.19.1.3 New Work

Formal testing of Subarea C was completed in December 1994. Sixteen trenches were excavated to examine site stratigraphy and prospect for buried deposits; four test pits were manually excavated to document the site's data potential. Test Pits 1 and 2 were offset from BTs 12 and 13, while TPs 3 and 4 were isolated units. The unit sizes and depths are presented in Table 5.35.

5.19.2 Results

The 16 trenches across Subarea C revealed a complex series of deposits that appear to represent different facies associated with at least three Holocene fill events and at least one trench composed almost entirely of penecontemporaneous colluvial deposits. In general, the trenches closest to Clear Creek in the southern and central parts (e.g., BTs 1, 2, and 10) exhibited weak profiles (A-C or A-Bk-C) developed in thick, loamy to gravelly deposits interpreted as recent Ford

alluvium. Although a few dispersed burned rocks were noted in the profile of BT 2, no in situ cultural strata were observed in these youngest deposits.

Thick deposits interpreted as the late Holocene West Range fill of Nordt (1992) were encountered in BTs 3, 4, 5, 9, 11, and 15. In several trenches situated near the Ford fill boundary (e.g., BTs 3 and 9), the West Range fill was capped by a mantle of Ford alluvium up to 80 cm thick. In addition, a fine-grained facies of the West Range fill tentatively interpreted as a West Range channel plug was encountered in BT 14, and a mantle of West Range alluvium was observed resting on the older Fort Hood fill in BTs 6, 12, 13, and 16. Typically, the West Range deposits exhibited a thick A-Bk profile developed in gravelly loams cut by multiple beds of loamy gravel indicating deposition on a chute-modified point bar.

Alluvial deposits of Fort Hood age were detected in BTs 6, 8, 12, 13, and 16 (Figure 5.92). In all cases, the Fort Hood-age fill was mantled with a drape of either mixed West Range alluvium and dense cultural debris, loamy West Range alluvium, or midden debris. This suggests that burned rock midden F 1 accreted on an elevated early-middle Holocene alluvial surface formed at the top of the Fort Hood fill concomitant with the deposition of the thick, extensive West Range fill elsewhere on the site. Fort Hood facies ranged from sandy channel facies in BTs 12 and 13, to bedded loams and gravels representing chute-modified point bar deposits in BTs 8 and 16, to slightly gravelly, fine grained, overbank deposits in BT 6. The midden typically consisted of abundant clast- and matrix-supported burned rock, flakes, bone, and mussel shell in a very dark brown to black (10YR 2/1 to 10YR 2/2) loamy matrix. The degree of disturbance of the feature within these trenches was difficult to determine, but at least some degree of disturbance was suggested in each profile. The degree of soil development in the underlying Fort Hood sediments varied with texture, with the sandy channel and point bar sediments exhibiting the least development (thin, weak Bw-BCk profiles) and the fine-grained sediments exhibiting the most (strong, thick Bk-C profiles). No cultural material was detected in the body of the Fort Hood fill.

Table 5.35 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	6	0.8	1.6	T1 terrace
BT 2	5	0.8	1.6	T1b terrace
BT 3	6	0.8	1.8	T1a terrace
BT 4	5	0.8	1.8	T1a terrace
BT 5	6	0.8	2.2	T1a terrace
BT 6	10	1.5	3.7	T1a terrace
BT 7	10	0.8	2.4	T1a terrace
BT 8	11	1.5	3.5	T1a terrace
BT 9	6	0.8	2.0	T1a terrace
BT 10	8	0.8	2.5	T1b terrace
BT 11	11	1.5	3.4	T1b terrace
BT 12	12	1.5	3.4	T1 terrace
BT 13	20	0.8	1.8	T1a terrace
BT 14	10	0.8	3.1	T1a terrace
BT 15	8	1.5	2.1	T1a terrace
BT 16	14	0.8	1.5	T1 terrace
TP 1	1.00	1.00	0.70	T1a terrace
TP 2	1.00	1.00	0.90	T1a terrace
TP 3	1.00	1.00	0.80	T1a terrace
TP 4	1.00	1.00	0.90	T1a terrace

Finally, a thick colluvial profile containing two distinct episodes of sedimentation was noted in BT 7. Although the ages of these two units is unknown, both units contained colluvial burned rock, indicating that they are both of Holocene age. Secondary burned rock was particularly prevalent in the upper deposit, suggesting that it is probably either coeval with or postdates accretion of F 1.

Test Pit 1 was offset from the north wall of BT 13 and excavated to the base of F 1 and dense gravels at 70 cmbs. Although more than 100 flakes, several ecofacts, and over 300 burned rocks were recovered from the upper 30 cm, recent debris (tin foil) was also discovered from 20 to 30 cmbs

implying these levels of F 1 have been disturbed (Table 5.36). The remaining four levels were thought to be undisturbed; however, the structure of the matrix continued to be loose. From 30 to 40 cmbs the amount of burned rocks increased dramatically from about 100 to more than 200 per level, while the frequency of flakes decreased sharply. Level 5 also yielded well over 200 burned rocks, with only three flakes and a mussel shell. Level 6, 50 to 60 cmbs, yielded 57 burned rocks and five flakes. Level 7 contained dense gravels in which three burned rocks and two flakes were recovered.

Test Pit 2, offset from the east wall of BT 12, was excavated to the base of F 1, dense gravels at 90 cmbs. Again, the upper 30 cm yielded abundant cultural material, including a Pedernales point, in apparently disturbed context. Level 4 contained 72 burned rocks, over 40 flakes, and two bone fragments. A large intact tree root traversed the unit at this depth, implying that the human disturbances had not reached this depth. A peak in artifact recovery occurred from 40 to 50 cmbs, where 240 burned rocks, over 80 flakes, and seven bone fragments were found. Level 6 yielded about half the amount of burned rocks and flakes as Level 5, seven animal bone fragments, and flakes of mussel shell. A couple of these bone fragments were fairly long, indicating that vandalism had not reached this depth. A small (0.8 g) charcoal sample was identified as White Oak wood and gave a $\delta^{13}C$ (-27.5‰) corrected age of 2140 ± 50 BP (Beta-83262). Level 7 yielded virtually the same type and amount of material as the previous level in addition to a complete Kent dart point. The bottom level of F 1 (70 to 80 cmbs) yielded 60 burned rocks, over 20 flakes, and three bone fragments. The lowest level, 80 to 90 cmbs, yielded dense gravels and 12 burned rocks, six flakes, and a bone fragment.

Test Pit 3, about 35 m southeast of BT 13 in an undisturbed area, was excavated to the dense gravels at 80 cmbs. Although all but the upper level was undisturbed, the F 1 midden was not encountered. Cultural material was very sparse

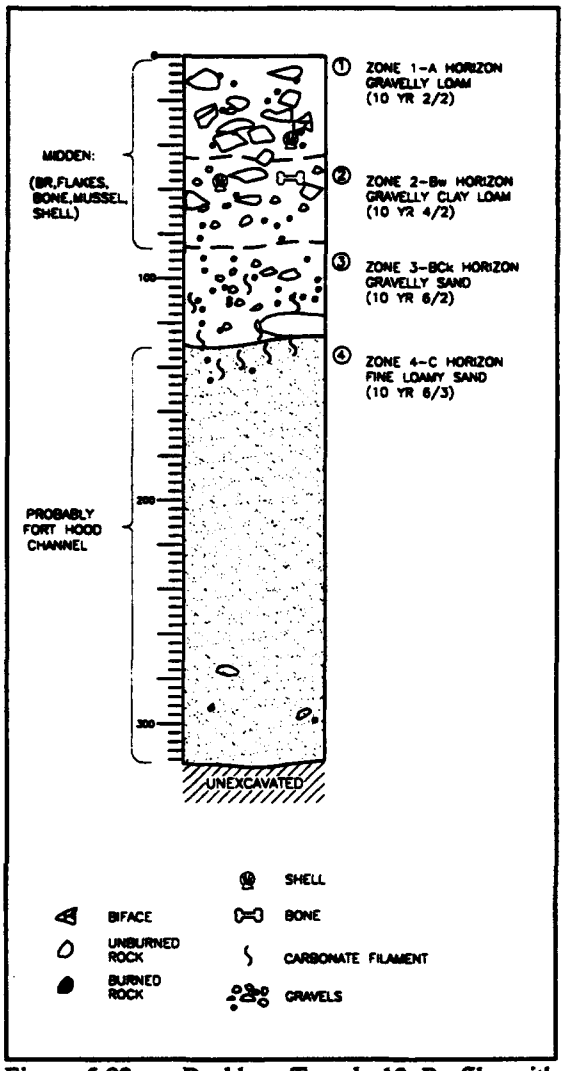


Figure 5.92 Backhoe Trench 12 Profile with Burned Rock Midden Feature 1 Deposit, 41CV117.

with a few flakes from 10 to 30, cmbs, a single flake from the next two levels, and a few small burned rock fragments from most levels.

Test Pit 4, about 40 m south of TP 2 at another apparently undisturbed area of the midden, was excavated to dense gravels at 90 cmbs. The upper 10 cmbs yielded a single flake in disturbed

Table 5.36 Artifact Recovery by Test Pit, 41CV117.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	150	15.0	0	0	0	0	18	0	1	-	mixed
	2	F1	169	34.0	0	0	0	0	68	0	1	-	mixed
	3	F1	125	23.0	1	0	0	0	52	0	1	-	mixed
	4	F1	225	45.0	0	0	0	0	21	0	2	-	LA
	5	F1	235	46.0	1	0	0	0	1	0	1	-	unspec.
	6	F1	57	11.0	0	0	0	0	6	0	0	-	MA
	7	-	3	0.9	0	0	0	0	2	0	0	-	MA
	Total		964	174.9	2	0	0	0	168	0	6		
2	1	F1	160	19.0	0	7	0	0	56	0	1	-	mixed
	2	F1	270	40.0	0	6	0	0	48	1	1	?dart	mixed
	3	F1	58	7.0	1	1	0	0	52	1	2	Pedernales	mixed
	4	F1	72	10.0	0	2	0	0	66	0	2	-	LA
	5	F1	240	29.0	0	7	0	1	95	0	1	-	LA
	6	F1	130	18.0	1	13	0	0	68	0	0	2140±50	LA
	7	F1	90	12.5	0	5	0	0	42	1	3	Kent	MA
	8	F1	60	8.5	0	4	0	0	12	0	1	-	MA
	9	-	12	2.5	0	1	0	0	7	0	0	-	MA
	Total		1092	146.5	2	46	0	1	446	3	11		
3	1	-	2	0.9	0	0	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	3	-	1	0.3	0	0	0	0	2	0	0	-	unspec.
	4	-	3	0.3	0	0	0	0	0	0	0	-	unspec.
	5	-	8	1.5	0	0	0	0	1	0	0	-	unspec.
	6	-	9	1.9	0	0	0	0	0	0	0	-	unspec.
	7	-	5	1.3	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		28	6.2	0	0	0	0	6	0	0		
4	1	-	0	0.0	0	0	0	0	1	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	3	-	2	0.5	0	0	0	0	5	0	0	-	unspec.
	4	-	1	0.1	0	0	0	0	6	0	0	-	unspec.
	5	-	4	1.0	0	0	0	0	6	0	0	-	unspec.
	6	F1	14	4.5	0	1	0	0	4	1	0	Bulverde	MA
	7	F1	63	18.0	1	0	0	0	7	0	0	4040±50	MA
	8	F1	22	6.5	1	0	0	0	2	1	0	Kent	MA
	9	F1	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		106	30.6	2	1	0	0	37	2	0		

undisturbed and contained only sparse lithic debitage. Flake density was low through 80 cmbs and absent between 80 to 90 cmbs. Few burned rocks were from 20 to 50 cmbs but increased rapidly at 50 to 60 cmbs. Roughly 100 burned rocks, 12 flakes, two mussel shells, a Bulverde and a Kent dart point, and a bone fragment were recovered from 50 to 80 cmbs. This material was thought to be a buried, intact portion of F 1. A very small (0.05 g) charcoal sample from Level 7 provided a $\delta^{13}C$ (-27.5) corrected assay of 4040 ± 50 BP (Beta-83524). No cultural material was found in the lowest level.

Based on formal testing results, F 1 is roughly estimated to measure 250 m north-south x 120 m east-west. The generally ovate midden is along a rise on the Holocene terrace and rests upon a dense gravel deposit at the top of the Fort Hood fill. The midden has been heavily impacted by vandalism and subsequent plowing; however, the deeper parts are buried and undisturbed as evidenced by the results in TP 4 and the lower levels of TP 2.

5.19.3 Analysis and Interpretations

5.19.3.1 Definition of Analytical Units

The cultural material from the four test pits were assigned to two identifiable time units, Middle Archaic and Late Archaic periods based on two charcoal dates of 4040 BP and 2140 BP plus three diagnostic points. Some material was considered mixed and some unclassifiable to a general time period. The Middle Archaic period includes material form TPs 1, 2, and 4, and depths of 50 to 70, 60 to 90, and 50 to 80 cmbs respectively. Late Archaic materials lie above the earlier materials in TPs 1 and 2 at depths of 30 to 40, and 30 to 60 cmbs. The mixed material encompasses levels 1-3 of both TPs 1 and 2, level 1 of TP 3, plus levels 1 and 2 in TP 4. The Unclassifiable material includes level 5 in TP 1, the lower 70 cm in TP 3 and levels 3-5 in TP 4. These latter levels probably below to one of the identifiable time periods but lack diagnostics and or dates on which to assign them. Each of these Analytical Units is discussed below.

5.19.3.2 Middle Archaic Materials

This time period encompasses the lower part of the burned rock midden and includes 82 pieces of lithic debitage, 307 burned rocks (59.9 kg), four stone tools, two complete Kent dart points, 10 bone fragments, two mussel shell umbos, and some charcoal and snail shells.

The 82 specimens of lithic debitage represent five identified and six unidentified chert materials with only 13% of the materials identifiable (Table H-167). Indeterminate light brown debitage contributes nearly 50% of the materials to the total assemblage and is over 50% of the unidentified materials. The Heiner Lake Tan materials of the Southeast Range dominate the identified portion of the cherts. Only the combined indeterminates occur in higher than expected frequencies, while all others occur at less than expected quantities (Table H-168). The exclusion of the indeterminates results in Heiner Lake Tan occurring in higher than expected amounts and all others occurring at expected quantities.

There is no peak in the quantity of material by size as the categories from 0.9 through 5.2 cm all occur within a specimen of each other. Over 77% of the debitage is tertiary with a small percentage of the materials with abraded cortex (20%) (Table H-169). The debitage is probably a composite assemblage of core and biface reduction strategies.

One Kent was manufactured from indeterminate light brown chert, while the second Kent was of Gray/Brown/Green chert. It is interesting that the points were still complete when they were discarded into the midden. The four stone tools consist of two utilized flakes, an edge modified flake, and a distal end of a late stage biface (Table H-170). These were manufactured on Heiner Lake Tan chert (n=3) and indeterminate light gray chert.

The ten bone fragments showing marked weathering of their surfaces include medium to large mammals the size of deer and are mostly long bone fragments with one pelvis fragment (Table H-171). Only one long bone fragment was burned. All the bone was from TP 2. Apparently the primary subsistence resource here, at this time, was deer size animals. A float sample from TP 2, level 8, yielded a carbonized fragment of a bulb from the Lily family and no other carbonized plant remains, and a second float sample from TP 1, level 6, did not contain any carbonized plants remains.

The two umbos (Table H-171), a right and a left, were identified as *Amblema* sp. and were unburned and otherwise unmodified by human alterations. These may represent the opposite halves of the same specimen. Mussel shells are so sparse that they may not have served as a human resource or been intensively used in the midden.

The sparse recovered charcoal totaled only 0.15 g with one tiny (0.05 g) sample identified as indeterminate wood which provided a radiocarbon assay of 4040 BP from Level 7 of TP 4. The presence of two Kent points is interesting as these are not part of Prewitt's (1981; 1985) Central Texas sequence while Turner and Hester (1985) indicate these are more common in the eastern half of the state. Both points are below the Bulverde point in Level 6, TP 4 which Prewitt assigned to the Marshall Ford phase of Central Texas (Prewitt 1981; 1985). The date of 4040 BP was from a level between the lower Kent and upper Bulverde point in the same test pit.

5.19.3.3 Late Archaic Materials

The Late Archaic materials were near the middle portion of the burned rock midden and included 250 pieces of lithic debitage, 681 burned rocks (106.5 kg), one projectile point, one core, five stone tools, 23 bone fragments, one mussel shell umbo, sparse charcoal and lots of snail shells.

The 250 pieces of lithic debitage represent 10 identified and eight unidentified chert types with only 25% of all materials identifiable (Table H-172). Heiner Lake Tan materials stand out within the identified cherts at 76%. Although light brown materials are prominent among the unidentified cherts, they are only 39% of the indeterminates. The presence of 7 Mile Novaculite chert is not surprising given the location of this site within the Turkey Run site grouping. The Southeast Range materials dominate the debitage with three types and 81% of the identified portion. As would be expected the binomial statistic results in Heiner Lake Tan and the combined indeterminates occurring in higher than expected quantities (Table H-173). The exclusion of indeterminates results in only Heiner Lake Tan occurring at higher than expected frequencies, Cowhouse White, 7 Mile Novaculite, and Fort Hood Yellow occurring in expected quantities, and all other cherts are in less than expected frequencies.

The modal peak for size is the 1.2 to 1.8 cm category and drops off more slowly to the lower-sized materials. Approximately 80% of the materials are smaller than 1.8 cm in size and 82% of the cherts do not retain cortex (Table H-174). The size distribution of the material closely resembles a bell-shaped curve with all categories present. The debitage data taken as a whole probably represents mostly biface reduction.

The one projectile point is a complete Bulverde of indeterminate light brown chert. The six stone artifacts include two utilized flakes, a middle stage biface fragment, a medial section of a late stage biface, the proximal end of a finished biface, and a multiple platform core (Table H-175). These tools were manufactured from two different colors of indeterminates chert (n=3), Heiner Lake Tan and a Gray/Brown/Green chert.

The 23 bones were from TP 2 and represent mostly medium to large mammals the size of deer, and include long bone fragments (Table H-176). Eight pieces were burned but otherwise unmodified for use. It appears that deer size animals were the

primary food resource here at this time. The one umbo was identified as Unionacea and was unmodified. The low frequency and lack of modification may indicate that mussels were not part of the human food base.

A 0.8 g sample of charcoal from level 6 was identified as White Oak wood and provided an age of 2140 BP. A float sample from the midden deposit in TP 2 level 5 did not yield any carbonized plant remains. A higher density of burned rock and lithic debitage is apparent in the Late Archaic midden section than the early Middle Archaic portion. It was unfortunate that no diagnostic points were recovered to help assign a particular phase to this assemblage. The 2140 BP age would place this into Prewitt's Uvalde phase (1981; 1985).

5.19.3.4 Mixed Materials

The mixed material from the plowed top of the midden include 298 pieces of lithic debitage, 934 burned rocks (138.9 kg), 14 bone fragments, two mussel shell umbos, seven stone tools, and two diagnostic points.

The 298 pieces of lithic debitage represent six identified and nine unidentified chert types with only 155 of the materials identifiable (Table H-177). Indeterminate light brown chert stands out among the unidentified materials at 39% of the total, while Heiner Lake Tan is the most prominent among the identified cherts at 67% of these category and 10% of the total. However each of these two cherts two are definite dominant materials. The high amounts of Heiner Lake Tan result in the Southeast Range materials dominating the identified debitage with two types but 69% of the materials. The combined indeterminates occur in higher quantities than expected while all identified materials occur at less than expected frequencies (Table H-178). The exclusion of indeterminates results in Heiner Lake Tan occurring in higher than expected frequencies, 7 Mile Novaculite, Fort Hood Yellow, and Cowhouse Mottled occurring in expected frequencies, and all others at less than expected amounts.

The modal peak for size is the 1.2 to 1.8 cm category. Approximately 71% of the total assemblage is less than 1.8 cm in size and 78% of the total are tertiary (Table H-179). The debitage data indicates bifacing as the primary reduction strategy.

The diagnostic points included the distal tip of an untyped dart point and the base of a Pedernales point. The later was manufactured from an indeterminate light gray chert, while the former was of Owl Creek Black. The seven stone tools include two utilized flakes, two side scrapers, a spokeshave, the distal end of a finished biface, the proximal end of a late stage biface (Table H-180). Just over 40% of the tools were manufactured from various colors of indeterminate cherts, while Cowhouse mottled (n=2), Owl Creek Black (n=1), and Heiner Lake Tan (n=1) were identified materials. The presence of Cowhouse Mottled and Heiner Lake Tan in the debitage support an on-site production of the tools.

The 14 bone fragments were identified as medium to large mammals, deer size, with seven being burned (Table H-181). The two umbos were identified as *Amblema plicata* and Unionacea and neither were burned. The frequencies and types of bones and shells are similar to those identified in the lower portion of the midden.

Since two Archaic projectile points were recovered and the bone fragments and mussel shell types were similar to those in the Middle and Late Archaic period it appears these mixed deposits probably relate to those events. Therefore it does not appear that there was a Late Prehistoric event on the top of this midden.

5.19.3.5 Temporally Unspecified Materials

The unclassifiable materials from the midden include 30 pieces of lithic debitage, 268 burned rocks (52.8 kg), one stone tool, and one mussel

shell umbo of the Unionacea species. A float sample from TP 1 level 5 yielded no carbonized plant remains.

The 30 pieces of lithic debitage represent four identified and eight unidentified chert types with 37% of the materials identifiable (Table H-182). Only the Heiner Lake Tan materials and light brown debitage stand out among their respective categories. Southeast Range materials as based on the quantities of Heiner Lake Tan are the predominate source for chert. However, only the combined indeterminates occur in higher than expected frequency, while Heiner Lake Tan and Cowhouse Mottled occur in expected amounts, and all other occur in less than expected quantities (Table H-183). The modal peak for size is the 1.8 to 2.6 cm category and the materials are almost evenly split between partially cortified and tertiary specimens (Table H-184).

The one tool is an edge modified flake made of indeterminate white chert.

5.19.4 Conclusions

This site consists of an extremely large burned rock midden feature that appears to almost completely cover a paleoterrace underlain by the early-middle Holocene Fort Hood alluvial fill. The later fill is overlain with deep and extensive deposits of the subsequent West Range and Ford fills, with cultural deposits dating to the Middle and Late Archaic periods essentially restricted to areas underlain by the Fort Hood paleoterrace.

The burned rock midden Feature 1 is intimately interbedded with fine-grained overbank alluvium dating to the Middle and Late Archaic periods between at least 4000 and 2100 BP. The feature has been subjected to considerable disturbance from vandalism and cultivation of the top 30 cmbs, but still appears to retain some integrity, especially in the deeper levels. The overall frequency of lithic debitage is relatively low as are the frequency of stone tools, charcoal and other organic materials. Although similar size features have been reported in the literature, the enormous size of the feature is unparalleled in our experience on Fort Hood, and thus represent the focus of tremendous Archaic activity.

On the basis of the above, site 41CV117 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.20 SITE 41CV125

In February 1995 we conducted formal test excavations at prehistoric archeological site 41CV125. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits totaling 0.7 m^3 were manually excavated. These tests demonstrate the presence of buried cultural components in good context dating to the Late Prehistoric period and have high potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.20.1 Introduction

5.20.1.1 Site Location and Description

Site 41CV125 is in western Fort Hood, in Fort Hood Training Area 44. The site is on the uplands at the south end of Manning Mountain. The site is a lithic resource procurement area with two rockshelters. Maximum site dimensions, as defined in 1993, measure 2,300 m east-west by

900 m north-south, covering an area of, very roughly, 207 hectares (511 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.20.1.2 Previous Work

This extraordinarily large site was initially recorded by Thomas in 1978 as an extensive lithic scatter or procurement area on top of Manning Mountain with a series of rockshelters in a tributary valley on the east side (Skinner et al. 1981). Landforms included an upland interfluvial and ridge top surfaces. Thomas did not define site boundaries, but estimated its size to be 500,000 m^2 and recommended a subsequent visit to establish actual boundaries. He also identified a burned rock mound on the upland surface. This mound was originally assigned a separate site designation (41CV124) despite its location inside the boundaries of 41CV125.

Strychalski monitored the site on 16 February 1986 and noted that it was an extensive chert field with light cultural material, but stated that no prehistoric site was present. Therefore, no protective measures were necessary. Mesrobian and Pry again monitored the site in November 1987 and estimated that the area was 70% impacted by vehicles and erosion. Like Strychalski, they concluded that no true site was present and that Thomas was "overzealous in calling vehicle-impacted chert fields sites." However, they admitted that their coverage was poor (neither monitoring visit appears to have made any attempt to locate and assess the rockshelters or thoroughly traverse the upland), and recommended that resurvey was necessary to define and describe the site. No further efforts were made to define site boundaries. For management purposes the site was later classified as a lithic resource procurement area.

Following several initial scoping visits during the winter of 1993, Abbott and Ellis revisited the site on 4 May 1993. On this occasion, the fifth formal assessment on record, a boundary was finally defined, primarily on the basis of the distribution of available residual chert. The site was divided into three subareas on the basis of geomorphology and a site map was drawn. The upland was designated Subarea A, a relatively small rockshelter (Shelter A) at the apex of the northern tributary valley was designated Subarea B, and a rockshelter complex (Shelter B) in the southern valley was designated Subarea C. In Subarea A, the chert resources were observed in nondepositional contexts, therefore impact and chert zones were identified and recorded, and samples of natural chert were collected. Surface impacts were not sufficient to negate the potential value of the nondepositional contexts for lithic-procurement issues, a resurvey crew returned on 7 through 10 May 1993 and completed 524 observations along 66 survey transects.

Because the shelters and a possible burned rock upland mound (41CV124) had the potential for intact deposits, a shovel testing crew returned on 10 May 1993 and excavated three 50 x 50 cm test quads (1, 2, and 3). Shovel test 2 was in the upland mound and excavated to 40 cmbs. It was determined that the mound formation was actually an old "push pile" and not a cultural feature. Shovel test 1 was excavated in Shelter A (Subarea B) to bedrock at 57 cmbs, but no cultural material was recovered. Shovel test 3 was in Shelter B (Subarea C) and excavated to bedrock at 40 cmbs. Recovery included 19 flakes and six bone fragments, which were fairly evenly distributed through all four levels.

Based on these results, two to four manually excavated test pits were recommended for Rockshelter E to determine NRHP eligibility (Trierweiler 1994:A752-758). The area immediately surrounding the burned rock mound on site 41CV124 and a limited area of the upland in the western third of the site (covered by resurvey transects 1-10 and 28-32) were assessed as potentially eligible for inclusion to the NRHP and avoidance was recommended for these well defined areas. No further management was recommended for the remainder of the site.

5.20.1.3 New Work

Formal testing of rockshelter B was completed on 22 February 1995. Two test pits (TPs 1 and 2) were excavated. Test pit 1 was just under the dripline on the eastern side of a cascading channel and TP 2 was immediately north of TP 1. Unit sizes and depths are presented in Table 5.37.

Table 5.37 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.10	rockshelter
TP 2	1.00	1.00	0.60	rockshelter

5.20.2 Results

Shelter B, below the upland scarp at the apex of a valley, consists of two distinct sections which lie on either side of a cascading ephemeral channel. On the west side, a small tube-like cave, about 1 m wide, extends about 15 m back into the rock face (Figure 5.93). On the eastern side is a 12 x 4 m shelter, roughly triangular in plan. It was this latter area that was tested with TPs 1 and 2 (Figure 5.94). Shelter B is filled with thick, dark reddish brown sediment that represents eroded upland soil washed out of pipes and fissures in the rear. At present, the ceiling is about 1.5 m above the floor. Recovery from the upper 10 cm of TP 1 included two flakes, two unidentified bone fragments, and a isolated human incisor which was not "shovel shaped." Pursuant to Fort Hood standard policy regarding human remains, all of the recovered material was returned to the test pit and the unit backfilled.

Because interpretation of the single non-shovel shaped tooth was ambiguous, TP 2 was excavated further in towards the shelter's backwall to bedrock at 60 cmbs. It revealed a profile composed of black (10YR 2/1), stony clay loam over a yellowish red (5YR 6/8) stony clay. Both strata

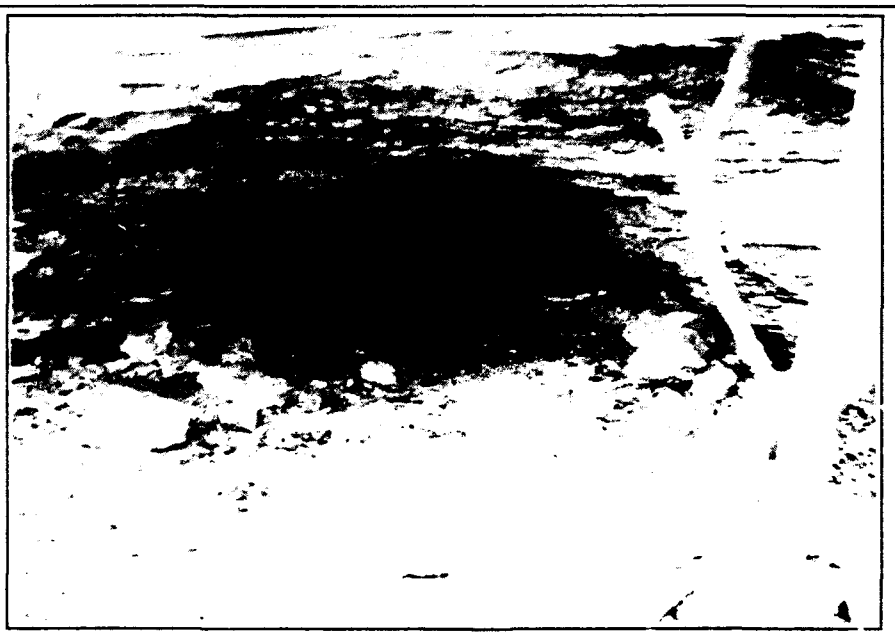


Figure 5.93 Opening to Cave at Rockshelter B, 41CV125.

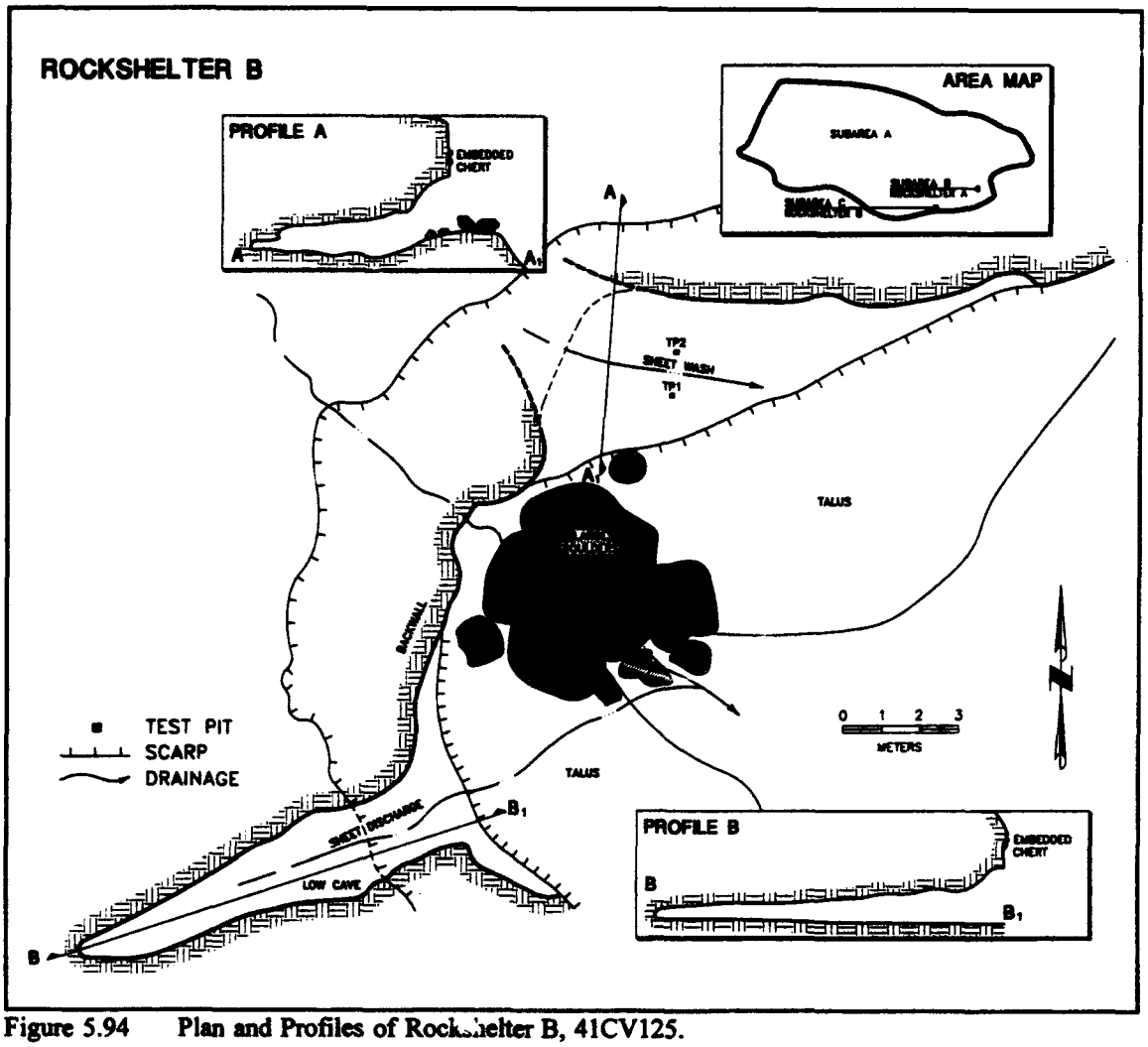


Figure 5.94 Plan and Profiles of Rockshelter B, 41CV125.

probably represent upland material delivered primarily through pipes and fractures in the bedrock and combined with some weathered shelter spall. Level 1 yielded two small unidentified bone fragments. The following two levels contained the highest frequencies of cultural material including well over 50 flakes, nine stone tools, about five bone fragments, charcoal, and several burned rocks (n=7 and n=12, respectively) per level (Table 5.38). In addition, a mussel shell umbo and the mid-section of a large dart point were recovered from 20 to 30 cmbs. A large (10.5 g) charcoal sample from level 3 was identified as White Oak wood and yielded a $\delta^{13}C$ (-26.5‰) corrected assay of 898 ± 90 BP (TX-8419). Below this level, flake counts diminished fairly rapidly (from 30 to 15 to 2), and a few bone fragments and burned rocks, a couple mussel shells, and charcoal continued to be found. The base level excavated contained two flakes and a single bone fragment.

Table 5.38 Artifact Recovery by Test Pit, 41CV125.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	Total		0	0.0	0	0	0	0	0	0	0		
2	1	-	0	0.0	0	2	0	0	0	0	0	-	mixed
	2	-	9	10.0	0	15	0	0	93	0	4	-	LP-I
	3	-	16	2.7	1	52	0	0	183	1	5	?dart, 900±90	LP-I
	4	-	11	3.1	1	15	0	0	172	0	0	-	LP-I
	5	-	8	2.0	1	2	0	0	29	0	0	-	unspec.
	6	-	0	0.0	0	1	0	0	4	0	0	-	unspec.
	Total		44	17.8	3	87	0	0	481	1	9		

5.20.3 Analysis and Interpretations

5.20.3.1 Definition of Analytical Units

Because all of the material from TP 1 was reinterred with the human tooth, this material was not available for analysis. The cultural material from TP 2, 10-40 cmbs was assigned to the Late Prehistoric I based on a charcoal assay of 898 BP from 20 to 30 cmbs. A dart point fragment in this component is thought to be a collected and reused item. The first 10 cm in TPs 1 and 2 contained only recent historic materials and therefore determined not to represent prehistoric occupations. The cultural material from 40 to 60 cmbs in TP 2 was unclassifiable to a specific time period. This latter material is quite limited and may represent cultural items filtering downward from the overlying Late Prehistoric I occupations through bioturbation. Lacking direct evidence to document such a possible association, this material was conservatively separated from the Late Prehistoric I material. Each AU is presented below.

5.20.3.2 Late Prehistoric I Materials

Three levels, 10 to 40 cmbs from TP 2, contained 450 specimens of lithic debitage, 27 pieces of burned rock, a medial dart point fragment, three utilized flakes, four edge modified flakes, a denticulate, a crushing /abrading stone, 27 burned rock that weighed 11.8 kg, two mussel shell umbos, and scattered charcoal pieces.

The 450 pieces of lithic debitage represent ten identified and seven unidentified chert types with only 15% of the materials identifiable (Table H-185). Cowhouse White and Fort Hood Yellow are the dominant identified materials at 27% each. The light brown and miscellaneous categories dominate the indeterminate cherts. The North Fort chert province, with three types (48%) barely dominates the Southeast Range with four types (41%). As anticipated, only the combined indeterminates occur in higher than expected frequency, while all others occur in less than expected amounts (Table H-186). The exclusion of the indeterminates from the binomial distribution results in Fort Hood Yellow occurring

at higher than expected rates, with Heiner Lake Tan, Fossiliferous Pale Brown, Fort Hood Gray, Gray/Brown/Green, Cowhouse Striated, and Cowhouse Novaculite occurring at expected rates, and East Range Flecked and Cowhouse Brown with Flecks at less than expected ratios.

The modal size peak is 1.2 to 1.8 cm while 65% of all materials are tertiary (Table H-187) with a high percentage of partially cortexed debitage at 28%. These data indicate late stage manufacturing and/or tool refurbishing.

The single medial dart point fragment, an edge modified and utilized flake were manufactured from indeterminate light brown cherts (Table H-188). Two tools, an edge modified flake and a utilized flake were of Fort Hood Yellow, two similar tools were of Cowhouse White, with one Fort Hood Gray edge modified piece, an indeterminate chert for the denticulate and Heiner Lake Tan chert was used for the crushing/abrading tool. These material types were primarily from Southeast Range and North Fort chert provinces and reflect the two main known sources as reflected in the debitage.

Two mussel shell umbos were identified as *Toxolasma texanensis* and Unionacea. Neither are burned or otherwise modified by humans. The 27 burned rocks weighed 11.8 kg and were dispersed across these three levels with no actual intact feature recognized. A total of 22.5 g of wood charcoal was recovered from these three levels; of this total, a 10.5 g sample from level 3 gave the 898 BP date. This age corresponds to Prewitt's (1981; 1985) Austin phase even though no diagnostic points were recovered. This is the most common occupation period of the Fort Hood rockshelters.

5.20.3.3 Temporally Unspecified Materials

Between 40 to 60 cmbs in TP 2 yielded 33 pieces of lithic debitage, six burned rocks, one mussel shell umbo, and scattered charcoal flecks which were of unknown age. No stone tools, faunal material, or charcoal were available to help identify these materials.

The 33 specimens of lithic debitage represent seven unidentified chert types (Table H-189). Indeterminate light brown is the most dominant material of the assemblage which is similar to that discovered in the Late Prehistoric I component. The modal peak for size is the 1.2 to 1.8 cm category, while 82% of the debitage is tertiary flakes (Table H-190) indicating late stage reduction and/or tool refurbishing.

The one umbo represented an Unionacea, and it was burned. This is direct evidence this specimen was part of the cultural resource and not something related to animal manipulation. The six burned rocks were not in any recognizable pattern or feature and weighed only 1.5 kg. Scattered charcoal was also present in very limited amounts (0.5 g).

5.20.4 Conclusions

Subarea A, the upland, does contain natural chert deposits that may contribute information towards chert resource procurement and reduction strategies. Subarea B with Shelter B appears to contain buried and intact cultural deposits representative of the Late Prehistoric I period - the Austin phase (Prewitt 1981; 1985). These age deposits are quite common in the small Fort Hood rockshelters. No evidence of disturbance was noted and the prehistoric deposits within Shelter B appear to be pristine. While no buried hearth feature was discovered, the presence of charcoal and burned rocks imply a hearth or other feature may be present in the vicinity of TP 2. The single human incisor is problematic since it is not shovel shaped like most Native American incisors. It is probably not of Native American origin and is mixed in with other materials.

On the basis of the above, Rockshelter B (Management Unit 1) of site 41CV125 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in

the research design for Fort Hood (Ellis et al. 1994). Accordingly, this portion of the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are shallowly buried in a setting that is well known for its capacity to yield artifacts, protection efforts should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.21 SITE 41CV184

In January and February 1995, we conducted formal test excavations at prehistoric archeological site 41CV184. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. One backhoe trench and two test pits were excavated through a midden, with a total of 5.4 m^3 being hand excavated. These test excavations demonstrate the presence of a partially intact Late Archaic midden at the surface, plus intact, buried, and stratified cultural components dating to the Early Archaic period. These materials have high potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.21.1 Introduction

5.21.1.1 Site Location and Description

Site 41CV184 is in north-central Fort Hood, Training Area 72. The site is southwest of the confluence of Henson Creek and an unnamed tributary (Figure 5.95), and is a prehistoric midden and open camp. Maximum site dimensions, as defined in 1993, measure 100 x 70 m, with a north-south long axis and covers an area of 0.5 hectare (1.2 acres). For purposes of analysis, the site is considered a member of the East Henson site group.

5.21.1.2 Previous Work

The site was first recorded by Holtzapple on 8 April 1979 as a burned rock midden and occupational site with burned rock and mussel shell concentrations (Skinner et al. 1981). One Marcos point was collected and prismatic blades, tabular burned rock, mussel shell, bifaces, edge worked tools, flakes, side scraper, chopper, hammerstone, core, deer bone, mammal bone, skull bone, and rodent teeth were observed. About 70% of the site was estimated to be disturbed by vandalism. Moore and Strychalski monitored the site on 2 December 1985. Most of the cultural material observed on the initial survey was again observed but the site was only estimated to be 50% disturbed by vandalism, erosion, and vegetation. It was concluded that reliable site boundaries had not been determined.

Kleinbach and Abbott revisited the site on 29 October 1992. Archeological and geomorphological assessment forms were completed and the site map was revised. The site was recorded as consisting of a thick burned rock midden (F 1) with flakes, fire-cracked rock, and mussel shell shallowly buried in a sloping Holocene alluvial terrace and colluvial toeslope complex (Figure 5.96). Many vandal holes had exposed midden debris along the western boundary. The site boundaries were expanded to include the south bank of Henson Creek and further east on the terrace.

Because the site had the potential for buried intact deposits, a shovel testing crew returned on 5 November 1992 and excavated seven shovel tests to depths of 40 to 60 cmbs. Of these, four were positive and were at the southern part of the site. These four tests yielded 293 cultural items. Based on these results the site was thought to contain significant cultural deposits and protection was recommended (Trierweiler 1994:A776-780). Subsequently, the State Historic Preservation Officer suggested that further testing was warranted to more clearly document NRHP eligibility.

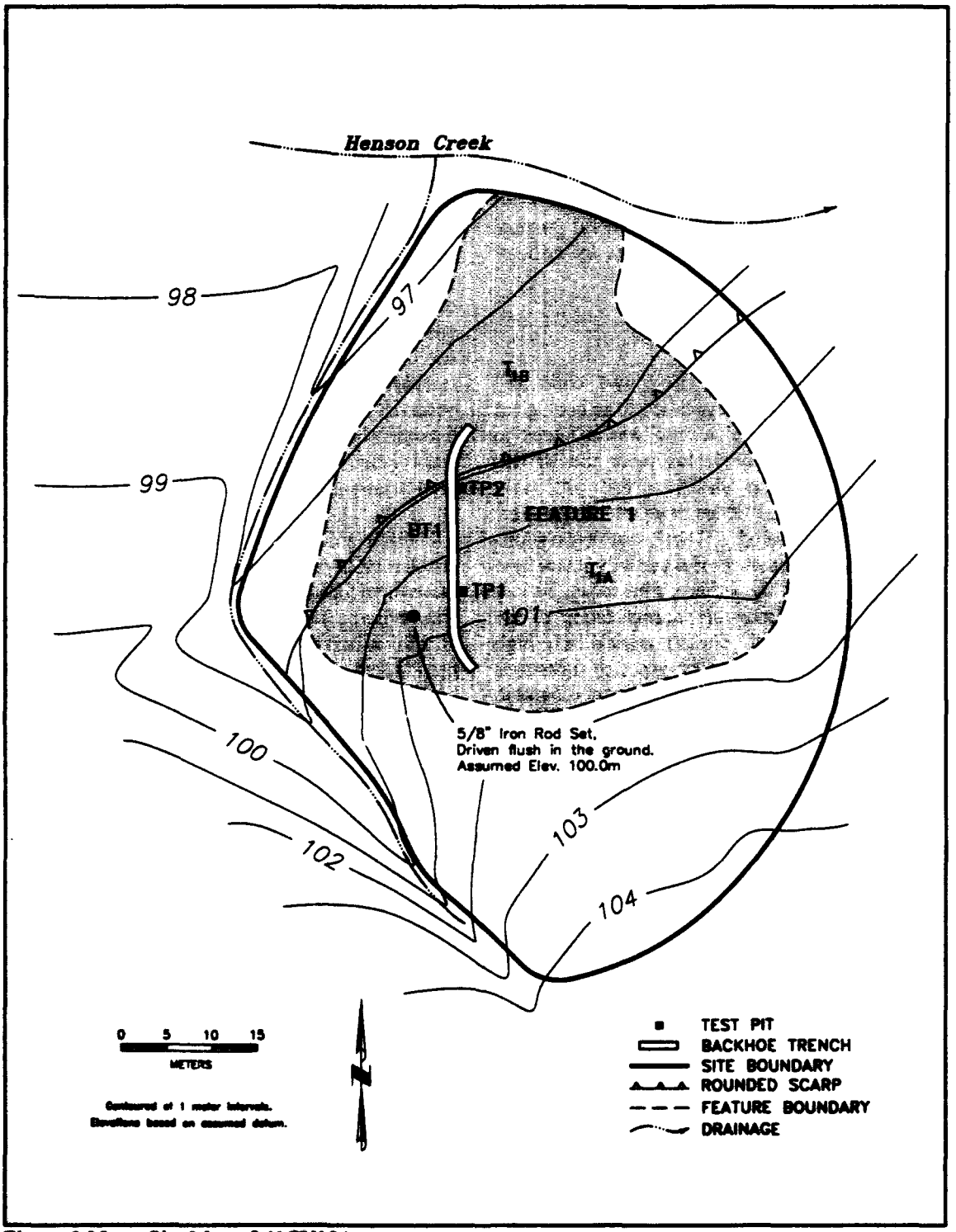


Figure 5.95 Site Map of 41CV184.



Figure 5.96 View Northeast Across 41CV184.

5.21.1.3 New Work

On 17 November 1994, Gil Eckrich (Fort Hood, Fish and Wildlife) and G. Mehalchick field checked the site's location since it was possibly in the endangered species habitat. Upon inspecting the area Eckrich granted permission for the archeological work to proceed. Formal testing was completed in early February 1995. One long backhoe trench was mechanically excavated, and offset from this trench, two test pits were manually excavated. Unit sizes and depths are presented in Table 5.39.

5.21.2 Results

The north-south trending BT 1 traversed the west side of the site (Figure 5.97). This trench revealed two alluvial fills interpreted as Nordt's (1992) West Range and Fort Hood fills, and revealed that the topographic break previously interpreted as a contact between alluvial and colluvial deposits was in fact a contact between two inset alluvial deposits that differed in elevation by 1 to 1.5 m (Figure 5.98). The older Fort Hood fill underlay the higher surface and the distal part of the lower surface (at depth), whereas the more recent West Range fill consisted of a downslope-thickening wedge of West Range alluvium. The burned rock midden (F 1) was exposed throughout the upper A horizon on both surfaces, but thickened considerably beneath the lower surface on the downslope end of the trench. Because of this strong lateral variability, two different measured sections were recorded near the upslope and downslope ends of the trench.

Table 5.39 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	30	1.5	3.5	T1 terrace
TP 1	1.00	1.00	2.30	T1 terrace
TP 2	1.00	1.00	3.10	T1 terrace



Figure 5.97 Backhoe Trench 1 through Burned Rock Midden Feature 1, 41CV184.

The downslope section encompassed the thickest exposed part of the late Holocene West Range fill. Overall, the section exhibited an A1-A2-AB-B1k-B2k-2B1k-2B2k-2C profile. The midden was restricted to the A and AB horizons (0 to 140 cmbs) which consisted of very dark grayish brown to black (10YR 3/2 to 10YR 2/1), massive to weak blocky stony clay loam. The underlying West Range sediments extended to a depth of 2.1 m, and consisted of structured, grayish brown to pale brown (10YR 5/2 to 10YR 6/3) stony silty clay loam. It was separated from the underlying Fort Hood fill by a clear dipping contact. The Fort Hood fill consisted of a fining upward sequence that graded down from a blocky, pale brown (10YR 6/3) stony silty clay loam to a light olive brown (2.5Y 5/6), massive loamy sand with depth. The section extended to a depth of 3.7 m.

The upslope section revealed a thick section of Fort Hood alluvium, possibly overlain by a thin, welded drape of West Range alluvium. It exhibited an A-Bw-Bk profile, and was 290 cm thick. The thin (60 cm) A horizon contained a moderate amount of burned rock and flakes that probably is temporally equivalent with the late Holocene midden downslope. The Bw horizon was 50 cm thick and consisted of very dark grayish brown (10YR 3/2) gravelly clay loam. It graded into a thick, blocky structured, brown (10YR 5/3) Bk horizon containing common films and filaments of carbonate. The lower Bk horizon contained a dense burned rock concentration (F 2) and several discrete burned rock clusters at various places along the trench.

Test pit 1, offset from the upslope end of the east wall of BT 1, above Fs 1 and 2, was excavated to a dense gravel lens at 230 cmbs. Feature 1 midden deposit was immediately encountered just below the ground surface. This first level excavated also yielded the highest frequency of artifacts within the midden, with 89 flakes, three stone tools, over 270 burned rocks, seven mussel shells, and a bone fragment (Table 5.40). High frequencies of debitage (n=220) and burned rocks (n=310), a Darl

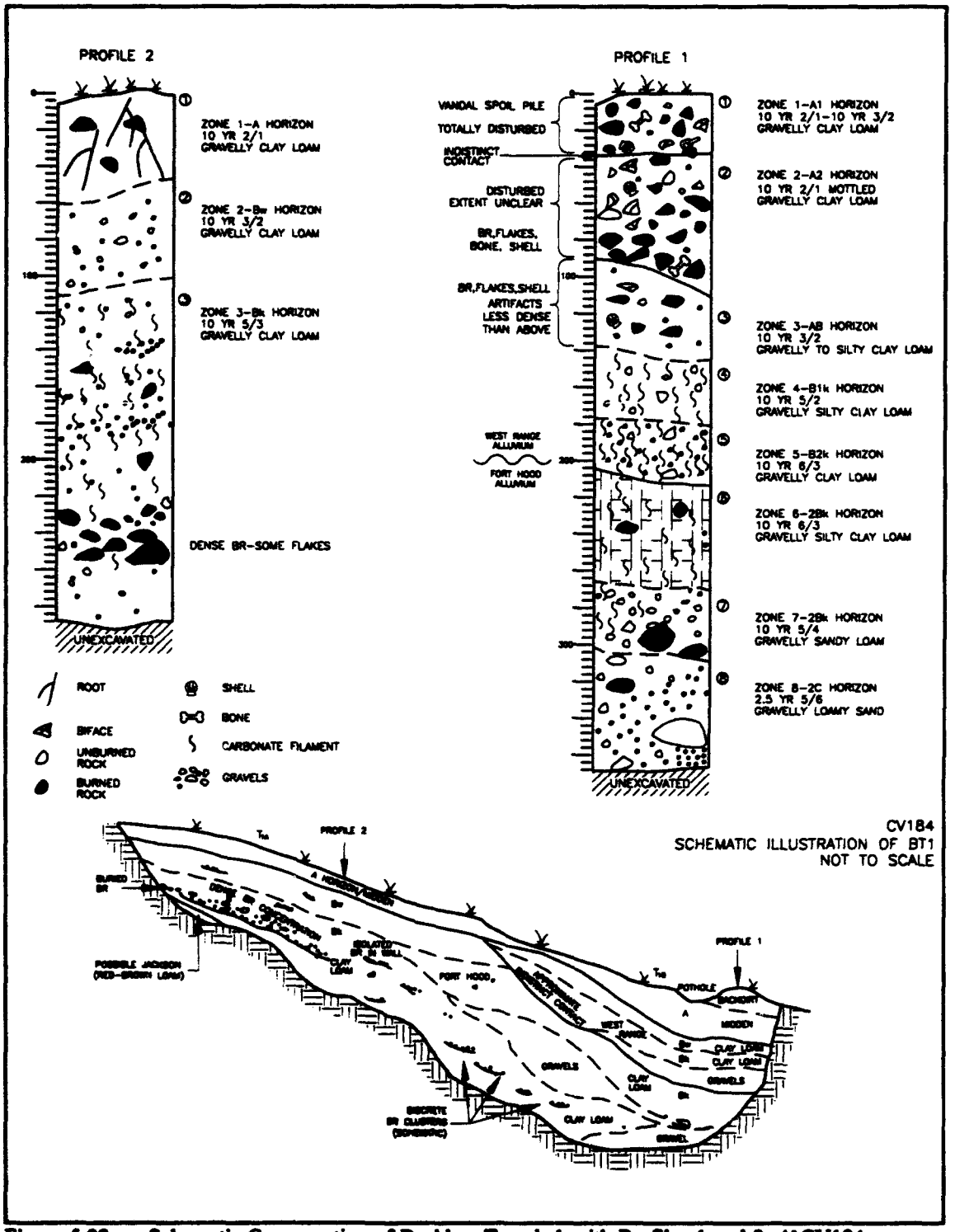


Figure 5.98 Schematic Cross-section of Backhoe Trench 1 with Profiles 1 and 2, 41CV184.

Table 5.40 Artifact Recovery by Test Pit, 41CV184.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	270	38.0	6	1	0	1	85	0	3	-	LA
	2	-	190	22.0	9	1	0	0	78	1	3	Darl, 1280±60	LA
	3	-	120	11.0	8	11	0	0	141	0	0	-	LA
	4	-	18	2.0	3	5	0	0	61	1	0	?dart	LA
	5	F1	8	0.9	3	5	0	0	23	0	0	2160±50	LA
	6	-	4	0.9	1	1	0	0	9	0	0	-	LA
	7	-	3	1.3	0	2	0	0	12	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	1	1	0	0	2	0	0	-	unspec.
	10-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	1	0.3	0	0	0	0	1	0	0	-	EA
	16	-	0	0.0	0	0	0	0	2	0	1	-	EA
	17	-	0	0.0	0	0	0	0	9	0	0	-	EA
	18	-	0	0.0	0	0	0	0	4	0	0	-	EA
	19	F2	35	3.5	0	0	0	0	4	0	0	-	EA
	20	F2	166	38.5	0	0	0	0	21	0	0	-	EA
	21	F2	259	37.5	0	0	0	0	1	0	0	-	EA
	22	F2	55	14.0	0	0	0	0	4	0	1	-	EA
	23	-	3	0.9	0	0	0	0	1	0	0	-	EA
	Total		1132	170.8	31	27	0	1	458	2	8		
2	1	F1	14	2.0	1	1	0	0	9	0	1	-	mixed
	2	F1	26	3.5	1	2	0	0	25	0	1	-	mixed
	3	F1	38	5.5	3	3	0	0	49	2	0	Darl	mixed
	4	F1	5	6.5	13	1	0	1	64	2	0	Lange, ?dart	LA
	5	F1	34	3.5	6	13	0	0	53	0	1	-	LA
	6	-	3	0.1	0	0	0	0	2	0	0	-	LA
	7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	13	-	2	0.5	1	0	0	0	1	0	0	-	EA
	14	-	11	2.5	1	0	0	0	12	0	0	-	EA
	15	-	10	2.0	0	0	0	0	6	0	0	-	EA
	16		4	0.8	0	0	0	0	3	0	0	-	EA
	17	-	0	0.0	0	0	0	0	0	0	0	-	EA
	18	-	3	3.5	0	0	0	0	3	0	1	-	EA
	19	-	0	0.0	0	0	0	0	5	0	0	-	EA
	20	-	0	0.0	0	0	0	0	0	0	0	-	EA
	21	-	2	1.0	0	0	0	0	0	0	0	-	EA
	22	-	1	0.3	0	0	0	0	1	0	0	-	EA
	23	-	1	0.3	0	0	0	0	1	0	0	-	EA
	24	-	1	0.2	0	0	0	0	2	0	0	-	EA
	25	-	1	0.3	0	0	0	0	0	0	0	-	EA
	26	-	6	2.5	0	0	0	0	0	0	0	-	EA
	27	-	2	1.0	0	0	0	0	0	1	0	?dart	EA
	28	-	3	1.5	0	0	0	0	0	0	0	-	EA
	29	F3	117	113.5	0	0	0	0	2	0	1	6230±60	EA
	31	-	0	0.0	0	0	0	0	0	0	0	-	EA
	Total		284	151.0	26	20	0	1	245	5	5		

point, three stone tools, several mussel shells and bone fragments continued to be recovered in the following two levels. A very small (0.05 g) charcoal sample level 2 yielded a $\delta^{13}C$ (-27.2‰) corrected assay of 1280 ± 60 BP (Beta-83525). Although 61 flakes, an unidentified dart point and several ecofacts were recovered from 30 to 40 cmbs, burned rock counts (n=18) decreased dramatically. A further reduction in flake and burned rock counts occurred from 40 to 50 cmbs. Another very small (0.1 g) sample of wood charcoal from level 5 was identified as hickory and provided a $\delta^{13}C$ (-27.5‰) corrected assay of 2160±50 BP (Beta-83346). A hickory nut was also recovered from this same level. Although the base of F 1 was considered to be at 50 cmbs, some flakes, a few burned rocks, and various ecofacts were from 50 to 70 cmbs. No cultural material was from 70 to 140 cmbs, except two flakes and a couple of ecofacts at 80 to 90 cmbs. From 140 to 180 cmbs, a finished biface, and less than ten flakes were found in each level.

The top of F 2, a burned rock concentration, was encountered at 185 cmbs (Figure 5.99). The feature was exposed in both the east and west sidewalls of BT 1 for about 7 m. This concentration did not have a uniform thickness and ranged from about 30 cm thick at the widest part to a single layer of burned rocks (about 10 cm thick) at other areas. Test pit 1 was positioned above one of the thicker parts of F 2 and although the feature was encountered between 185 to 220 cmbs within the test pit, it had a maximum thickness at this point of 25 cm due to its position on a buried surface sloping towards the terrace (Figure 5.99). Total recovery included over 500 burned rocks (93.5 kg), 34 flakes and one complete side scraper. All of the rocks were tabular and rounded burned limestone that ranged from small fragments to pieces 20 x 15 x 6 cm. No internal rock patterning was observed. Below F 2, the lowest level excavated yielded a single flake and a couple small burned rocks.

Test pit 2, offset from downslope end of the east wall of BT 1, above F 1 and one of the discrete

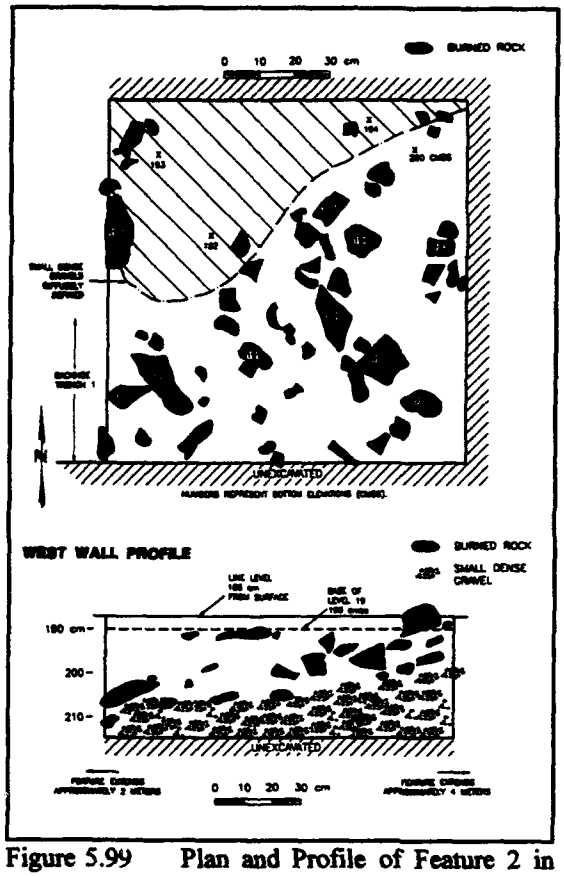


Figure 5.99 Plan and Profile of Feature 2 in Test Pit 1, 41CV184.

clusters of burned rock in the Fort Hood fill, was excavated to 310 cmbs. As in TP 1, the midden deposit of F 1 was encountered at the surface. Although numerous burned rocks (n=78) and flakes (n=71), a few ecofacts, a side scraper, and two Darl point bases were recovered from the upper 30 cm, recent items were also found indicating that this may be spoil from vandalism. Level 4 was apparently undisturbed and contained over 50 flakes, 52 burned rocks, more than 10 mussel shells, a bone fragment, an untyped dart tip, and a proximal end of a Lange point. Artifact counts decreased slightly from 40 to 50 cmbs, which was considered the base of the midden. Only a few items were found from 50 to 60 cmbs. Levels 7 and 8 were sterile. From 80 to 280

cmbs, few flakes and/or burned rocks were recovered from each level (levels 11 and 20 were sterile). Of note, an untyped dart similar to a Martindale point was found at 260 to 270 cmbs. The top of the cluster of burned rock (F 3) was encountered at 280 cmbs and the base was defined at 305 cmbs. When initially exposed, this cluster merely resembled a dense pile of jumbled blocky pieces of limestone which extended into the north, south, and east walls of the test pit (Figure 5.100). After the removal of two to three tiers of these rocks (n=104, 75.5 kg), 13 large tightly placed limestone slabs (38 kg) were exposed. These slabs, the largest measuring 38 x 35 x 5 cm (12 kg), defined the base of a large, slightly basin shaped hearth. The matrix below the slabs was oxidized and charcoal stained. A 2.4 g sample of wood charcoal yielded a $\delta^{13}C$ (-26.9‰) corrected assay of 6230 ± 60 BP (Beta-83418). Relatively few items, including two flakes, an end scraper, and few mussel shell and bone fragments, were found in the feature matrix. As mentioned above, the hearth extended into all of the test pit walls, but did not extend across the trench. Therefore, the size of the hearth was estimated to be a maximum 4 m diameter. No cultural material was found below the hearth from 305 to 310 cmbs and excavation was terminated.

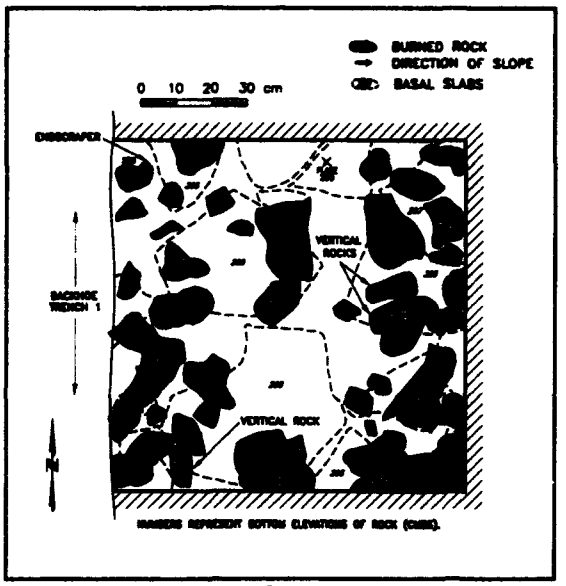


Figure 5.100 Plan of Feature 3, Test Pit 2, 41CV184.

5.21.3 Analysis and Interpretations

5.21.3.1 Definition of Analytical Units

Test pits 1 and 2 yielded one partially disturbed midden (F 1), two intact features (Fs 2 and 3), and associated cultural material that were assigned to two identifiable time periods, the Early Archaic, and the Late Archaic based on three charcoal dates of 1280, 2160, and 6230 BP, plus seven dart points. The Early Archaic materials lie below 120 cmbs in both test pits and include midden F 2 and basin hearth F 3. The late Archaic materials are restricted to the midden deposit exposed on the surface and in the top 60 cm in each test pit.

The cultural material in TPs 1 and 2, between 60 to 120 cmbs (between the two identified time periods), were not assigned to a particular time period. It is possible that most of these materials were displaced downward by turbation from the midden above. The lack of absolute dates and diagnostic points prevented material assignment. The top 30 cm of TP 2 had material that was considered mixed as it contained recent trash and suffered from vandalism. Even though some mixing has occurred in this upper midden deposit, all the mixed material may still belong to the Late Archaic period. Being conservative, it was not analyzed as such.

5.21.3.2 Early Archaic Materials

These materials include a totally buried burned rock midden (F 2) that is 40 cm thick, a basin shaped hearth (F 3), 83 pieces of lithic debitage, 683 burned rocks, two mussel shell umbos, four stone tools, one untyped point, charcoal pieces, and snail shells.

The 83 pieces of lithic debitage represent six identified and seven unidentified chert types with 65% of the materials identifiable (Table H-191). Fort Hood Yellow chert contributes 52% to the identifiable cherts and 34% to the total assemblage. The highest quantities of typeable cherts originate from the North Fort chert province (96%) with only two types from the Southeast Range chert province. Based on these data it is not unexpected that Fort Hood Yellow and the indeterminate cherts occur in higher than expected quantities, Fort Hood Gray and Gray/Brown/Green occur in expected frequencies, and all others occur in less than expected quantities (Table H-192). The exclusion of the indeterminates results in no change.

The modal peak for size occurs in the 1.2 to 0.8 cm category with a slow drop off to the larger sizes. Only 61% of the debitage is tertiary (Table H-193). This is expected given the rather large size of the materials and may indicate either more influence in the debitage from core reduction or the importation of larger flake-blanks with less shaping and trimming.

The proximal point fragment from Level 27 in TP 2 was untyped, but somewhat resembles a Martindale. It was manufactured from Cowhouse White chert. The four stone tools consist of a utilized flake, distal fragment of a finished biface, a side scraper, and a longitudinal section of an end scraper (Table H-194).

The only two umbos recovered were both from TP 2 level 13 and 14 and were identified as *Quadrula* sp. and *Lampsilis* sp. (Table H-195). Neither specimen was burned. These appear to be associated with the burned rock above F 3. The lack of bones appears to result from poor preservation.

The burned rock was mostly (93%) from the two identified features. Feature 2 yielded 515 pieces that weighed 93.5 kg while F 3 yielded 117 pieces that weighed 113.5 kg. The remaining pieces were mostly scattered in TP 2 levels 14 through 16 which may relate to another occupation zone during this period.

Scattered flecks of charcoal (2.55 g) were associated with hearth F 3 and a 2.4 g provided a date of 6230 BP. Two float samples from F 3 yielded no carbonized plant remains. A tiny (0.05 g) sample from F 2 was submitted for dating, but was determined to be too small for an accurate age determination. A float sample from F 2 yielded no carbonized plant remains.

The absolute age of 6230 BP places F 3 and associated materials in Prewitt's San Geronimo phase (1981; 1985). The untyped dart point that somewhat resembled a Martindale point was about 10 cm above this dated feature. It is unclear if F 2 midden is this old or slightly later in time. In 1981 Prewitt indicated that the Early Archaic, Oakalla phase (5100 to 4600 BP) was the earliest phase associated with burned rock middens. The over cultural assemblages associated with the two features are quite sparse but these aged deposits are also quite rare, especially with this type of excellent context. These Early Archaic occupations are one of less than six dated to this major time period in Fort Hood.

5.21.3.3 Late Archaic Materials

These materials were in midden F 1 that is observed on the surface. The two test pits yielded 520 pieces of lithic debitage, seven stone tools, four dart points, 652 burned rocks (84.8 kg), 49 mussel shell umbos, 38 bone fragments, sparse charcoal, and quantities of snail shells.

The 520 pieces of lithic debitage represent eight identified and seven unidentified chert types with 60% of the materials identifiable (Table H-196). Fort Hood Yellow stands out among the identifiable cherts (58%) and also among the total assemblage (35%). As seen with the Early Archaic materials, North Fort cherts dominate with four types and 89% while the Southeast Range has one type represented and 9%. As anticipated, Fort Hood Yellow and the combined indeterminates

result in higher than expected quantities, with Gray/Brown/Green occurring in expected amounts, and all others occurring in less than expected frequencies (Table H-197). The exclusion of the indeterminates results in Fort Hood Yellow occurring in higher than expected quantities, Heiner Lake Tan, Fort Hood Gray, and Gray/Brown/Green occurring in expected frequencies, and all others in less than expected quantities.

Two categories contribute to form a modal peak for size with quantities of 173 specimens each (0.9-1.2 and 1.2-1.8 cm). Only the smallest size of debitage is not present. These data may indicate that the assemblage is a mixture of biface and core reduction or that reduction only proceeded to a certain point before the resultant tools were removed from the site. Over three-quarters of the materials lack cortex, with approximately 20% of the materials having partially cortex (Table H-198).

The four dart points consist of the proximal end of a Heiner Lake Tan Lange, a complete Darl of Owl Creek Black, an untyped indeterminate light gray blade section, and the distal end of a dart point made of Gray/Brown/Green chert. The seven stone tools consist of a utilized specimen, an edge modified flake, a complete chopper, the proximal end of finished biface, and a complete late stage biface (Table H-199). The material types from the North Fort chert province dominate (55%), with another 27% that represent Southeast Range province, and 18% that are unknown paralleling the patterns found in the debitage.

The 38 bones represent medium to large mammals, deer size, with positive identification deer (Odocoileus sp.) teeth and a calcanium identified (Table H-200). Nine of the specimens are burned and 12 show spiral fractures. The 49 umbos were identified as Unionacea (n=26), *Tritigonia verrucos* (n=3), *Amblema* sp. (n=13), *Quadrula sp.* (n=3), *Cyrtonaias* sp. (n=2), and *Quadrula apiculata* (n=2). Only two Unionacea specimens were burned. It appears that the deer and mussels supplied the principal food resources. The 652 burned rocks were all part of the midden and tend to have been concentrated in the first three levels. No specific patterns were recognized.

Only very limited charcoal (0.04 g) was recovered from the midden. A 0.1 g sample from TP 1 level 5 provided an assay of 2160 BP and a second tiny (0.05 g) charcoal sample from TP 1 level 2, yielded an assay of 1280 BP. These two charcoal dates are in stratigraphic order and provide excellent age control for this midden. These absolute ages cover the entire time span of the Late Archaic and are therefore equivalent to Prewitt's (1981; 1985) Uvalde, Twin Sisters, and Driftwood phases. In fact, the Darl point out of TP 1, level 2 corresponds nicely with the 1280 BP age from the same level. The Lange point may equate with the 2160 BP date. The absolutes ages of this midden reveal about a 1,000 year accumulation period and with its position of the slope reveal the slow accumulation of matrix.

5.21.3.4 Mixed Materials

These mixed materials include 83 pieces of lithic debitage, 78 burned rocks (11 kg), five mussel shell umbos that were identified as *Amblema plicata* (n=3) and Unionacea (n=2), six deer size bone fragments of which two are burned (Table H-201), two Darl points, a longitudinal section of a side scraper and a distal end of a finished biface.

The 83 specimens of lithic debitage represent five identified and eight unidentified chert types with just under half the materials identifiable (Table H-202). Fort Hood Yellow is the most dominate of the identified materials at 56%, and 28% of the total assemblage which is dominated by four North Fort types (90%). As would be anticipated Fort Hood Yellow and the combined indeterminates occur in higher than expected quantities, Gray/Brown/Green occur in expected frequency and all others occur in less than expected frequency (Table H-203). The exclusion of the indeterminates results in Fort Hood Yellow remaining in higher than expected frequency, Gray/Brown/Green and Heiner Lake Tan occurring

in expected frequencies, and all others types not changing.

The modal peak for size is the 1.2 to 1.8 cm category with a more gradual drop off in frequency toward the larger sizes. Sixty-six percent of the debitage is tertiary with almost 20% of the partially cortex materials (Table H-204).

5.21.3.5 Temporally Unspecified Materials

These materials include 21 specimens of lithic debitage, three burned rocks (1.3 kg), one Unionacea umbo shell, three unburned deer size mammal bones (Table H-205). No stone tools or points were found in these deposits.

The 21 specimens of lithic debitage represent four identified and five unidentified chert types with only 43% of the materials identifiable (Table H-206) dominated by the three types of North Fort (88%). Only the combined indeterminates occur in higher than expected frequencies with all other materials occurring in expected amounts (Table H-207). The exclusion of the indeterminates does not result in any change. The quantity of debitage peaks in the 1.2-1.8 cm size category and drops off slowly to both ends of the spectrum. All sizes but the smallest are present. Three-quarters of the debitage are tertiary (Table H-208).

5.21.3.6 Investigation of Amino Acid Epimerization of Rabdotus Shells

As part of the continuing investigation of the utility of amino acid epimerization to questions of chronology and site integrity, a stacked sequence of *Rabdotus* shells, consisting of 4-6 shells from each vertical provenience, were selected and analyzed from Levels 4 , 9 , 13, 16, 20, and 25 to 26 in TP 2. The results of the individual assays are illustrated in Figure 5.101 and are presented in Appendix C.

The six shells from level 4, in the upper part of the undisturbed portion of F 1, exhibited remarkably tight clustering with no significant outliers. The A/I ratios from these six shells ranged from 0.0412 to 0.0464, which represents a variability of approximately ±5.5% relative to the mean value of the sample. Because Goodfriend has demonstrated that analytical variability alone of the technique is approximately ±5%, it is considered unlikely that any heating effects are represented in this cluster. This in turn implies that either this part of the midden was not created by in situ burning, or alternatively, and considerably less plausibly, that all six shells are intrusive. The approximate mean radiocarbon-equivalent age of the six shells is 1214 BP according to the equation of Ellis et al. (1995), and 1585 BP according to the equation used by Abbott et al. (1995) in the previous testing report. Both of these estimates are well in line with the chronometric data from charcoal in TP 1.

In contrast, the five shells from level 9 exhibit extreme variability, with A/I values ranging from 0.0591 to 0.736. Variability of the samples is nearly 300% of the mean value, and none of the shells exhibit clustering with any other shell at ±5% of the measured value. For this reason, the lowest A/I ratio was tentatively accepted as the best estimate of the age of deposition, and suggests approximate radiocarbon-equivalent ages of 1750 BP and 2285 BP using the calibration ages of Ellis et al. (1995) and Abbott et al. (1995), respectively. Although this level is well below F 1, comparison of the purely descriptive test pit profile with the interpretive trench profile suggests that the fill at this level is of West Range age, and is therefore not in strong conflict with the A/I results. However, the recovery of charcoal from the lower part of F 1 in TP, which was at a higher stratigraphic level and dated to 2160 BP, suggests that the latter of the two age estimates is probably closer to the true age. Moreover, the wide spread of A/I values strongly suggests that this shell suite was heated, even though the level is at least 30 cm below the base of the midden. In short, interpretation of the A/I results from these five shells is problematic.

Six shells were analyzed from Level 13, which lies approximately at the West Range/Fort Hood contact. The suite yielded values ranging from

0.0882 to 0.232, with a cluster of three shells ranging between 0.882 and 0.946. These three specimens are considered to best represent the age of deposition, and equate to radiocarbon-equivalent ages of approximately 2960 BP and 3840 BP using the equations of Ellis et al. (1995) and Abbott et al. (1995), respectively. The other three shells do not cluster and exhibit substantially "older" A/I ratios (radiocarbon-equivalent ages of between approximately 5000 BP and 8500 BP per the method of Goodfriend et al. 1995), but lack extreme values, and may actually represent reworking of older deposits rather than artificial heating. Such mixed assemblages should be particularly common at buried erosional contacts (Abbott et al. 1995).

Another six shells were analyzed from level 16, which is clearly well within the Fort Hood fill based on dated stratigraphy exposed in the backhoe trench. These specimens yielded A/I ratios ranging from 0.084 to 0.114, including four clustered between 0.084 and 0.0963. These four snails were considered to best represent the probable age of deposition. The mean radiocarbon-equivalent ages determined with the formula of Ellis et al. (1995) and Abbott et al. (1995) are approximately 2875 BP and 3725 BP, respectively. Although the latter estimate is closer, both of these two estimates are too young to be associated with the Fort Hood fill, which stopped accumulating somewhere around 4500 BP (Nordt 1992). Therefore, two observations are pertinent: none of the specimens from level 16 were significantly heated, and the radiocarbon-equivalent age predicted by both A/I regressions appears too young.

The same is true of the last two proveniences in TP 2. Six snails from level 20 yielded A/I ratios between 0.103 and 0.135. The three "youngest" assays were analytically identical, while the results from two additional shells were slightly higher (up to 0.11) but still within the same "loose cluster." These five shells were judged to represent the best estimate of the age of deposition. However, once again, the regression-estimated ages (3345 BP and 4450 BP) derived from the two equations appear at least 1,000 years too young given the currently understood stratigraphic framework.

Four snail shells from a sparse population in levels 25-26 were also analyzed. They represented the only usable specimens from this depth, and yielded A/I ratios that ranged from 0.0987 to 0.129. Two of the specimens from level 26 overlapped at ±5% clustered at a mean value of 0.101, while the third specimen from level 26 and the only specimen from level 25 also overlapped, but at a mean value of 0.124. The younger of these two estimates equates to a mean radiocarbon-equivalent age of approximately 3285 BP using the equation of Ellis et al. (1995) and approximately 4260 BP using the method of Abbott et al. 1995. Both of these ages are not only too young given the known context of the fill and the radiocarbon age of 6230 from Level 29, but also represent a stratigraphic reversal relative to the A/I values obtained from Level 20. Because these snail shells were clearly not intrusive, this implies that the rate of racemization at depth was either slowed due to burial depth or groundwater cooling, or the shells were selectively leached of amino acids by groundwater (see Section 7.4).

5.21.4 Conclusions

This site represents an alluvial fill of Fort Hood age (early-middle Holocene), containing both alluvial and colluvial sediments, that incorporates a number of interstratified burned rock features, and a younger, inset fill of West Range age that contains an extensive burned rock midden (F 1).

Feature 1 dates to the Late Archaic period (about 2100 to 1280 BP) and appears to have vertically accumulated over a 1,000 year period. This period is equivalent to the Uvalde, Twin Sisters, and Driftwood phases (Prewitt 1981; 1985) in the Central Texas sequence. Although the midden deposit visible on the surface shows considerable vandalism, and the integrity of the top 30 cmbs (possible deeper in localized disturbances) is poor, their are intact parts still buried. The fact that this

feature dates to one period of time means it could still provide useful information for the period.

At least two buried Early Archaic occupations in excellent context lie well below (60 cm) this midden deposit. The buried midden F 2 does not have projectiles or absolute dates associated with it but could provide informative data. The lower occupation containing a basin hearth F 3 dated to 6230 BP has sparse material in association. These Early Archaic occupations are only a few of the dated events at Fort Hood and with their apparently pristine context provide excellent opportunities to answer various questions about this period.

Accordingly, site 41CV184 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Protection efforts should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.22 SITE 41CV201

In late October and early November 1994, we conducted formal test excavations at prehistoric archeological site 41CV201. Testing was designed to evaluate eligibility for inclusion to the NRHP. Six backhoe trenches and two test pits were excavated, with a total of 2.0 m^3 being hand excavated. These tests demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP, and no further work is recommended.

5.22.1 Introduction

5.22.1.1 Site Location and Description

Site 41CV201 lies in Fort Hood Training Area 53. The site is delimited by Turnover Creek to the east-southeast and an ephemeral tributary to the north (Figure 5.102). Many roads cross the site, with a borrow pit and stock pond just beyond the northwest and north central site boundaries. Maximum site dimensions, as defined in 1992, measure 475 x 200 m with a northwest to southeast long axis, and cover an area of 9.5 hectares (23.5 acres). For purposes of analysis, the site is considered a member of the Shoal/Turnover site group.

5.22.1.2 Previous Work

The site was first recorded by Thomas on 27 April 1979 as an extensive flake scatter (Skinner et al. 1981). Occasional cores and bifaces were noted, in addition to many cobbles and limestone chunks. The site had undergone extensive sheet erosion and was considered a procurement area with a possible camp function. The site was monitored by Moore and Strychalski on 11 November 1985. A thin scatter, as well as several "hot spots," of flakes and tools were observed across a "chert field." At that time, the site had been impacted an estimated 15% by roads and erosion. For management purposes, the site was later classified as a lithic resource procurement site.

On 30 December 1992, Frederick and Mehalchick reevaluated the site based on archeological potential and geomorphic context, and delineated Subarea A as the Holocene valley of Turnover Creek, and Subarea B as the slopes and ridge crest. In Subarea A, multiple alluvial fills, possibly several meters thick, were noted. Although no cultural material was observed in this subarea, the depositional units were of a culturally relevant age and therefore, required shovel testing. In Subarea B, moderate frequencies of lithics and burned rocks were scattered across the surface. The soil was usually less than 30 cm thick and in some

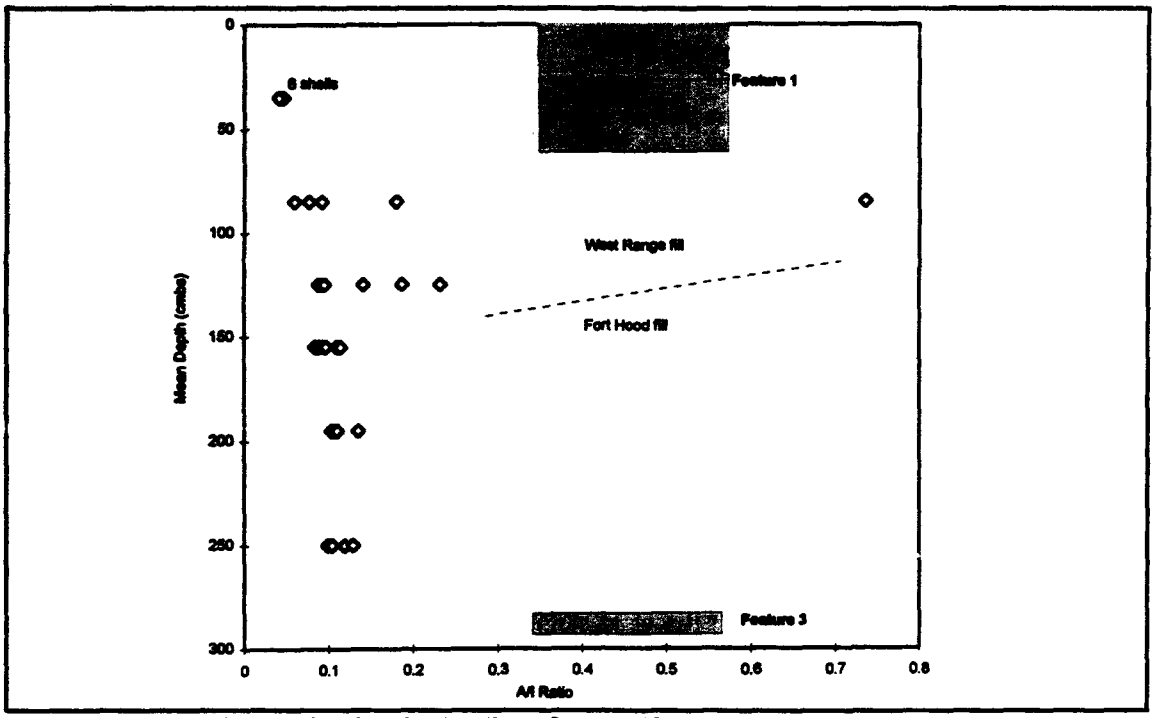


Figure 5.101 Amino Acid Epimerization Data from 41CV184.

places, this soil was underlain by a stage 4 to 5 calcrete formed in gravelly alluvium which was probably the remnants of a Pleistocene age fill. In addition, about 30% of the ridge crest was exposed limestone. This area had been heavily disturbed by tree clearing, erosion, historic occupation and a stone wall construction. Since the potential for buried cultural deposits was negligible, no shovel testing was recommended for Subarea B.

On 4 January 1993, a crew shovel tested Subarea A and excavated 25 tests to 40 cmbs. Of these, only four tests (16%) were positive, yielding a total of 11 lithics. On 22 April 1993, Abbott and Kleinbach returned to the site to evaluate the potential of Subarea B to address questions of lithic resource procurement and reduction. Two chert zones and two impact zones were identified, mapped, and characterized, and samples of material were collected. Impact zone 1 showed intense disturbance and was excluded from resurvey; impact zone 2 consisted of islands of relatively intact slopes which were resurveyed on 27 April 1993. Nine transects with 46 observation points spaced 30 m apart were surveyed, but no positive observations were made. Based on these results, Subarea B was judged to be ineligible for inclusion to the NRHP.

In Subarea A, it was concluded that the upper 40 cm of deposit had extremely limited archeological potential, but intact cultural material might be buried at greater depths. Formal testing was recommended for Subarea A to clearly evaluate NRHP eligibility (Trierweiler 1994:A781-A785).

5.22.1.3 New Work

Formal testing of Subarea A was completed in early November 1994. Six trenches (BTs 1-6)

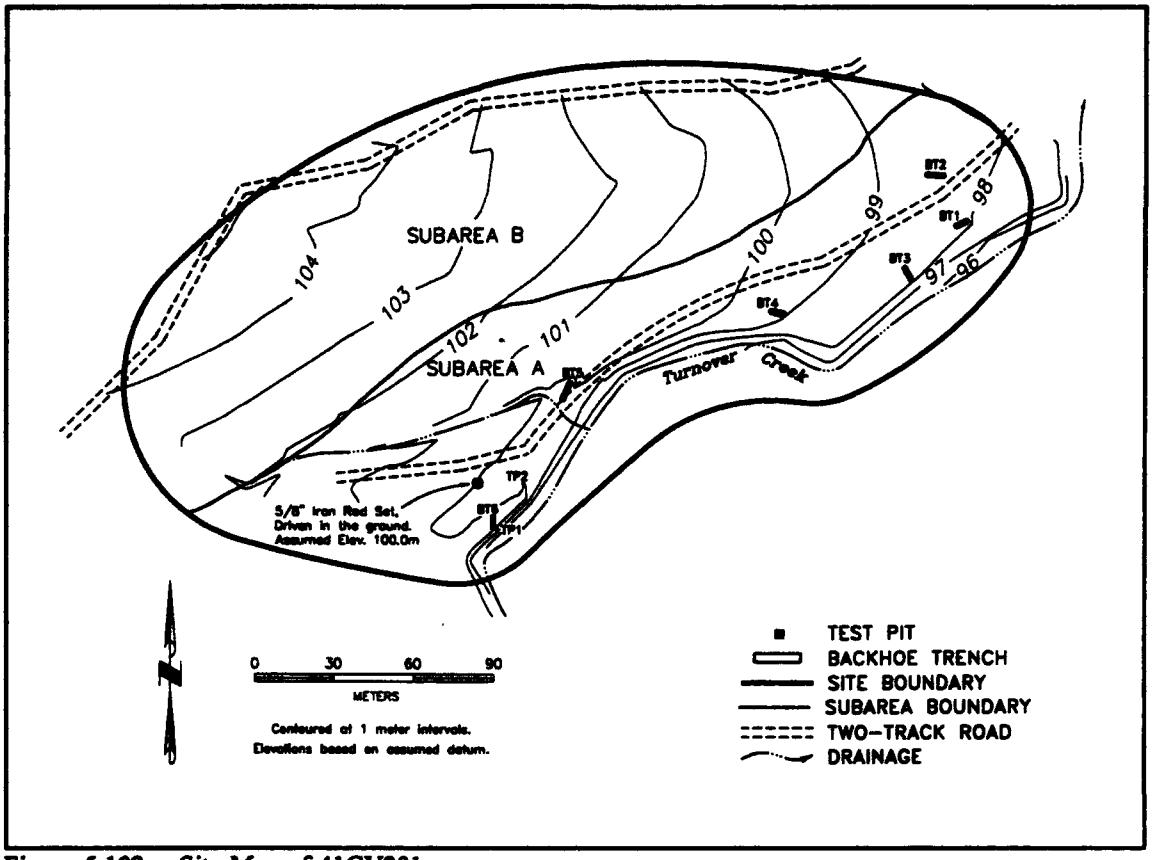


Figure 5.102 Site Map of 41CV201.

were mechanically excavated to prospect for buried cultural material and examine site stratigraphy and two test pits (TPs 1 and 2) were manually excavated. The unit sizes and depths are presented in Table 5.41.

5.22.2 Results

The six trenches were excavated along the north bank of Turnover Creek, from east to west. No cultural material was in BTs 1 through 5 and only a very few flakes were detected in BT 6 about 55 to 90 cmbs.

Table 5.41 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	0.8	T2 terrace
BT 2	5	0.8	0.8	T2 terrace
BT 3	5	0.8	0.8	T2 terrace
BT 4	5	0.8	0.8	T2 terrace
BT 5	7	0.8	1.0	T2 terrace
BT 6	6	0.8	1.7	T1 terrace
TP 1	1.00	1.00	1.00	T1 terrace
TP 2	1.00	1.00	1.00	T1 terrace

5.22.2.1 Excavations in the Intermediate Alluvial/Colluvial Surface

Trenches 1 through 5 were all excavated on an alluvial/colluvial surface that merged almost imperceptibly with the gently-sloping intermediate upland (Killeen) surface away from the stream (Figure 5.103). All five trenches revealed thin (less than 1 m) deposits of Holocene-age black gravelly clay loam that appeared to consist primarily of slopewash shed off the gently sloping upland over a thin zone of alluvial gravels resting on an elevated bedrock strath. Profile development ranged from A-C to A-Bw-2K, depending on the age of the underlying gravel. Although a great deal of naturally-occurring chert was contained in the clay loam, no cultural material was detected in BTs 1 through 5.

5.22.2.2 Excavations in the Alluvial Terrace

Trench 6 was excavated on a lower alluvial fill terrace outside the originally-defined site boundary in the southwestern corner. It revealed a stacked sequence of two distinct, fine-grained alluvial fills separated by a distinct paleosol and resting on hard limestone. The upper fill exhibited an A-C profile developed in granular, dark grayish brown (10YR 4/2 to 10YR 4/1.5) gravelly clay loam and was 55 cm thick. The lower fill was 1 m thick and exhibited an A-Bw-Bk profile developed in very dark gray to dark grayish brown (10YR 3/1 to 2.5Y 4/2) blocky gravelly clay. The Bk horizon was heavily mottled with distinct whitish, grayish, and yellowish mottles and contained common soft carbonate masses of probable phreatic origin. A few probable cultural flakes were detected in the strongly structured buried A horizon. Hard limestone bedrock was encountered 155 cmbs. Based on the degree of soil development, the sequence is tentatively interpreted as a veneer of Ford Alluvium over a thin deposit of probable West Range alluvium that has experienced considerable digenetic alteration in its lower part due to periodic saturation.

Test Pit 1 was offset from the southeast corner of BT 6 and excavated to 100 cmbs. The only

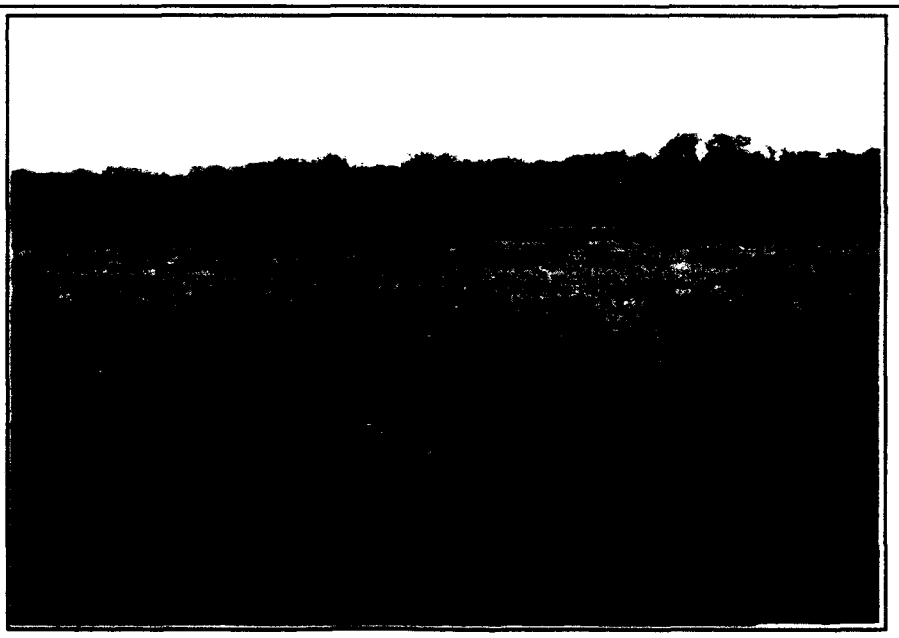


Figure 5.103 View South Across 41CV201.

cultural material recovered consisted of two flakes from 60 to 80 cmbs (Table 5.42). Test Pit 2 was 15 m northeast of BT 6 and excavated to 100 cmbs. The upper two levels were composed of a recent sandy flood drape which was removed unscreened. Again, this unit was nearly devoid of cultural material with a single flake from 80 to 90 cmbs and charcoal was collected from 40 to 50 cmbs.

5.22.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences from the site are grouped together as a single temporally unclassifiable Analytical Unit. The six backhoe trenches failed to encounter any cultural features, with only two possible chert flakes encountered in BT 6. The two test pits yielded a total of three pieces of debitage, 17 snail samples, one charcoal samples (0.4 g), and no burned rock, stone tools or features.

The three flakes include one identified as Fort Hood Yellow and two unidentified chert types (indeterminate light brown and indeterminate mottled). Each specimen is of a different size class ranging from 0.9 to 2.6 cm in size and two specimens have cortex.

5.22.4 Conclusions

The majority of the site is underlain by slopewash deposits that mantle the gently sloping surface of the intermediate (Killeen) upland. The tested part of the site consists of a gravel-mantled strath terrace overridden by a veneer of this clayey slopewash. Whereas the environment is marginally conducive to preservation, no cultural material was detected in any of the trenches. One additional trench (BT 6) was excavated on an alluvial fill terrace outside of the previously defined site boundary. Although this trench yielded a light scatter of flakes in association with a buried paleosol, the density is very low and appears not to represent a major component.

We conclude that site 41CV201 contains no significant archeological materials. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort

Table 5.42 Artifact Recovery by Test Pit, 41CV201.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	2	0	0		
2	1-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	0		

Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.23 SITE 41CV240

In August 1994, we conducted formal test excavations at prehistoric archeological site 41CV240. Testing was designed to evaluate eligibility for inclusion to the NRHP. Five backhoe trenches and seven test pits were excavated, with a total of 5.5 m^3 being manually excavated. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP, and no further work is recommended.

5.23.1 Introduction

5.23.1.1 Site Location and Description

Site 41CV240 lies in northwestern Fort Hood in Training Areas 48 and 53. The site is an extensive lithic resource procurement site with a maximum dimension, as defined in 1993, of roughly 1,300 m long, with width at various points ranging from 100 to 500 m (Figure 5.104). The site has a northeast-southwest axis, and covers an area of about 32.5 hectares (80 acres). An underground pipeline bisects the site from northwest to southeast. For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.23.1.2 Previous Work

This site has been visited and recorded at least seven times prior to the current work. The Fort Hood artifact catalog lists one Clovis, one Plainview, one Angostura, one Uvalde, one Gower, two Bulverde, two Pedernales, two Marshall, two Marcos, two Castroville, one Lange, two Darl, one Ensor, nine untyped dart points, and ten ceramic sherds as being collected from this site.

It was initially recorded by Mobley on 28 October 1979 as a 750 x 350 m open camp (Skinner et al. 1984). One corner-notched and four stemmed projectile points were collected and a high density of artifacts, including flakes, cores, scrapers, bifaces, and burned rock, were observed. The site was estimated to be 20% to 25% disturbed by a pipeline, roads, and tank traffic. Mobley noted that much of the material observed had been heat treated suggesting that lithic thermal alteration was being conducted.

On 5 May 1981, Thomas recorded a 150 x 100 m artifact scatter with a large area of burned rock located within the site boundary established on the previous survey. Thomas noted that the site contained discrete Archaic and Late Prehistoric components. End scrapers, a dart point, two ceramic sherds, a final biface, and two PaleoIndian lanceolate points were collected. Thomas noted that ceramic sherds and Perdiz arrow points were collected by Morrison. The site was estimated to be 5% disturbed by a roads.

Drollinger and Michaels recorded the site on 2 April 1985 as a 575 x 120 m temporary camp. Nine dart points and a drill fragment were collected with debitage, bifaces, and burned rock being observed. The site was estimated to be 35% disturbed by roads and vehicular traffic.

Bradle again recorded the site on 28 June 1985, as a 800 x 500 m secondary and tertiary lithic reduction campsite. Eleven projectile points and an end scraper were collected with flakes, scrapers, and bifaces being observed. The site was again estimated to be 35% disturbed by erosion and vehicular traffic. Bradle noted that field numbers IH332 and IH333 were incorporated into 41CV240.

Cullom and Pry monitored the site on 3 February 1988. The site dimensions were listed as 575 x 120 m. Artifacts were noted as being sparse throughout the monitor area except for a "hot spot" at the northeast edge of the site. The site was estimated to be 40% disturbed by erosion, juniper cutting, and vehicular traffic. Callum and Pry

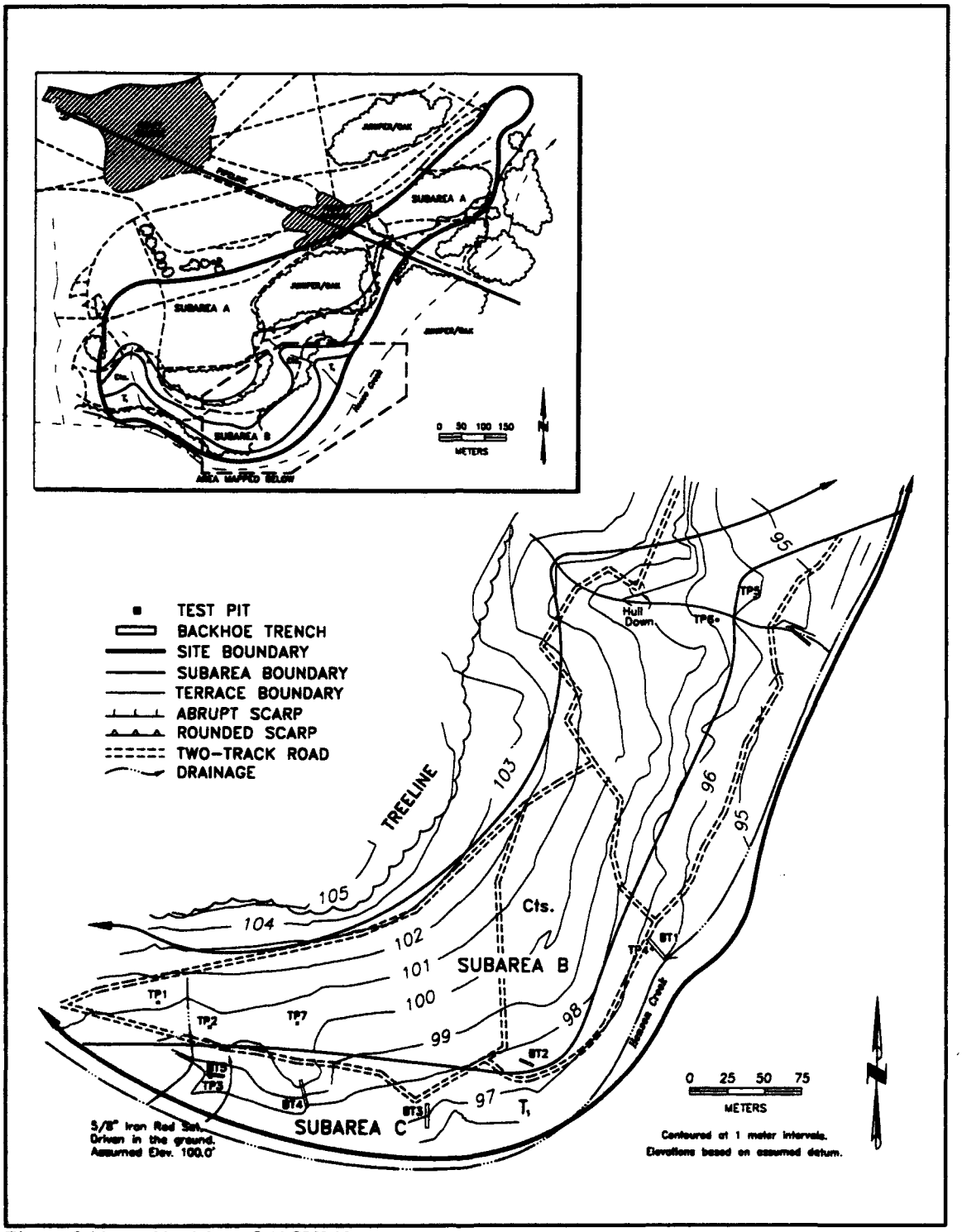


Figure 5.104 Site Map of 41CV240.

concluded that a resurvey was needed for a site boundary check. However, the site dimensions noted by these investigators led to formal classification of the site as an LRP.

Kleinbach and Abbott revisited the site on 30 April 1993 and divided it into three subareas (A through C) based on the geomorphic context and the potential for intact cultural deposits. Subarea A subsumed a highly disturbed sloping Killeen surface, Subarea B subsumed a broad colluvial toeslope, and Subarea C subsumed a (T_1) terrace of Henson Creek (Figure 5.105). The site also was evaluated for its potential to address lithic-procurement issues. Chert and impact zones were identified, mapped, characterized, and samples of material were collected.

Because the site was observed to have chert resources and was not judged to be completely damaged by military activity, a resurvey crew returned on 11 May 1993 and completed 128 observations along 16 resurvey transects. Little natural chert was observed, and the site was judged to have a very low potential to contribute to lithic-procurement research. Because no intact deposits were present within Subarea A, no shovel tests were dug there. Because Subareas B and C had the potential for intact deposits, therefore a shovel testing crew returned on 12 May 1993 and excavated 45 shovel tests within Subarea B and 22 shovel tests within Subarea C. Shovel testing results indicated that Subareas B and C contained potentially intact cultural materials with possible NRHP eligibility. Therefore, 4 to 6 m^2 of manual excavation in Subarea B and 2 to 4 m^2 of manual excavation plus two backhoe trenches in Subarea C were recommended to determine NRHP eligibility (Trierweiler 1994:A793-A798).

5.23.1.3 New Work

Formal test excavations were conducted 9 through 16 August 1994. Four test pits (TPs 1, 2, 6, and 7) and one trench (BT 2) were excavated in Subarea B and three test pits (TPs 3-5) and four trenches (BTs 1, 3, 4, and 5) were excavated in Subarea C. The unit sizes and depths are presented in Table 5.43.

5.23.2 Results

5.23.2.1 Excavations in the Colluvial Toeslope

Trench 2 was excavated at the front of the colluvial toeslope (Subarea B) to 130 cmbs. It consisted of a moderately thick accumulation of gravelly clay loam and gravelly silty loam on the downstream end of a low-amplitude meander bend. The trench revealed an A-C-2Bk profile containing a considerable amount of matrix carbonate of probable phreatic origin. The upper 35 cm was a very dark grayish brown (10YR 3/2) granular gravelly clay loam A horizon over a dark gray (10YR 4/1) loamy gravel Ck horizon. This Ck horizon rested on a very distinct truncated surface underlain by a 30 cm thick B21k horizon composed of massive, light gray (10YR 7/2) gravelly silt loam. This zone was heavily charged with powdery matrix carbonate, imparting the silty texture. The underlying B22k horizon was also carbonate-rich and exhibited similar texture, color, and lack of structure. However, the lower Bk horizon also exhibited distinct orange redox mottles indicating fluctuating saturation conditions. No cultural material was detected in the trench. The age of the fill represented is unknown, but the degree of soil development (exclusive of carbonate accumulation, which appears to be due to groundwater discharge) suggests that the fill is younger than the fill interpreted as the Fort Hood in BT 1. Therefore, the fill is tentatively identified as equivalent to the West Range fill of Nordt (1992).

Test pit 1 was 20 m west of a small drainage channel and excavated to 80 cmbs. The upper 20 cm of deposit had been disturbed by vegetation clearing with the top 10 cm yielding one flake and one utilized flake while 10 to 20 cmbs was sterile. The remainder of the test pit appeared undisturbed, but recovery of cultural material was very sparse, yielding only one flake from 20 to 30 cmbs, one flake from 30 to 40 cmbs, and one flake from 50



Figure 5.105 View East Across 41CV240.

to 60 cmbs (Table 5.44).

Test pit 2 was 20 m east of the small drainage and excavated to 80 cmbs. A total of 26 pieces of debitage and two stone tools were recovered. The debitage was recovered from all levels except level 8. The tools included a late stage biface from 0 to 10 cmbs and a utilized flake from 40 to 50 cmbs.

Test pit 6 was just south of a another unnamed drainage at the eastern edge of the subarea and excavated to dense gravels at 30 cmbs. Two flakes were found in 0 to 10 cmbs and three flakes were from 10 to 20 cmbs with no tools identified. The bottom level was sterile.

Test pit 7 was 70 m east of TP 2 and excavated to a matrix change at 100 cmbs in which small dense gravels appeared. Twenty-five pieces of debitage and one burned rock were recovered from 0 to 90 cmbs, fewer than seven per level, with 90 to 100 cmbs being sterile. No features or tools were identified. In addition, a Martindale point was collected from the surface.

5.23.2.2 Excavations in the Henson Creek T_1 Terrace

Backhoe trench 1 was at the eastern part of Subarea C, just above Henson Creek. It consisted of more than 2 m of sandy clay loam and clay

Table 5.43 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	18	0.8	1.7	T1 terrace
BT 2	18	0.8	1.3	colluvial
BT 3	15	0.8	2.2	T1 terrace
BT 4	18	0.8	2.2	T1 terrace
BT 5	12	0.8	0.7	T1 terrace
TP 1	1.00	1.00	0.80	colluvial
TP 2	1.00	1.00	0.80	colluvial
TP 3	1.00	1.00	0.60	T1 terrace
TP 4	1.00	1.00	1.10	T1 terrace
TP 5	1.00	1.00	0.90	T1 terrace
TP 6	1.00	1.00	0.30	colluvial
TP 7	1.00	1.00	1.00	colluvial

Table 5.44 Artifact Recovery by Test Pit, 41CV240.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile *point	AU
1	1	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	4	0	1		
2	1	-	0	0.0	0	0	0	0	2	0	1	-	unspec.
	2	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	6	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	26	0	2		
3	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	6	0	0		
4	1	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	7-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	7	0	0		
5	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	1	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	1	0	0	0	0	0		
6	1	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	5	0	0		
7	1	-	1	0.5	0	0	0	0	3	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.5	0	0	0	0	25	0	0		

loam exhibiting an A-Bwk-Bk profile. The A horizon was 30 cm thick and consisted of very dark brown (10YR 2/2) granular sandy clay loam. It graded into a dark brown (10YR 3/3) blocky structured Bwk horizon about 50 cm thick. This horizon contained a few fine filaments of carbonate, but significant accumulation of secondary carbonate was limited to the underlying Bk horizon. This horizon was about 1 m thick and consisted of blocky, pale brown (10YR 6/3) slightly gravelly clay loam. On the basis of color, structural development, and carbonate distribution, the unit is tentatively interpreted as equivalent to the early-middle Holocene Fort Hood fill of Nordt (1992). No cultural material was observed in the trench.

Test pit 4 was offset from the west wall of BT 1 and was excavated to 110 cmbs. Seven pieces of lithic debitage were recovered with one flake in levels 1 and 2, two flakes in level 5, and three flakes in level 6. No other cultural materials were from this unit.

Trench 3 was roughly 80 m upstream from BT 2, near the central part of the subarea approximately 10 m north of Henson Creek and excavated to 215 cmbs. Overall, BT 3 exhibited an A-2Ab-2Bwb-2Bkg-2Bg-2Cg profile. The A horizon was 30 cm thick and consisted of weak coarse blocky structured, dark grayish brown (10YR 4/2) silty loam that appeared to represent a cap of slopewash sediment derived from upslope. The underlying 2A horizon consisted of black (10YR 2/1), granular gravelly clay loam and was 35 cm thick. It graded into a very dark grayish brown (10YR 3/2) gravelly clay loam Bw horizon 10 cm thick, then into 55 cm of massive, dark gray (10YR 4/1) silty loam containing abundant matrix carbonate and common rhizoliths. As in BT 2, this horizon was underlain by a similar horizon that differentiated primarily by the presence of orange redox mottles. The basal horizon extended from 180 to 220 cmbs and consisted of mottled, weak blocky dark gray (10YR 4/1) gravelly clay loam channel deposits. This fill is tentatively interpreted as West Range. No cultural material was detected in this trench.

Trench 4 was about 80 m west of BT 3, where the T_1 surface becomes relatively narrow. Trench 4 was similar to the lower part of BT 3, and is also interpreted as the West Range equivalent. It exhibited an A-Bkg-Cg horizon more than 220 cm thick. No cultural material was recovered from BT 4.

Trench 5, at the upstream end of the meander bend, was composed of about 75 cm of weakly stratified dark gray to dark grayish brown (10YR 4/1-10YR 4/2) gravelly clay overlying dense imbricated limestone gravels. It exhibited an A-C profile. The degree of soil development suggests that it is equivalent to the Ford fill of Nordt (1992). No cultural material was observed in BT 5. Test Pit 3 was offset from the south wall of BT 5 and excavated to 60 cmbs. No cultural material was found in the upper 20 cm of deposit with six flakes between 20 to 60 cmbs.

Test Pit 5 was 10 m north of an unnamed drainage at the east end of Subarea C and about 40 m east of TP 6. No prehistoric cultural material was found in the 90 cm excavated. A sample of snail shell was collected from 0 to 20 cmbs and a cow tooth came from 10 to 20 cmbs.

5.23.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, excavation proveniences from the colluvial toeslope and the T_1 terrace parts are grouped together as a single temporally unclassifiable Analytical Unit. The Martindale point, manufactured of Anderson Mountain gray chert and from the surface, which represents an Early Archaic period, appears to be out of context and is not considered below. None of the five backhoe trenches yielded cultural material or cultural features. The seven test pits yielded a total of 73 pieces of lithic debitage, one burned rock, three stone tools, including a late stage biface

and two utilized flakes, and six samples of snail shells, but no features, diagnostic artifacts, or discrete activity areas were recognized in these tests.

The 73 specimens of lithic debitage represent two identified and six unidentified chert types with only 11% identifiable. Both the North Fort and the Southeast Range chert provinces are represented, but are outweighed by the sheer numbers of indeterminate chert types, especially light brown (51% of the total) (Table H-209). Binomial test results indicate that the indeterminate materials occur in higher than expected frequencies (Table H-210) and the identified types less than expected. When the unidentified types are excluded the identified types are within expected ranges.

The lithic debitage is restricted to 0.9 to less than 5.2 cm size categories. The peak number of pieces fall in the 1.2 to 1.8 cm size range. The tertiary debitage predominates (71%) in the assemblage (Table H-211).

The two utilized flakes were manufactured on indeterminate light gray and Fort Hood Yellow cherts, whereas the late stage biface was of Cowhouse White. The latter being from the eastern side of the Fort, and therefore probably brought in as a finished tools form.

5.23.4 Conclusions

Five trenches were excavated and revealed deposits representing three aggradational episodes (the Fort Hood, West Range, and Ford fills). The character of West Range deposits (BTs 2, 3 and 4) has been strongly altered by gleying and carbonate accumulation resulting from groundwater discharge. The character of sediments suggests somewhat flashy deposition, particularly during the latter fill episodes, but does not preclude preservation of archeological materials in reasonable context. However, no cultural material was detected in any of the trenches excavated on the T_1 terrace. Test pits excavated on the higher Subarea B surface revealed mixed alluvial and slopewash deposits approximately 75 cm thick. These mixed deposits were composed of sandy to silty clay loam. Strong differences were apparent in the thickness of the A horizon, which varied between about 15 and 70 cm. In those pits where the A horizon was thin (e.g., TP 1), a thick lower solum exhibiting a well-developed Bwk-Bk profile was exposed. Although the age of the deposits is unknown, the presence of common pedogenic carbonate masses in the lower solum suggests that they probably are at least middle Holocene in age.

In both subareas, recovery of cultural material was sparse, with no clear indications of intact cultural contexts. Overall frequency of cultural material was quite low, with a net density of only 14 items per m^3. Overall lithic ubiquity was relatively low as well, with 45% of tested levels having no recovered lithics. Moreover, no features were observed in any trench or manual test. On the basis of the above, we conclude that site 41CV240 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.24 SITE 41CV271

In January 1995, we conducted formal test excavations at prehistoric archeological site 41CV271. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two backhoe trenches and one test pit (2.0 m^3) were excavated. These tests demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as not eligible for inclusion to the NRHP and no further work is recommended.

5.24.1 Introduction

5.24.1.1 Site Location and Description

Site 41CV271 is along the northern edge of Fort Hood in Training Area 71. The site is bounded by Henson Creek to the south and the Fort Hood military reservation fence line, which parallels Highway 36, to the east (Figure 5.106). Many dirt roads criss-cross the site. Maximum site dimensions, as defined in 1992, measure 500 x 300 m with an east-west long axis, and cover about 15 hectares (37 acres). For purposes of analysis, the site is considered a member of the East Henson site group.

5.24.1.2 Previous Work

On 26 March 1980, Bandy first recorded the site as a large (1500 x 500 m) lithic procurement area.

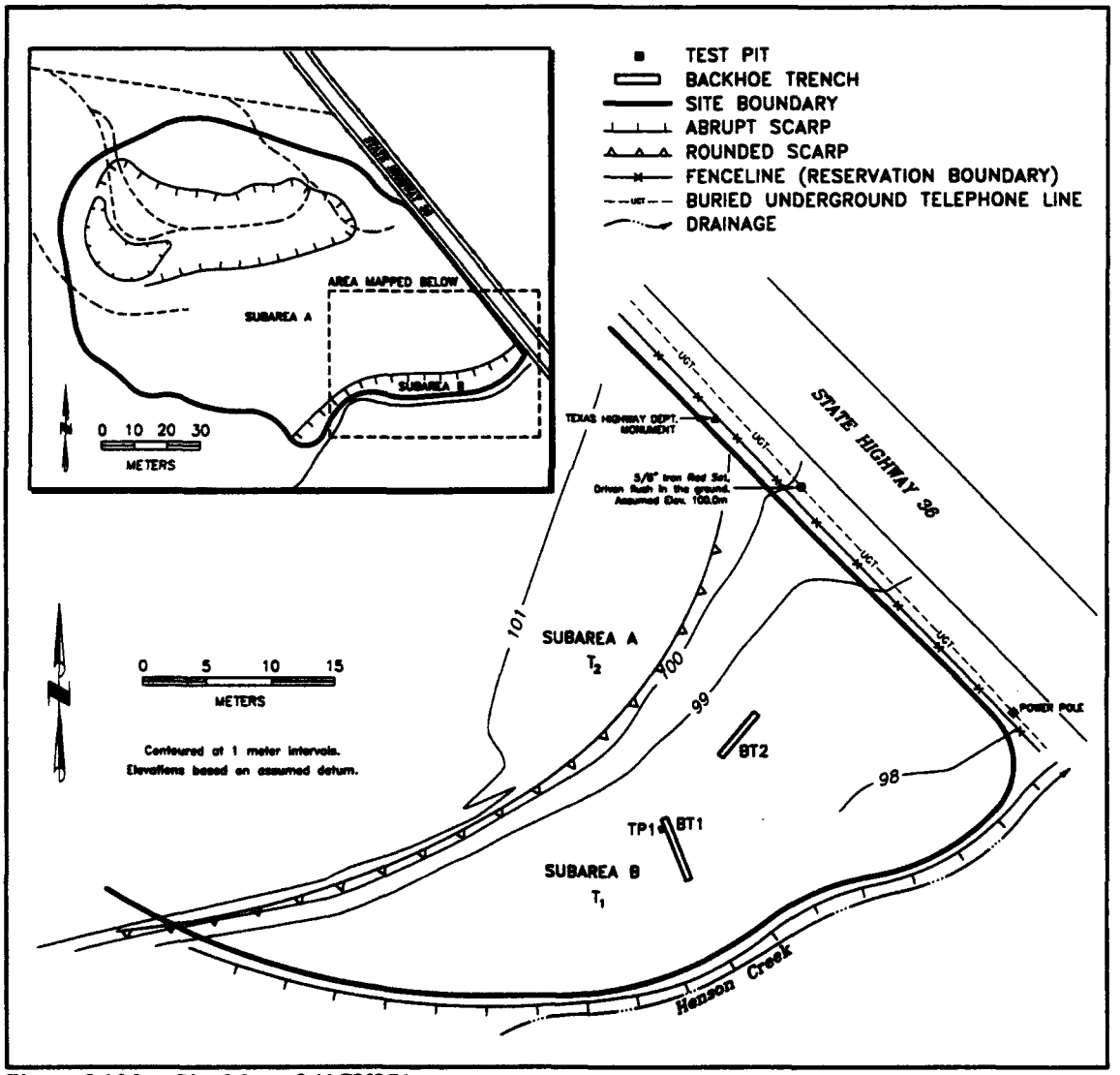


Figure 5.106 Site Map of 41CV271.

Bifaces, cores, debitage, hammerstones, and choppers were scattered across the surface. The site was disturbed 20% by roads and erosion. The Fort Hood boundary fence line, which paralleled Highway 36, delimited the eastern site boundary, however, the sketch map had a "possible site remnant" noted east of the highway. Incomplete site records suggest that the site was monitored 4 February 1988 by a crew from Texas A&M. The records note that the site was to large to define due to time constraints, but confirmed part of the site lay east of the highway; and resurvey and recording was recommended.

On 5 November 1992, Frederick and Turpin visited and evaluated the site based on geomorphic context and archeological potential and divided it into two subareas. Subarea A consisted of a hill, the surrounding slopes, and a Pleistocene age strath terrace that lies between the hill and the Holocene floodplain of Henson Creek (Figure 5.107). Chert cobbles and boulders mantled the erosional-colluvial slopes but much of the surface had been disturbed by vehicular activity and sheet erosion and a large area adjacent to the Henson Creek terrace appeared to have been scraped with a bulldozer. The potential for cultural deposits in primary context was extremely limited, and no further work was recommended for Subarea A. Subarea B subsumed the T_1 and T_0 surfaces of Henson Creek, narrow remnants of which were inset against the T_2 surface adjacent to the creek. Although no cultural deposits were observed in this part, the alluvial deposits had the potential to contain in situ archeological remains. In November 1992 a crew excavated four shovel tests. Based on this testing, the upper 40 cm of deposit was judged to have extremely limited archeological potential but the potential of the deeper deposits was unknown and formal testing was recommended to evaluate NRHP eligibility. A minimum testing effort of three trenches was recommended; if cultural material was present in the trenches, then up to three manually excavated tests were recommended to assess the site (Trierweiler 1994: A799-801).



Figure 5.107 View West at Backhoe Trench 2, 41CV271.

5.24.1.3 New Work

Formal testing of Subarea B was completed on 19 January 1995. Two trenches were excavated to examine stratigraphy and prospect for buried cultural material, and one test pit was excavated to recover a sample of cultural material. The unit sizes and depths are presented in Table 5.45.

Table 5.45 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	8	1.5	2.7	T1 terrace
BT 2	7	0.8	1.4	T1 terrace
TP 1	1.00	1.00	2.00	T1 terrace

5.24.2 Results

Trench 1 was about 60 m west of Highway 36 and 5 m north of Henson Creek and revealed a thick sequence of relatively recent alluvium that is all interpreted as the Ford alluvium of Nordt (1992), although some West Range alluvium may be present at depth. The trench exhibited an AC-2A-2C1-2C2-2C3-2C4g profile developed in weakly stratified grayish brown to dark yellowish brown (10YR 4/2 to 10YR 3/8) silty loams, silty clay loams, and gravelly loams. Test pit 1 was offset from the west wall at the north end of BT 1 and dug to 200 cmbs. From the surface to 120 cmbs only a single lithic was found (Level 9). Below this, 38 pieces of debitage, two burned rocks (0.6 g), and one light brown chert chopper (level 17) were recovered from 120 to 200 cmbs (Table 5.46). An increase in the density of gravels and natural chert was noted, suggesting that all of the cultural material below 120 cmbs was in a secondary context.

Trench 2 was excavated 25 to 30 m northeast of BT 1 and 30 m from the Pleistocene terrace. It

Table 5.46 Artifact Recovery by Test Pit, 41CV271.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	10-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	13	-	1	0.3	0	0	0	0	12	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	9	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	2	0	1	-	unspec.
	18	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	19	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	20	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	Total		2	0.6	0	0	0	0	39	0	1		

revealed a profile almost identical to BT 1. With the exception of one stream-abraded flake discovered at depth (about 260 cmbs), no cultural material was detected.

5.24.3 Analysis and Interpretations

Because of overall gross similarity in context, all excavation proveniences are grouped together as a single Analytical Unit. The single test pit yielded 39 pieces of lithic debitage, two burned rocks, one chert chopper, and one charcoal sample (64.5 g). The charcoal sample was not dated because of doubtful context.

The 39 specimens of lithic debitage represent four identified types and five unidentified chert types with 59% identifiable (Table H-212). Gray/Brown/Green chert from the North Fort Chert Province is the most common at 52% of all identified cherts. The chert materials reflect a North Fort province use, although two specimens are of Southeast Range Heiner Lake Tan chert. No flakes smaller than 0.9 cm in size were recovered and 62% of the flakes had cortex (Table H-215). The chopper was of an unidentified light brown chert.

5.24.4 Conclusions

The tested portion (Subarea B) of this site consists of thick, recent alluvium that is tentatively correlated with the Ford alluvium of Nordt (1992). Testing failed to document any deposits of cultural material in positive primary context. Accordingly, we conclude that site 41CV271 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). On the basis of this apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.25 SITE 41CV317

From August to early October 1994, we conducted formal test excavations at prehistoric archeological site 41CV317. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Six backhoe trenches and six test pits were excavated, with a total of 11.1 m^3 being hand excavated. Formal test excavations demonstrate some intact, buried, and stratified cultural components dating to Late Prehistoric I in the western side of Subarea A. This area contains deposits that have high potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.25.1 Introduction

5.25.1.1 Site Location and Description

Site 41CV317 is in west central Fort Hood, Training Area 41. The site is on a series of alluvial terraces south of Cowhouse Creek and an unnamed tributary (Figure 5.108). This site includes a historic component as evidenced by a stone wall and scattered historic artifacts and is criss-crossed by various roads. Maximum site dimensions, as defined in 1993, measured 480 x 240 m, with an east-west long axis, that covered an area of 11.5 hectares (28.4 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.25.1.2 Previous Work

Briuer first recorded this site in 7 July 1978. It consisted of a lithic and burned rock scatter on terraces and adjacent slopes associated with Cowhouse Creek and an unnamed tributary. Observed prehistoric stone tools included scrapers, retouched flakes, and bifaces, with a crescent shaped scraper collected. The site was judged to be 75% impacted by erosion, vehicular traffic, and farming/ranching activity.

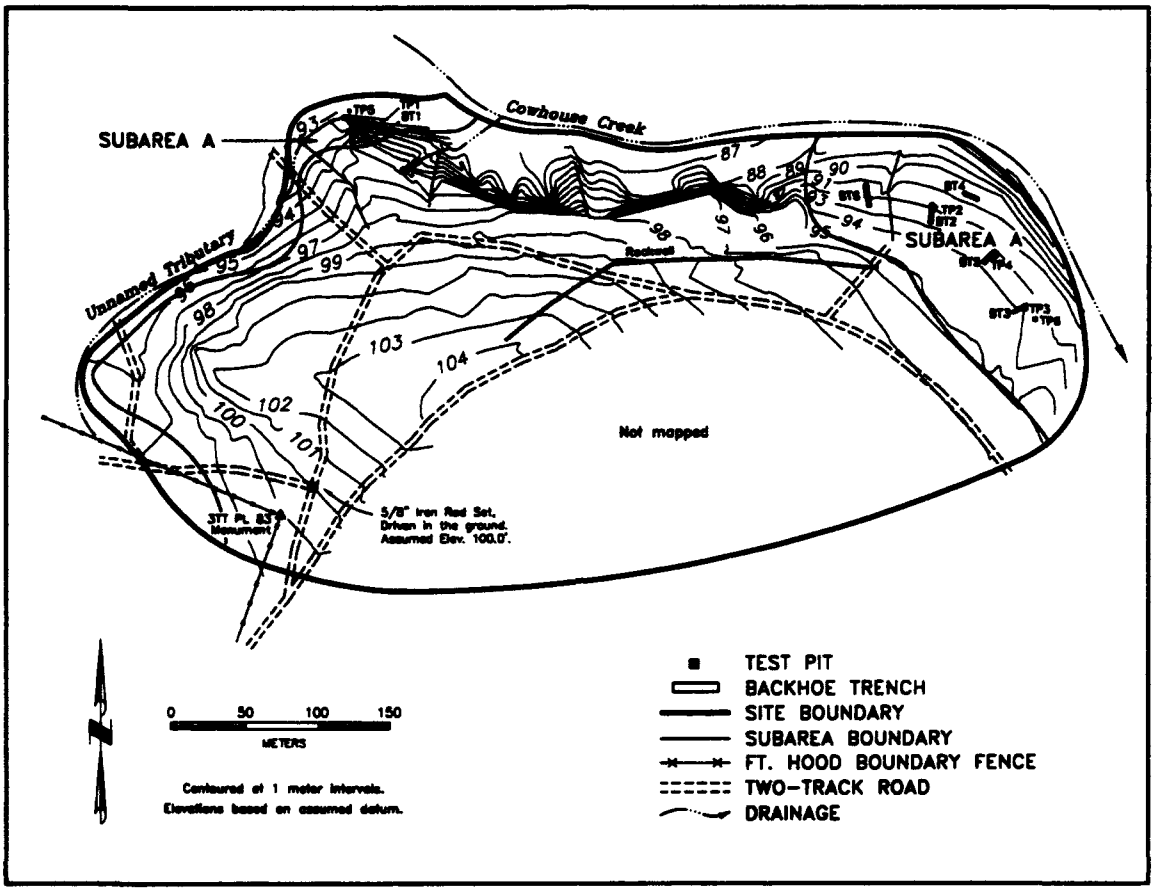


Figure 5.108 Site Map of 41CV317.

On 18 February 1987, Dureka and DeMarcay again recorded the site (Mueller-Wille and Carlson 1990b). Scattered lithics and burned rocks were noted on a high terrace overlooking Cowhouse Creek, with a burned rock midden containing mussel shells and flakes observed in a "deeply entrenched, very tight meander of a minor unnamed tributary to Cowhouse Creek" (Figure 5.109). This section roughly measured 2 to 3 m wide across the top and 3 to 5 m high. Vandalism of this area was evidenced by shovel cuts and backdirt. For the entire site, depth of deposit was estimated between 50 and 250 cm. Overall, the site was impacted 67% by a historic occupation, vehicular traffic, and erosion, and vandalism. Since the site area was over 180,00 m^2, the site was subsequently classified as a lithic resource procurement (LRP) area for management purposes, even though no significant chert resource was present.

On 14 January 1992, Quigg and Frederick revisited the site and subdivided it into two subareas on the basis of potential for intact cultural deposits and geomorphic context. Subarea B consists of a Pleistocene terrace (T_2) which comprised about 75% of the entire site area. A moderate density of lithics, burned rocks, and mussel shells was observed across Subarea B, however, the surface had been heavily disturbed by erosion and plowing (presence of contour terraces and a stone wall). Due to lack of in situ deposits, Subarea B had negligible potential for intact cultural deposits in good context, and no further work was



Figure 5.109 View South Across Cowhouse Creek to 41CV317.

recommended. Subarea A includes Holocene age fills which overlapped the Pleistocene terrace at the northeast and northwest site margins. The December 1991 flood deposited debris and a thick mud drape across Subarea A, affording no surface visibility. In gully and cutbank exposures, up to 3 m of deposits were noted, however, no in situ cultural material was exposed. In addition, the burned rock midden noted in 1987 could not be relocated, again due to the recent flooding. Nevertheless, on the basis of stratigraphic potential, Subarea A was recommended for additional work.

On 30 January 1992, a crew excavated 34 shovel tests in Subarea A. Only 15% (5) were positive, with a total of four flakes and three burned rocks recovered between the surface and 40 cmbs. In addition, three shovel tests contained historic and/or recent artifacts in the upper 20 cm of deposit. Whereas the upper 40 cm of fill had little demonstrated archeological potential, intact cultural deposits were still possible below the limits of shovel testing, and formal testing was recommended to determine NRHP eligibility. The recommended testing effort included six trenches and five to eight manually excavated test pits (Trierweiler 1994:A802-A806).

On 9 June 1992, Abbott and Kleinbach revisited the site to evaluate its potential utility to address questions of lithic resource procurement and reduction in the non-depositional areas (Subarea B) as the site was listed as an LRP. No natural chert zones were identified, but impact zones were identified, mapped, and characterized. Subarea B was judged to have very low archeological potential due to lack of contextual integrity and damage to the assemblages and was determined to be ineligible for NRHP inclusion according to research designs outlined in Ellis et al. (1994).

5.25.1.3 New Work

From August to early October 1994, formal testing was conducted in Subarea A to determine NRHP eligibility. Six trenches and six test pits were excavated. Unit sizes and depths are presented Table 5.47.

5.25.2 Results

5.25.2.1 Excavations in the Western Terrace

Backhoe trench 1 (BT 1) was excavated about 80 m west of the confluence of Cowhouse Creek and its tributary in the terrace section noted in 1978 as containing a burned rock midden. Trench 1 revealed a narrow wedge of Holocene alluvium overlying the sloping surface of the beveled Pleistocene (Jackson) fill. Seven zones were identified (Figure 5.110). Zones 1 through 4 were composed of Holocene alluvium, while Zones 5 through 7 were developed in the Pleistocene deposits. The Holocene sequence consisted of dark gray to dark grayish brown (10YR 4/1 to 10YR 4/2) blocky clay loams overlying a basal deposit of massive, grayish brown (10YR 4/2) sandy loam. Zone 1 (A1 horizon) extended from 0 to 12 cmbs and appeared to be composed of an admixture of primary alluvium and Pleistocene alluvium reworked by slopewash. Zone 2 (A2 horizon) extended from 12 to 60 cmbs. It consisted of dark gray (10YR 4/1) clay loam alluvium and contained a considerable quantity of burned rocks, flakes, mussel shells, and bones that dipped and thickened toward the tributary. Some cultural material was also evident in Zone 3 (B21k horizon), which consisted of dark grayish brown (10YR 4/2), weak blocky structured sandy clay loam suffused with thick strands of filamental carbonate. At the lower end of the trench, this zone graded into Zone 4, which was composed of massive, grayish brown (10YR 5/2) sandy loam, while on the upslope end of the trench it overlay the Pleistocene alluvium. Although the age of this wedge of Holocene alluvium is unknown, its position and degree of soil development suggest that it is of late Holocene age, and it is tentatively interpreted as West Range-equivalent alluvium deposited by the adjacent tributary.

Three zones were noted in the beveled Pleistocene deposits. Zone 5 consisted of a 10 cm thick, buried Akb horizon developed on the beveled surface of the Pleistocene terrace. It consisted of dark brown (7.5YR 3/4), strong subangular blocky structured clay loam that contained weak organic enrichment and abundant carbonate filaments and films. This horizon clearly represents alteration of the strongly-developed B horizon developed on the Pleistocene terrace, and implies that the beveled side of the terrace was stable for at least several hundred years prior to deposition of the Holocene wedge. Zone 6 represents the Pleistocene Btkb horizon. It consisted of blocky structured brown (7.5YR 4/4) loamy clay and contained abundant carbonate films, filaments, and soft masses. It was about 30 cm thick at the measured section, but thickened considerably upslope. The lowest zone exposed (Zone 7) consisted of blocky structured silty clay loam suffused with disseminated matrix carbonate and a moderate number of carbonate filaments which represents the Pleistocene Bkb horizon. No cultural material was detected in any of the older deposits (Zones 5 through 7).

Table 5.47 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	12	0.8	2.2	T1 terrace
BT 2	12	0.8	3.3	T0 terrace
BT 3	10	0.8	2.5	T1a terrace
BT 4	10	0.8	2.7	T0 terrace
BT 5	12	0.8	2.1	T1a terrace
BT 6	14	0.8	2.6	T0 terrace
TP 1	1.00	1.00	1.90	T1 terrace
TP 2	1.00	1.00	1.50	T0 terrace
TP 3	1.00	1.00	1.80	T1a terrace
TP 4	1.00	1.00	1.50	T1a terrace
TP 5	1.00	1.50	2.30	T1 terrace
TP 6	1.00	1.00	1.20	T1a terrace

Test pit 1 was offset from the east wall of BT 1 above the cultural zone and was arbitrarily stopped at 190 cmbs after a 10 cm sterile level. No artifacts were in the upper 20 cm, whereas levels 3 through 4 contained minimal amounts of cultural materia. (lithics, mussel shells, and/or burned rocks). The same artifact array, with a steady rise in lithic counts, was recovered from 40 to 60 cmbs

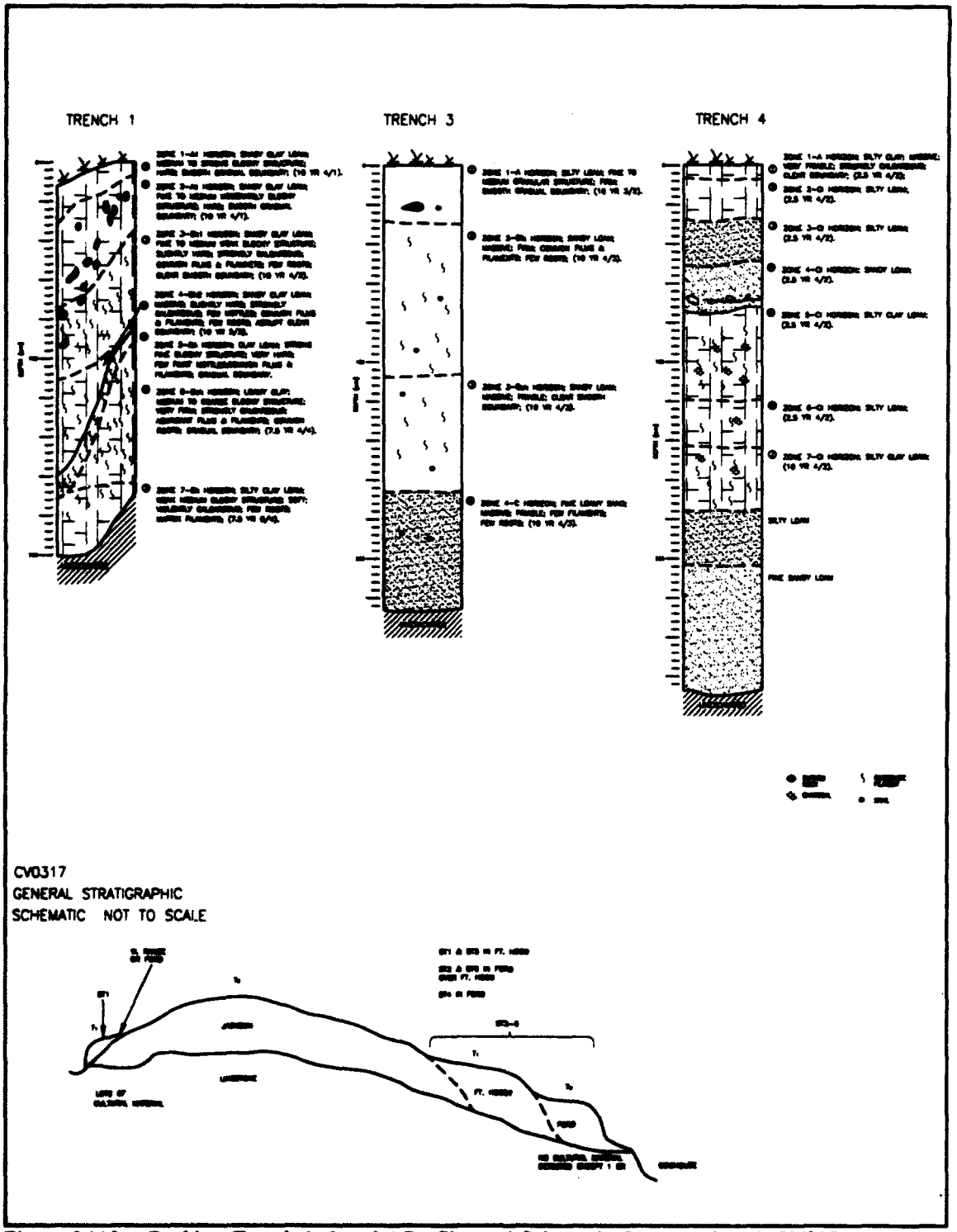


Figure 5.110 Backhoe Trench 1, 3 and 4 Profiles and Schematic Cross-section, 41CV317.

with 26 flakes, six burned rocks, and two mussel shell umbos. Beginning with level 7 and continuing through level 12, overall artifact recovery increased dramatically with high lithic counts in levels 9, (n=138), 10 (n=132) and 12 (n=379). In these same three levels burned rocks were equally high. Other cultural material included a dart point fragment, a biface tip, core fragments, debitage (some heat treated), mussel shell umbos, burned and unburned bones, and scattered charcoal. The overwhelming majority of burned rocks were small (2 to 3 cm) and scattered, with the largest being 7 to 8 cm in any given level. In levels 7 through 9, most artifacts were in the southern half of the unit, whereas in level 10, the material was more widespread. A small (2.5 g) sample of wood charcoal from 90 to 100 cmbs provided a $\delta^{13}C$ (-27.0‰) corrected assay of 955 ± 50 BP (TX-8420). From 100 to 120 cmbs, most material was confined to the northern half of the unit. This sloping zone of cultural material, from 60 to 130 cmbs, was considered to be a buried occupation. No patterning was apparent to delimit discrete features; however, this may also be a consequence of excavating in arbitrary 10 cm levels. Artifact counts steadily decreased with depth from 130 to 160 cmbs averaging about five flakes per level. A slight increase in artifact recovery occurred in levels 17 and 18. Level 19 was culturally sterile and excavation terminated.

Test pit 5, excavated to 230 cmbs, was 10 to 15 m north-northeast of BT 1 on the edge of the tributary cutbank. Due to the cutbank slope, the unit started out as a 1 x 1 m, but progressively increased in size (to a maximum of 180 cm east to west) with depth to capture the feature exposed in the cutbank. Excavated volume for this unit was thus 3.2 m^3. This unit exposed a thick accumulation of grayish-brown clay loam that exhibits an A-Bk profile and is interpreted as the same fill observed lapped on to the Pleistocene fill in BT 1 (Figure 5.111). With the exception of a few bone fragments, no cultural material was recovered from surface to 70 cmbs. Levels 9 through 23 yielded moderate to high densities of cultural material, with at least three occupations defined by intact features and one apparent occupation lens. Feature 1, a probable hearth, was exposed in the cutbank profile between 109 to 116 cmbs. This partial feature was confined to the west quarter of the unit and measured 67 x 47 cm (Figure 5.112). The hearth consisted of a single layer of horizontally scattered, angular burned rocks (n=21; 5 kg), that averaged 5 to 10 cm and represented about one-third to one-half of the projected feature. A few burned rocks were cracked in situ. A diffuse area, about 20 x 15 cm, of charcoal and burned earth was present near the southern edge of the hearth. One flake was found in the feature matrix, with lithic debitage, bone fragments, a shell fragment, and scattered burned rocks from the non-feature fill. A small (1.2 g) sample of wood charcoal from F 1 provided a $\delta^{13}C$ (-18.9‰) corrected assay of 920 ± 70 BP (Beta-83263). Although the hearth was minimally disturbed by roots, insects, and erosion (i.e., was exposed in the cutbank), the presence of charcoal and in situ cracked rocks suggests overall integrity. The four levels (10, 11, 12 and 13) encompassing this feature yielded moderate lithic frequencies of debitage per level.

Feature 2, first revealed at 142 cmbs and continued to 177 cmbs, appeared to be a burned rock concentration with no internal patterning. However, as excavation proceeded downward, an obvious, rock filled, basin shaped hearth became apparent (Figure 5.112). This hearth was along the eastern third of the unit and extended north, east, and south beyond the boundaries of the test pit with excavated dimensions of 100 x 60 cm. Feature 2 yielded two to three layers of overlapping angular and tabular burned rocks (n=123; 42 kg), the majority of which ranged from 5 to 15 cm. In the hearth fill, from 150 to 153 cmbs, a narrow strip, about 45 x 3 to 6 cm, of oxidized soil was encountered along the southeast part toward what was probably the center of the basin. No cultural material was recovered from this burned lens. From 168 to 175 cmbs, an ash deposit contained charcoal and cultural material was excavated along the east wall. This ash deposit measured 84 x 25 cm (maximum

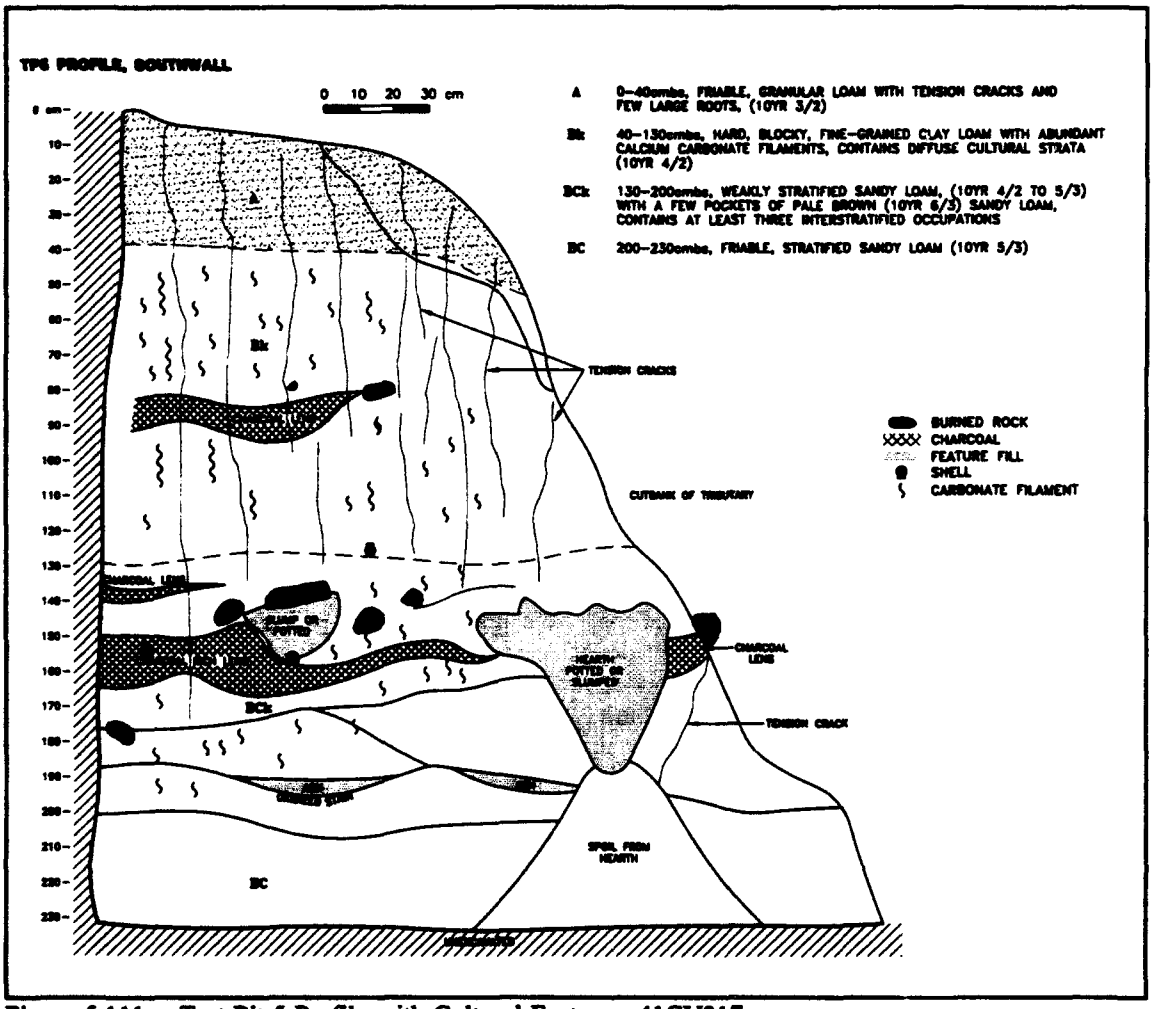


Figure 5.111 Test Pit 5 Profile with Cultural Features, 41CV317.

dimensions), extended beyond the eastern test pit boundary, and was fairly linear. A bone fragment, ten snail shells, six umbos, 19 flakes, scattered charcoal, and three burned rocks were in the ashy matrix. A 2 cm thick lens of oxidized soil that contained one umbo, four flakes, and 15 snail shells, was directly beneath the ash. This oxidized base at 177 cmbs defined the bottom of this basin hearth. A small (1.1 g) charcoal sample from 150 to 160 cmbs was identified as maple wood and yielded a $\delta^{13}C$ (-26.4‰) corrected assay of 1300 ± 60 BP (Beta-83458). Feature fill yielded two biface fragments, scattered charcoal, hundreds of snail shells, numerous burned and unburned bone fragments including burned turtle bones, about 20 mussel shell umbos, 50 to 75 flakes, and a small, triangular biface. In general, the hearth's upper 10 cm was disturbed by medium sized roots, with the remainder fairly intact based on the presence of stratified internal lenses and in situ, fire-cracked rocks.

A shallow basin shaped, rock filled hearth, F 3 was exposed in the cutbank profile and appeared in the western portion of TP 5 at about 170 cmbs. A shallow basin shaped, rock filled hearth, appeared

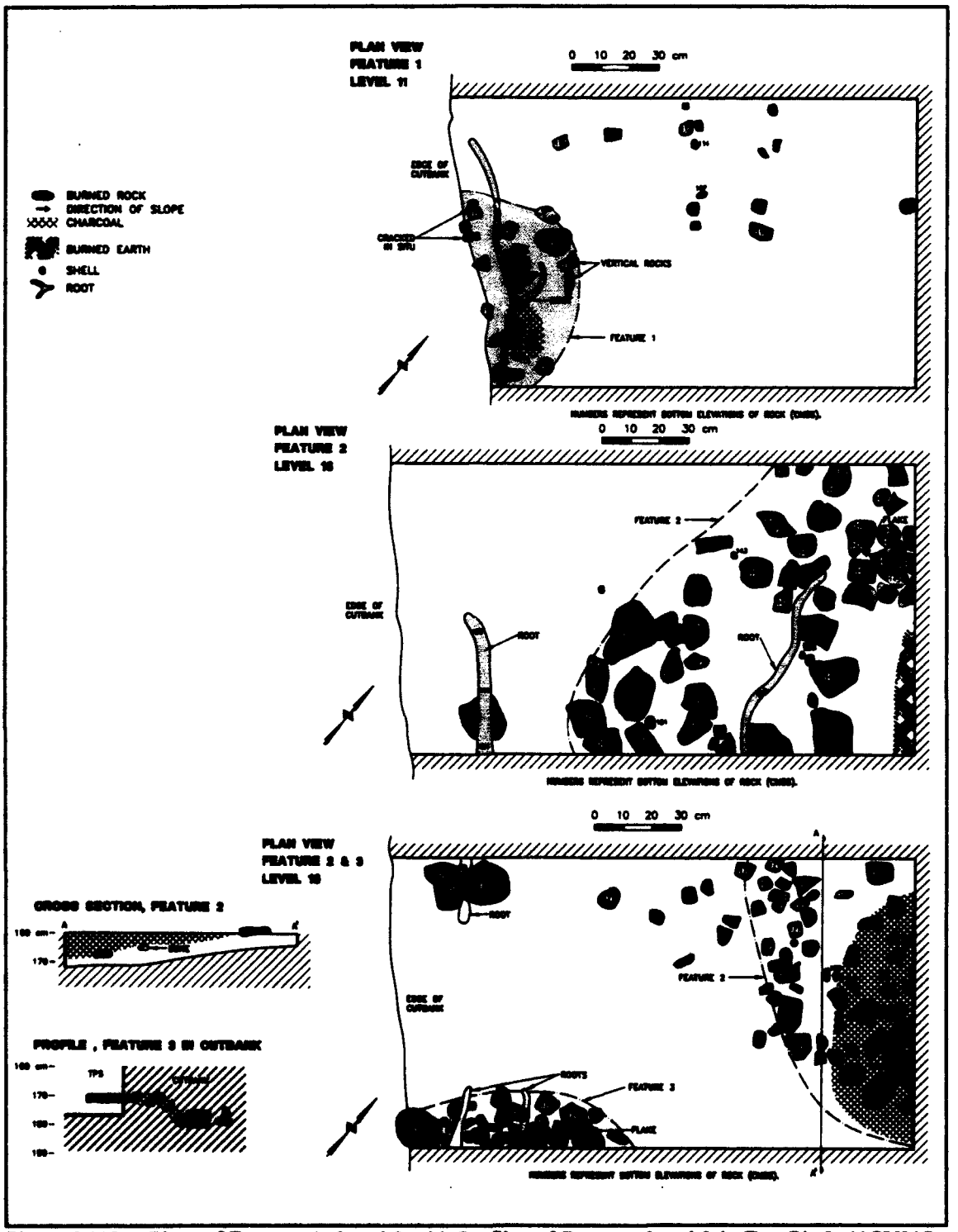


Figure 5.112 Plans of Features 1, 2 and 3 with Profiles of Features 2 and 3 in Test Pit 5, 41CV317.

slightly below F 2. This hearth, 78 x 60 cm, consisted of two, overlapping layers of angular and tabular burned rocks (n=37; 19 kg), that averaged 5 to 10 cm wide (Figure 5.112). Charcoal flecking was noted amongst the burned rocks toward the south wall of the test pit. One umbo, charcoal, and seven flakes came from Feature 3 matrix. A complete Castroville point was from non-feature fill in level 17, and a 4.7 g sample of wood charcoal was identified as oak and provided a $\delta^{13}C$ (-26.4‰) corrected assay of 1941 ± 60 BP (Tx-8428). Root activity and cutbank erosion had only slightly impacted this hearth, and due to the presence of charcoal and in situ burned rocks, overall integrity appeared intact. High frequencies of cultural materials were in levels 17 and 18, including the Castroville, a Fresno base, a proximal dart, and a distal arrow point.

Still in TP 5, at 190 to 210 cmbs another occupation appeared, confined to the eastern half of the test pit, and visible in the unit's east wall profile. Materials include 73 pieces of debitage, 79 burned rocks, 29 mussel shell umbos, 38 bone fragments, and five stone tools. A complete Scallorn point in level 20, was recovered in situ from the unit's western edge. A 5.9 g sample of wood charcoal from level 22 was identified as elm and gave a $\delta^{13}C$ (-25.3‰) corrected assay of 1190 ± 90 BP (Beta-83423). Levels 22 and 23 yielded a decrease in materials which may be another occupation lens with flake tools, three bone fragments, two umbos, and 16 burned rocks. Diffuse charcoal (210 to 215 cmbs) with 1 cm thick ash lens overlying a 2 to 3 cm thick oxidized matrix (211 to 215 cmbs) were in the eastern half and appear to indicate some type of burning event although no feature number was assigned to this material. A 5.9 g charcoal sample identified as Elm wood yielded a $\delta^{13}C$ (-25.3‰) corrected assay of 1190 ± 90 BP (Beta-83423).

5.25.2.2 Excavations in the T_0 Surface

The remaining five trenches (BTs 2 through 6) were excavated across Subarea A on T_1 and T_0 surface toward the eastern side of the site. Backhoe trenches 2, 4, and 6 were on the T_0 (lower and western edge of Subarea A) surface in an area about 120 m east-west x 50 m north-south. These trenches were 10 to 14 m long x 0.8 m wide and averaged 2.9 m in depth. Trench 4 was well out on to the tread of T_0 and revealed thick, stratified alluvial deposits interpreted as the Ford Alluvium of Nordt (1992). The A horizon of BT 4 was 8 cm thick and consisted of weakly organic, dark grayish brown silty loam. It was underlain by a series of stacked packets (20 to 60 cm thick) of dark grayish brown (10YR 4/2 to 2.5Y 4/2) silty loam, sandy loam, and silty clay loam that extended to better than 300 cmbs. Trenches 2 and 6 were at the back of T_0 tread. The exposed profiles consisted of 1.5 to 2 m of similar stratified deposits overlying massive sandy loams, suggesting that they represent a thick mantle of Ford alluvium and historic deposits overlying truncated Fort Hood alluvium. These three trenches were void of prehistoric remains.

Test pit 2 was offset from the eastern wall of BT 2 and excavated to 150 cmbs. Bones and/or bone fragments were in levels 9 and 10 with 110 pieces from 80 to 90 cmbs, with large bones identified as bison (Table 5.48). No cultural features, lithic debitage or stone tools were recovered.

5.25.2.3 Excavations in the T_1 Terrace

Two profiles of the two trenches (BTs 3 and 5) on the T_1 terrace were broadly similar and are interpreted as the Fort Hood fill of Nordt (1992) overlain by historic overbank deposits. These trenches exposed a profile composed of very dark grayish-brown to dark brown sandy loam exhibiting a thick (about 180 cm) A-Bk profile. The A horizon was about 30 cm thick and consisted of very dark grayish brown (10YR 3/2) granular, weakly calcic sandy loam. The underlying Bk horizons were massive dark brown (10YR 4/3) sandy loam and contained considerable amounts of secondary carbonate filaments. The underlying C horizon consisted of massive, dark brown (10YR 4/3) loamy fine sand. The only cultural material detected was a single burned limestone cobble in the upper 30 cm of BT 3.

Table 5.48 Artifact Recovery by Test Pit, 41CV317.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	15	0	0	0	0	0	0	-	unspec.
	2	-	1	0.3	1	0	0	0	0	0	0	-	unspec.
	3	-	2	0.3	0	0	0	0	5	0	0	-	unspec.
	4	-	1	0.3	2	0	0	0	3	0	0	-	unspec.
	5	-	3	0.3	0	0	0	0	14	0	0	-	unspec.
	6	-	3	0.3	2	0	0	0	19	0	0	-	unspec.
	7	-	13	2.0	3	8	0	0	39	0	0	-	LP-I
	8	-	9	1.5	2	30	0	0	37	1	0	?dart	LP-I
	9	-	16	2.0	11	52	0	0	138	0	0	-	LP-I
	10	-	21	3.0	0	88	0	0	132	0	1	960±50	LP-I
	11	-	16	2.0	8	43	0	0	57	0	3	-	LP-I
	12	-	12	1.5	7	29	0	2	379	0	4	-	LP-I
	13	-	4	1.5	6	16	0	0	14	0	0	-	LP-I
	14	-	3	0.3	1	6	0	0	6	0	0	-	LP-I
	15	-	0	0.0	0	4	0	0	4	0	0	-	LP-I
	16	-	0	0.0	1	0	0	0	3	0	0	-	LP-I
	17	-	4	0.5	0	1	0	0	5	0	0	-	LP-I
	18	-	2	0.1	1	1	0	0	8	0	0	-	LP-I
	19	-	0	0.0	0	0	0	0	0	0	0	-	LP-I
	Total		110	15.9	60	278	0	2	863	1	8		
2	1-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	1	0	0	0	0	0	-	unspec.
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	2	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	108	0	0	0	0	0	-	unspec.
	10-15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	111	0	0	0	0	0		
3	1-3	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	5	2.0	0	0	0	0	0	0	0	-	unspec.
	6	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	7	-	2	1.0	0	0	0	0	2	0	0	-	unspec.
	8	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	9	-	2	1.0	0	0	0	0	0	0	0	-	unspec.
	10	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	12-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	1	0	0	0	0	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	18	-	0	0.0	1	0	0	0	0	0	0	-	unspec.
	Total		12	4.9	2	0	0	0	7	0	1		

Table 5.48 Concluded.

TP	Level	Feature	Burned Rock number	Burned Rock weight (kg)	Collected Artifacts Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
4	1-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	8	0.5	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	4	0.5	0	0	0	0	0	0	0	-	unspec.
	10	-	6	0.5	0	0	0	0	4	0	0	-	unspec.
	11	-	5	0.5	1	0	0	0	1	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	13	-	2	0.5	0	0	0	0	3	0	0	-	unspec.
	14-15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		25	2.5	1	0	0	0	9	0	0		
5	1-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	2	0	0	0	0	0	-	unspec.
	9	-	3	0.2	0	7	0	0	2	1	1	?dart	LP-I
	10	-	13	1.5	1	28	0	0	42	0	3	-	LP-I
	11	-	35	2.5	0	16	0	0	12	0	0	-	LP-I
	12	F1	43	7.0	0	16	0	0	15	0	2	920±70	LP-I
	13	-	3	0.2	0	0	0	0	13	0	0	-	LP-I
	14	-	2	0.1	3	1	0	0	11	0	0	-	LP-I
	15	F2	3	0.5	7	7	0	0	28	0	1	-	LP-I
	16	F2	12	2.0	2	6	0	0	33	0	1	1300±60	LP-I
	17	F3	13	4.5	21	10	0	1	204	4	10	Castroville, Fresno, 1940±60	LP-I
	18	F2	18	8.0	22	7	0	0	159	3	3	?arrow	LP-I
	19	F3	16	3.5	42	4	0	0	53	0	3	-	LP-I
	20	-	57	7.0	22	13	0	1	1[illegible]	2	2	Scallorn, ?arrow	LP-I
	21	-	22	2.5	7	25	0	0	273	0	3	-	LP-I
	22	-	12	1.5	2	2	0	0	48	0	0	1190±90	LP-I
	23	-	4	0.5	0	1	0	0	3	0	0	-	LP-I
	Total		256	41.5	129	145	0	2	1,018	10	28		
6	1-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	1	0.3	0	1	0	0	1	0	0	-	unspec.
	6	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	8	-	3	0.5	1	0	0	1	0	1	0	?dart	unspec.
	9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	1	0.3	0	1	0	0	3	0	0	-	unspec.
	11-12	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		6	1.4	1	2	0	1	7	1	0		

Test pit 3 was offset from the eastern wall of BT 3 above the observed burned rock and terminated at 180 cmbs. No cultural material was recovered surface to 20 cmbs, with brown bottle glass in level 3. Levels 4 through 7 contained a light density of material; four pieces of lithic debitage, mussel shell fragments, charcoal flecks, and 24 burned rocks. Aside from charcoal flecking, level 8 was sterile except for one small burned rock. Two flakes and four burned rocks came from 80 to 110 cmbs. The next seven levels (12 to 18), yielded one flake, one mussel shell umbo, one flake graver, and no burned rock or bones.

Test pit 4 was offset from the east wall of BT 5 and dug to 150 cmbs. Recent material was noted in level 1, with nothing from level 2. Historic artifacts were recovered from 20 to 40 cmbs, along the west wall. No material was recovered 40 to 60 cmbs. Levels 7 through 13 contained a eight pieces of debitage, one umbo, 21 burned rocks, with the most debitage (n=4) in level 10 and most burned rock (n=8) in level 7. Levels 14 and 15 did not yield cultural material.

Test pit 6, excavated to 120 cmbs, was about 10 m east of TP 3. No cultural material was in the top 40 cmbs. Material density was quite low from 40 to 100 cmbs, with seven flakes, two bone fragments, one
mbo, six burned rocks, and a distal dart fragment in level 8. All other levels were culturally sterile.

5.25.3 Analysis and Interpretations

5.25.3.1 Definition of Analytical Units

The six test pits yielded a total of three features, 682 pieces of lithic debitage, 11 projectile points, 36 stone tools, 537 bone fragments, 192 mussel shell umbos, 410 burned rocks, sparse charcoal and many snail shells. Chronological data from TP 5 is complex. Four radiocarbon dates and two identified point types were obtained from this deep TP. From the top down, these include 920 BP (level 12), 1300 BP (level 16), 1941 BP and a Castroville point (level 17), a Scallorn point (level 20), and 1190 BP (level 22). Several interpretative scenarios are possible for these data. One scenario would assign the upper 140 (1 of materials to the Late Prehistoric I, with the Castroville point and the 1300 BP and 1941 BP dates identifying Late Archaic deposits. However, most problematic with this interpretation is the fact that a Scallorn point (190 to 200 cmbs) and the 1190 BP date (210 to 220 cmbs) would be *below* the upper boundary of the Late Archaic. While it is possible to accept the Castroville and the 1300 and 1941 BP dates as accurately identifying a Late Archaic occupation, this scenario would need to invoke at least 50 cm of downward displacement for both the Scallorn point and the 1190 BP charcoal. A more conservative interpretation would place the entire deposit below about 80 cmbs in the Late Prehistoric I, accepting the Scallorn at 190 to 200 cmbs as in situ. This scenario would recognize the possibility of (1) old wood yielding the 1941 BP date from F 3, and (2) the Castroville point as a curated Late Archaic artifact, recycled during the Late Prehistoric I. Supporting this notion is the fact that the wood sample was identified as oak, which can be an exceptionally long lived tree. Correspondingly, the materials TP 1 below about 60 cm would also be grouped in the Late Prehistoric I on the basis of the 955 BP date in level 10.

Employing this latter scenario, the cultural materials from the site were divided into two AUs: a Late Prehistoric I temporal unit, plus a residual temporally unclassifiable grouping. The Late Prehistoric I assemblage includes materials in TP 1 levels 7 through 13 and in TP 5 levels 9 through 23. No diagnostic or datable materials were from TPs 3, 4, and 6. All levels in these units plus the upper 60 cm of TP 1 and the upper 80 cm in TP 5 are of undetermined age and are grouped in an unclassifiable AU. All analytical units are discussed separately below.

5.25.3.2 Late Prehistoric I Materials

These material include three features, 1,840 specimens of lithic debitage, 10 projectile points,

35 stone tools, 422 bone fragments, 168 mussel shell umbos, 356 burned rocks, charcoal, and many snail shells. These represent at least four different events but document repeated use throughout this one period.

The 1,840 specimens of lithic debitage represent 20 identified and nine unidentified types with 33.5% of the sample identifiable (Table H-214). Both Heiner Lake Tan and Gray/Brown/Green stand out among the identified materials with 23.1% and 30.8% of the identified total, respectively. Indeterminate light brown chert dominates in the unidentified portion with 41% of the materials. All four chert provinces are represented; however, North Fort materials dominate with 58.1% due in most part to the high numbers of Gray/Brown/Green. Heiner Lake Tan, Gray/Brown/Green, and the combined indeterminates occur in higher than expected frequency, with Owl Creek Black occurring in expected frequency; all other cherts occur in less than expected amounts (Table H-215). The exclusion of the indeterminate cherts results in Heiner Lake Tan and Gray/Brown/Green occurring in higher than expected amounts with the addition of Fort Hood Yellow and Owl Creek Black to this group and the Fort Hood Gray occurring in expected amounts; all others still occur in less than expected frequency.

The modal peak for size occurs in the 0.5 to 0.9 cm size category with 86% of the cherts smaller than 1.8 cm in size. As would be expected from the high numbers of small flakes 76.1% of the debitage is tertiary in nature (Table H-216). A small percentage of the materials have been classified as having indeterminate cortex.

The ten points include one complete Scallorn, one Fresno, four distal fragments of untyped arrow points, a complete Castroville, and two untyped fragments of dart points and one untypeable point fragment (Table H-217). The three dart points are considered curated items and do not reflect mixed deposits.

The 39 stone artifacts consist of four multiple platform cores, ten late stage bifaces, eight utilized specimens, seven edge modified flakes, three end scrapers, three finished biface fragments, one side scraper fragment, one complete early stage biface, one complete crushing/abrading stone, and one complete Type B Chopper (Table H-218). The ten late stage bifaces are of various chert types with only two of indeterminate cherts. The eight utilized flakes are of four identified chert types and four indeterminate cherts.

The 422 bone fragments are dominated by unidentifiable long bone fragments (40%) and indeterminate fragments (39%) of mostly (46%) large to very large mammals (bison size) (Table H-219). Deer (n=15), turtle (n=19), snake (n=1), bird (n=2), and carnivore (n=1) are identified along fragments of some small (n=2) and small to medium size (n=20) mammals. Nineteen percent of the bones are burned and 11% reveal spiral fractures, both of which indicate human use. Nearly 33% have marked weathering and indicate the speed in which these organic remains deteriorate. The large mammals appear to have been the principle food resource supplemented by various other species including mussels. The latter include 168 umbos identified as 105 *Lampsilis* sp., 17 *Lampsilis teres*, 10 *Amblema* sp. and four *Trigonia verruccsa*, 31 unidentifiable specimens. Of these only three were determined to be burned and therefore definitely used by humans.

The 54 burned rocks weighed 10.3 kg and were scattered vertically throughout these deposits. Feature 1 had 21 pieces that weighed 5 kg, F 2 did not yield any burned rocks and F 3 had 16 pieces that weighed 3.5 kg. Feature 1, 110 to 120 cmbs, yielded a 1.2 g charcoal sample of indeterminate wood and provided a $\delta^{13}C$ (-18.9‰) corrected assay of 920 ± 70 BP (Beta-83263). Other wood species identified from F 1 include Leguminous wood, an indeterminate diffuse porous hardwood, and oak wood. The delta value obtained is not in the range of most common wood species, but falls in the CAM plant range. Unfortunately, this tiny

sample could not be positively identified and it is unclear as to what this charcoal represents.

Feature 2, 150 to 160 cmbs, yielded a 1.1 g charcoal sample that was identified as maple wood and provided a $\delta^{13}C$ (-26.4‰) corrected assay of 1300 ± 60 BP (Beta-83458). Other wood from this feature was identified as elm. A float sample from F 2 yielded a light fraction with 25 to 50 tiny charred wood fragments, but no identification was attempted.

Feature 3, 160 to 170 cmbs, yielded a 4.7 g charcoal sample identified as White Oak and provided a $\delta^{13}C$ (-26.4‰) corrected assay of 1940 ± 60 BP (Tx-8428). This charcoal was from inside this intact hearth feature in good context. This apparent out of sequence date (see below) is considered to have been on "old wood" to account for its age. This "old wood" can be expected because it is oak which lasts a long time. It is also stratigraphically above a younger date.

Test Pit 5, 210 to 220 cmbs (40 cm below F 3) yielded a 5.9 g charcoal sample identified as elm wood and provided a $\delta^{13}C$ (-25.3‰) corrected assay of 1190 ± 90 BP (Beta-83423). This date is younger than that obtained on the charcoal from F 3 and helps support the interpretation that F 3 had incorporated "old wood."

In TP 1, 90 to 100 cmbs, a 2.5 g charcoal sample was of indeterminate wood and provided a $\delta^{13}C$ (-27.0‰) corrected assay of 955 ± 50 BP (Tx-8420). Stratigraphically this age is similar to the youngest date obtained from TP 5, F 1. Other charred wood samples from this period include Live Oak, elm, and rose family (Rosaceae).

These five charcoal assays indicate at least four occupations during Prewitt's (1981; 1985) Austin phase who primarily used the Scallorn point and collected and curated an older Castroville dart point. Fs 1, 2, and 3 are intact hearth features that indicate separate and repeated occupations by the same groups. These age deposits are common in Fort Hood rockshelters and in the many burned rock middens, but rare in open air, non-midden sites such as this. This site may provide significant information toward addressing this settlement pattern question as it contains good faunal preservation that may allow seasonally to be established. The overall artifact assemblage is as broad and complete as seen for this time period.

5.25.3.3 Temporally Unspecified Materials

These materials include 64 specimens of lithic debitage, one projectile point, one stone tools, 115 bone fragments, 24 mussel shell umbos, 54 burned rocks, and some snail shells. No features or discrete occupations lenses were observed. These materials represent one or more events and probable date to the Late Prehistoric period based on the age of the alluvial deposits and the materials from TPs 1 and 5.

The 64 specimens of lithic debitage represent 11 identified and nine unidentified chert types with 43.8% of the sample identifiable (Table H-220). Fort Hood Yellow dominates among the identified materials with 39.3%, while light brown dominates the indeterminates at 41.6%. Although all four chert provinces are represented, North Fort materials narrowly outnumber the Southeast Range materials (9 specimens versus five). Only Fort Hood Yellow chert and the combined indeterminates occur in higher than expected amounts with all others occurring in expected frequencies (Table H-221). The exclusion of the indeterminates does not change the relative frequency.

In reality there is a bimodal distribution of debitage sizes (Table H-220). These peaks occur at 0.9 to 1.2 cm and 1.8 to 2.6 cm in size potentially reflecting the sizes of materials being used -- one large and one small. However, 90.6% of the materials are less than 2.6 cm in size reflecting biface reduction and possibly resharpening. These notions are clearly supported by the fairly equal numbers of partial cortex and tertiary debitage (Table H-222).

The one point is not typed, but is a distal dart point fragment of Heiner Lake Tan chert. A complete graver of indeterminate light brown chert and a multiple platform core of Cowhouse Mottles with Flecks were also recovered.

The 115 bones are nearly all large size (probably bison) with 88 rib fragments and a few vertebrae pieces from one cluster in TP 2, 80 to 90 cmbs (Table H-223). None of these were burned and only four revealed spiral fractures. As expected there is only light weathering on these specimens. These bones appear to represent the partial remains of a single bison that may have been altered by humans but it is unclear at present. The 24 mussel shell umbos included 11 unclassifiable specimens, four *Amblema* sp., and nine *Lampsilis* sp.Two of these are burned but show no other cultural alterations.

The 54 burned rocks weighed 10.3 kg and were scattered over four units. These did not appear in features or concentrations and charcoal was not associated.

5.25.4 Conclusions

Two spatially separate parts of Subarea A at 41CV317 were tested with mechanical trenches and test pits. Backhoe trench 1, excavated on the western margin adjacent to the tributary, revealed a dense cultural horizon contained in a wedge of West Range alluvium inset against the Pleistocene terrace. Test pits 1 and 5 dug in this same area revealed at least parts of three intact buried features and multiple stratified occupations with high frequencies of lithic debitage, burned rock, bone fragments, and some stone tools and mussel shells, dating to the Late Prehistoric I period. These stratified Late Prehistoric I period occupations and features are rare.

On the eastern side of Subarea A along Cowhouse Creek, five trenches (BTs 2 through 6) were excavated into two terraces, revealing a suite of massive sandy loam deposits and inset stratified loams and silts interpreted as Fort Hood and Ford alluvium, respectively. Four test pits (2, 3, 4, and 6) yielded sparse scattered cultural material and no features. Other than a concentration of bison bones in TP 2, 80 to 90 cmbs, recovery of artifacts was limited to a few flakes and the occasional burned rock and mussel shell umbo. These test pits revealed very low artifact frequency (n=30), density (0.5/m^2), and ubiquity (33%).

On the basis of the above, Subarea A in 41CV317 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, this site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because eligible components are relatively deeply buried, they are buffered from the normal training activities that affect the surface. Protection efforts should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.26 SITE 41CV332

In late August 1994, we conducted formal test excavations at prehistoric archeological site 41CV332. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two backhoe trenches and three test pits were excavated, and a total of 3.0 m^3 was hand excavated. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.26.1 Introduction

5.26.1.1 Site Location and Description

Site 41CV332 is in northwestern Fort Hood in Training Area 51. It is a large open air camp situated on a sloping upland surface but includes a small part of a low terrace of an unnamed tributary

(Figure 5.113). Maximum site dimension, as defined in 1993, measured 400 m by 185 m, with a northeast-southwest long axis covering 7.4 ha. A north-south, improved gravel road bisects the site, with a stock pond located just west of the road at the north end. For purposes of analysis, the site is considered a member of the Shoal/Turnover site group.

5.26.1.2 Previous Work

On 5 July 1978, Briuer first recorded the site as a lithic scatter with burned rock scatters and concentrations (possible midden). Observed artifacts included bifaces, retouched flakes, cores, blades, debitage, a scraper, spokeshave, and hammerstone, with the majority of lithics noted across the southern half. A drill fragment, biface, point fragment, and three points were collected. The site was estimated to be 25% impacted by an historic habitation and by military maneuvers.

On 6 February 1986, Schweigert and Mesrobian again recorded the site as mainly a burned rock scatter (Kock et al. 1988). A low density of lithic artifacts (bifaces, cores, flakes, and a collected dart point) was also observed. The site was estimated to be 60% disturbed by erosion, vehicular traffic, and cattle. Despite the absence of significant chert resources, 41CV332 was formally designated a lithic resource procurement area for management purposes due to the site's size (126,000 m2). The Fort Hood artifact catalog records the three collected points as Lange, Ensor, and untyped dart.

Kleinbach and Abbott revisited and reevaluated the site on 7 June 1993 and divided the site into two subareas based on geomorphic context and potential for intact cultural deposits. Subarea A encompassed the massive upland (Killeen) surface which had been extensively disturbed by military maneuvers, erosion, road/stock pond construction, and floral/faunal turbation (Figure 5.114). A low density of burned rocks, flakes, and bifaces were observed scattered across this surface, but since no significant late Quaternary deposits were present, no further work was considered warranted in this upland.

Subarea B consisted of a relatively level, narrow terrace with 100 to 150 cm of Holocene fill. Due to poor surface visibility, only a few flakes and burned rocks were observed. However, due to the potential for buried cultural material, this subarea was recommended for shovel testing.

On 16 June 1993 a shovel testing crew excavated five shovel tests in Subarea B. Whereas only ST 1 contained cultural material, six flakes between 10 to 50 cmbs, it was recognized that intact cultural material in stratified depositional context could be present below the 60 cm limits of shovel tests. As a result, formal testing was recommended, to include at least one backhoe trench and two square meters of manually excavated test pits (Trierweiler 1994: A811-A813).

5.26.1.3 New Work

Subarea B was formally tested in late August 1994. Two trenches (BTs 1 and 2) and three test pits (TPs 1-3) were excavated. The unit sizes and depths are presented in Table 5.49.

5.26.2 Results

Two trenches were excavated into the narrow tributary terrace at the north end, both revealing a single, loamy to clayey alluvial fill supporting a weak A-AB-Bk profile. In BT 1, this alluvium was overlain by a thin veneer of recent, dark grayish brown (2.5Y 4/2) silty loam slopewash about 12 cm thick. The A horizon was about 25 cm thick and consisted of dark gray (10YR 4/1) granular loam. It graded into a 10 cm thick AB horizon composed of dark grayish brown (2.5Y 4/2), subangular blocky clay loam. The B21k horizon was 30 cm thick and consisted of massive, dark olive brown (2.5Y 4/3) silty loam containing common fine carbonate filaments. It graded into a dark grayish brown (2.5Y 4/2) B22k horizon composed of massive silty clay loam. This horizon was suffused with carbonate filaments and

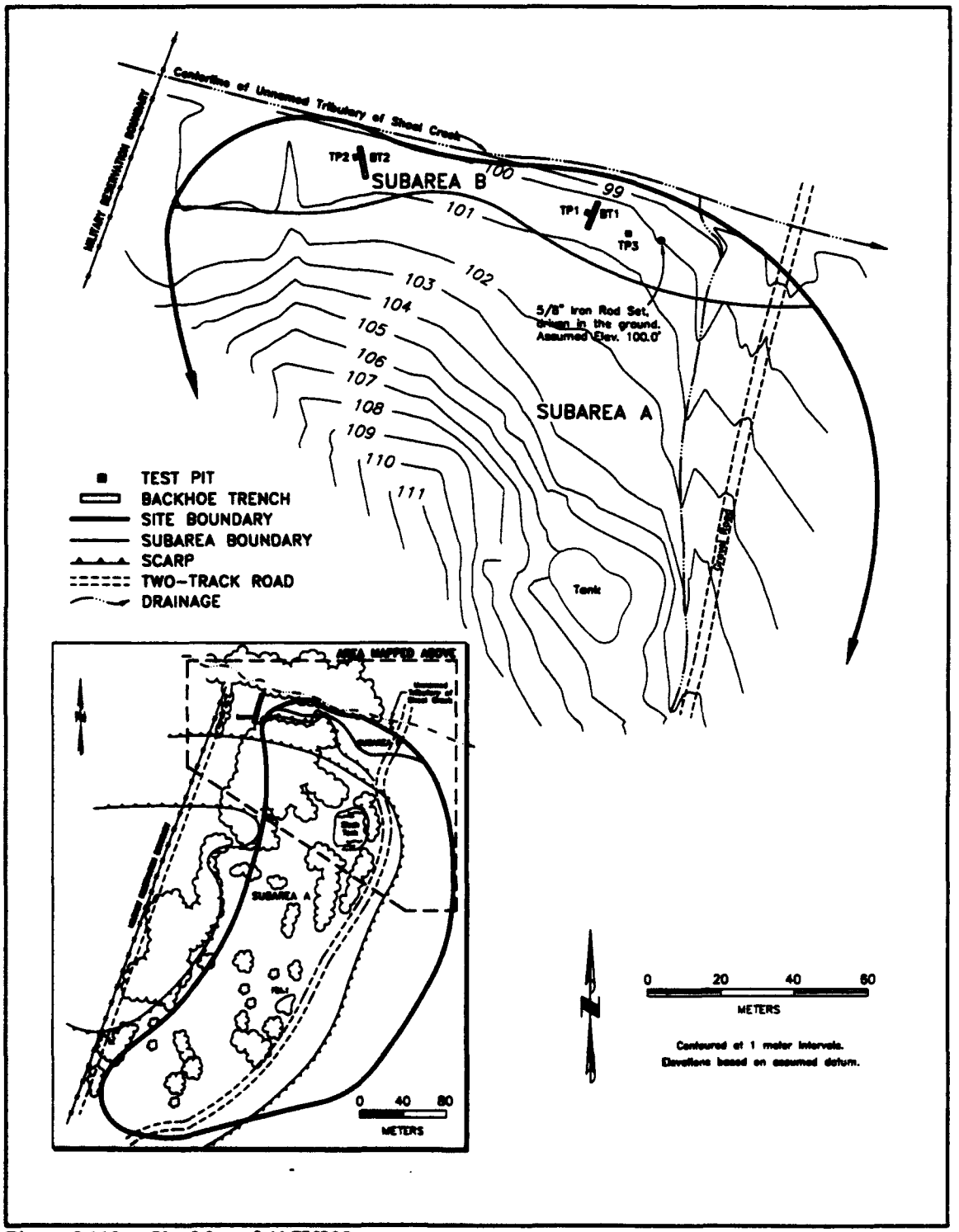


Figure 5.113 Site Map of 41CV332.



Figure 5.114 View West Across 41CV332.

fine, soft masses that may represent dissolving lithoclasts. The B23k horizon was about 60 cm thick and consisted of massive, olive (5Y 5/3) clay containing common films, filaments, and hard masses of carbonate. The latter probably represents dissolving limestone clasts. Below that was a massive, pale yellow (2.5Y 7/4) loamy gravel channel deposit which extended to the base of the trench at 175 cm.

Test pit 1 was offset from the west wall of BT 1 and excavated to 110 cmbs. A dart point midsection was recovered 10 to 20 cmbs, and 30 flakes were recovered between 30 to 60 cmbs, with 15 (50%) found between 50 to 60 cmbs (Table 5.50). In addition, the 60 to 70 level contained one flake.

Trench 2 was placed 45 m west of BT 1 and exhibited a similar, but thicker profile than BT 1, that extended to 300 cmbs but lacked the slopewash cap. No cultural material was detected. Test pit 2, excavated to 110 cmbs, was offset from the west wall of BT 2. Only two flakes were recovered from 80 to 90 cmbs.

In addition, TP 3 was placed about 5 m east of BT 1 and excavated to 80 cmbs. As with TP 1, the greatest recovery (23 flakes) occurred between 30 to 60 cmbs, with 12 (49%) found in level 6. One flake was recovered from level 8. A utilized flake came from 40 to 50 cmbs.

Table 5.49 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	7	0.8	1.8	T1 terrace
BT 2	10	0.8	3.0	T1 terrace
TP 1	1.00	1.00	1.10	T1 terrace
TP 2	1.00	1.00	1.10	T1 terrace
TP 3	1.00	1.00	0.80	T1 terrace

Table 5.50 Artifact Recovery by Test Pit, 41CV332.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	0	1	0	?dart	unspec.
	3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	8	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	15	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	31	1	0		
2	1-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	10-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	2	0	0		
3	1-3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	7	0	1	-	unspec.
	6	-	0	0.0	0	0	0	0	12	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	24	0	1		

5.26.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single unclassifiable Analytical Unit. The three test pits yielded 57 pieces of lithic debitage, one midsection of a projectile point, and one utilized flake. Timing of these events is unknown but these materials occurred vertically across more than 40 cm of deposits.

The 57 specimens of lithic debitage represent one identified (Fort Hood Yellow, North Fort province) and six unidentified chert types (Table H-224). The most abundant type is the indeterminate light brown chert at 60% of the total assemblage. The binomial distribution test indicates more indeterminate chert types than expected (Table H-225). The sizes of material are between 0.5 cm to 2.6 cm with the peak from 0.9 to 1.8 cm. Over three-quarters of the lithic debitage is tertiary (Table H-226).

The utilized flake was manufactured on a indeterminate mottled chert while the dart point was an indeterminate light brown chert. The material types represented by the stone tools are consistent with the lithic debitage recovered.

5.26.4 Conclusions

The two trenches excavated on 41CV332 reveal a thick but weakly developed profile formed in clayey alluvium. Although the age of the deposits is unclear, the degree of soil development suggests that they date to the late Holocene. Dissolving gravels distributed throughout the profiles indicate that slopewash forms a minor component that was incorporated throughout aggradation of the unit, but the majority of fine sediments represent overbank deposition by the adjacent upland tributary.

Recovery of cultural material was sparse, with no clear indications of intact cultural contexts. Overall frequency of lithics was quite low (n=57), with a net density of only 32 lithics per m^3. Overall lithic ubiquity was relatively low as well, with 53% of tested levels having no recovered lithics. Moreover, no features were observed in any trench or test pit. Although TPs 1 and 3 contained a some lithic debitage from 30 to 60 cmbs, these deposits appear to contain a mixture of secondary slopewash in the alluvial fines and can not be considered to represent an intact cultural component.

On the basis of the above, we conclude that site 41CV332 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.27 SITE 41CV378

Beginning in December 1994 and continuing through early February 1995, we conducted formal test excavations at prehistoric archeological site 41CV378. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Sixteen backhoe trenches were mechanically excavated and four test pits (5.4 m^3) were manually dug. The test excavations demonstrate the presence of intact, buried, and stratified cultural components of unknown age which have high potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.27.1 Introduction

5.27.1.1 Site Location and Description

Site 41CV378 is in northeastern Fort Hood, Training Area 2. The site is delineated by Owl Creek to the north, with an unnamed tributary near the eastern site margin. Many roads criss-cross this open campsite (Figure 5.115). Maximum site dimensions, as defined in 1992, measure 300 m east-west x 225 m north-south, with an area of 3.4 hectares (8.4 acres). For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.27.1.2 Previous Work

The site was first recorded by Thomas on 18 May 1982 as a lithic scatter on the south side of Owl Creek. A Perdiz point was collected. Dekker and Ensor again recorded the site on 13 June 1984 as a burned rock and lithic scatter, with debitage, bifaces, and cores. Five dart points were collected including Pedernales and Bulverde types and a fragment of a keeled end scraper was noted. The depth of deposit was estimated to be at least 1.5 m thick.

On 4 March 1992, Frederick and Quigg visited the site and evaluated it based on geomorphic context and archeological potential. The stratigraphic setting appeared complex, consisting of several alluvial and colluvial deposits of the late Quaternary age. Three geomorphic surfaces were present; the highest being a gently inclined colluvial slope along the southern site margin. A thin gravel veneer appeared to rest upon bedrock across the lower northeastern part, but the majority was overlain by a colluvial deposit derived from



Figure 5.115 View West Across Gully at East End of 41CV378.

marl. Some cultural material appeared shallowly buried to a maximum depth of 20 cm in some places. The colluvial slope graded to the terrace (T_2) of Owl Creek that rose 7 to 8 m above the modern channel. The T_2 surface was draped by a thin veneer of channel gravels (possibly ancient) which cropped out along the northeastern margin of the T_2 scarp. These gravels included numerous natural chert clasts which appeared to have served as a prehistoric lithic resource locality. A stage II to III calcrete formed within the gravels in more than one location suggesting that they represented a Pleistocene ages alluvial deposit (Jackson alluvium of Nordt 1991). A thin veneer of fine grained sediments draped the gravels across much of the surface. The texture, color, and geometry of this fine grained veneer suggested it may be primarily Holocene colluvium derived from marl, although some Owl Creek alluvium may be present. It was thought that this strath terrace may have been plowed in historic times. A lower terrace (T_1) which rose about 4 m above the modern channel of Owl Creek was inset into the T_2 surface along the northeast and northwest margins. This surface was underlain by two fine grained alluvial fills, believed to be the Ford and upper West Range units of Nordt (1991). Cultural material was broadly scattered across all geomorphic surfaces. One burned rock concentration consisting of small rocks and 2 to 3 m in diameter, was exposed 20 cmbs in a road cut near the southern site margin. Lithics, including four dart points, were noted and six points (Palmillas, Yarbrough, Montell, La Jita, Bulverde, and an untyped dart) were collected.

Due to the potential for buried cultural deposits, a crew excavated 52 shovel tests on 10 March 1992. The shovel tests ranged from 40 to 80 cm in depth, and 19 (36%) contained 165 pieces of cultural material. Based on these positive results, it was possible that intact archeological deposits were present near the western margin and possibly buried below the limits of shovel testing; therefore formal testing was recommended to determine NRHP eligibility. Testing was recommended to

consist of two to four backhoe trenches and three to six manually excavated test pits (Trierweiler 1994:A823-825).

5.27.1.3 New Work

Because the site was in a restricted endangered species habitat, Gil Eckrich (Fort Hood, Fish and Wildlife) visited the site on 17 November 1994 to check its location in the protected area. Ekrich directed that mechanical trenching on the colluvial slope should be restricted to cleared areas, but trenching across the remainder of the site was permitted.

Formal testing was completed on 21 February 1995. Sixteen backhoe trenches (BTs 1 through 16) and four test pits (TPs 1 through 4) were excavated to examine the complex stratigraphy and to prospect for buried cultural deposits. Trenches 1 through 15 were on various geomorphic surfaces west of the unnamed tributary into Owl Creek, with BT 16 on the east bank of the tributary (Figure 5.116). Test pit 1 was above a burned rock concentration exposed at the west end of BT 4, and TP 2 was offset from the east wall profile of BT 3. Test pits 3 and 4 were isolated units oriented to magnetic north. Test pit 3 was about 15 m south of BT 4, while TP 4 was 5 to 10 m north of BT 4. Unit sizes and depths are presented in Table 5.51.

5.27.2 Results

Trenching revealed four basic suites of Quaternary sediments, and one deposit that may represent an additional alluvial fill. Three of these suites were previously recognized by Frederick (i.e., the calcified, gravelly Pleistocene alluvium underlying the T_2 terrace, gravelly to silty colluvial deposits at the southern side, and late Holocene alluvium underlying the T_1 terrace), while a fourth (early-middle Holocene fan alluvium) was recognized during testing, and a possible fifth unit (channel sands possibly equivalent to the Georgetown alluvium of Nordt 1992) was tentatively identified.

A more than 4 m thick suite of fan sediments is present on the eastern side of the site, and makes up a significant part of the sediments underlying the previously identified T_2 surface. Fan deposits are inset against and override the Late Pleistocene (Jackson) alluvium on a gently sloping contact, becoming progressively thinner and finally pinching out toward the west. In BT 8 the fan sediments were underlain by very pale brown (10YR 7/4) sandy loam that appears unrelated to either the Pleistocene fill or the Early-Middle Holocene fan; it is tentatively interpreted as a remnant of the Late Pleistocene/Early Holocene Georgetown Alluvium of Nordt (1992). The only subsurface feature detected during testing was associated with the early-middle Holocene fan.

Only BT 5 was excavated on the small T_1 terrace wedge. Although Frederick previously suggested that both Ford and West Range alluvial fills might be present, only the more recent Ford Alluvium was exposed. The trench was excavated to approximately 230 cm and exhibited an A-C profile developed in stratified clay loams and gravelly clay loams. Although some charcoal was noted in the profile, no cultural material was observed.

Truncated Pleistocene terrace deposits, consisting of heavily calcified gravels and overlain by either thin slopewash deposits or relatively thick marginal fan deposits, were revealed in several trenches (BTs 6, 7, 9, and 10). All of these trenches were on the western half, and were overlain by colluvium and variable amounts of marginal fan sediments.

A relatively thick deposit of late Pleistocene/early Holocene colluvium and slopewash was revealed in BT 1. This trench extended to approximately 200 cmbs, and exhibited an A-Bw-Bk-C1-C2 profile developed in silty loam, silt, and silty gravel. This lower gravel may represent strongly truncated Pleistocene terrace deposits. Although no in situ cultural material was detected, sparse "crumbs" of burned rock were recovered from the lower Bw and upper Bk (about 50 to 70 cmbs).

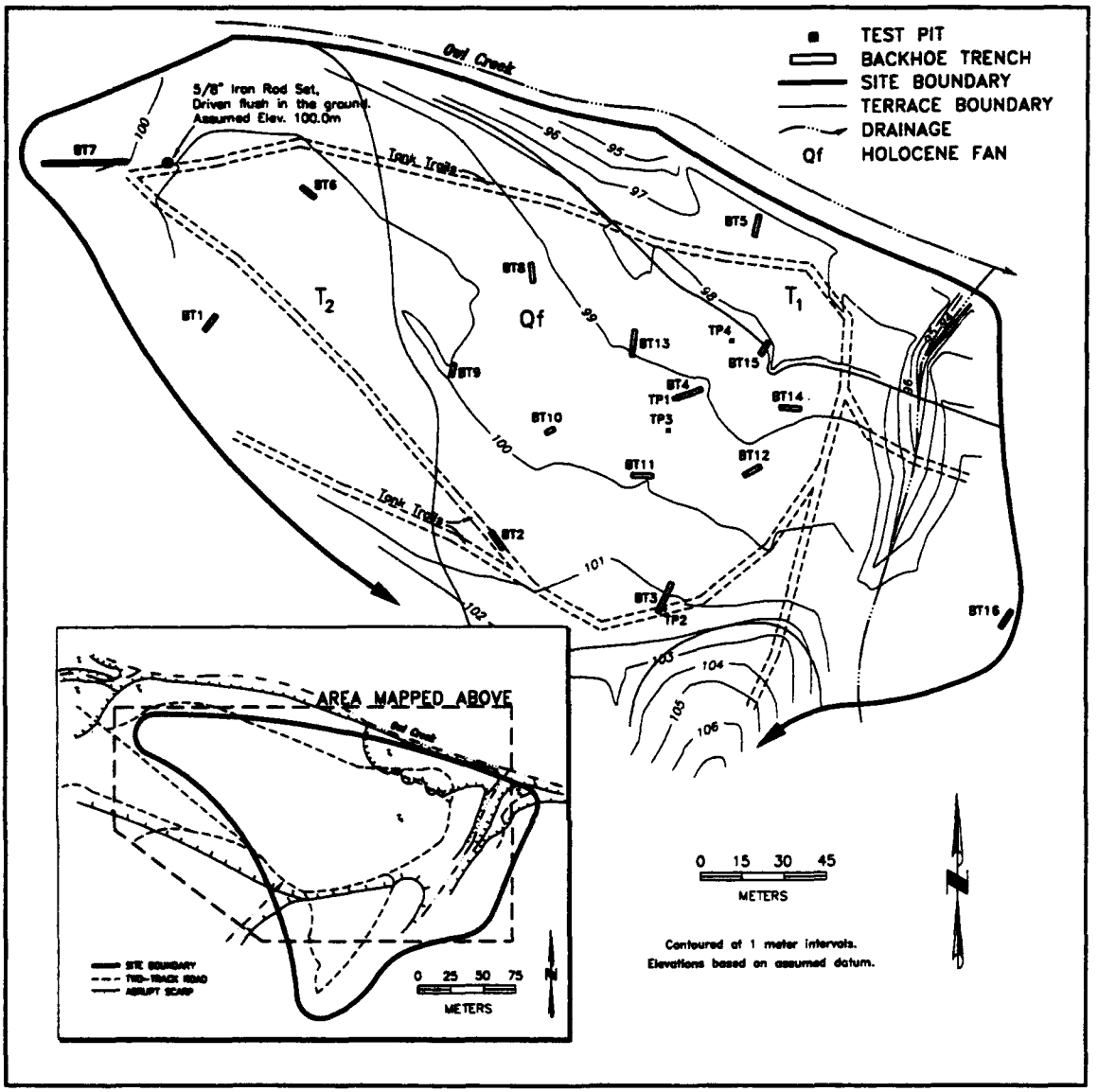


Figure 5.116 Site Map of 41CV378.

The remainder of the trenches penetrated the deposits of an alluvial fan system that is tentatively correlated with the early/middle Holocene Fort Hood fill of Nordt (1992). The fan issued from a tributary valley at the southeastern margin of the site, and the axis of the paleo-fan corresponds with the modern, incised tributary issuing from this valley. The fan deposits show marked facies variation; the axial portions are marked by abundant interbedded gravels and gravelly channels, while the lateral facies are predominantly loamy.

Thick, axial fan deposits were encountered in BTs 3, 4, 12, 15, and 16. These deposits were in excess of three meters thick and exhibited an A-

AB-Bwk-Bk-BC-C profile developed in gravelly sandy loam with interbedded lenses of loamy gravel. Loamier fan marginal deposits were noted in BTs 2, and BT's 9 through 14. Thickness of these deposits varied from 1 to 3 m and exhibited A-AB-Bw-Bk profiles developed in gravelly loam to loam.

Test pit 1 was excavated to 180 cmbs on the western margin of BT 4. Very sparse lithic debitage (n=17) was recovered from the surface to 80 cmbs (Table 5.52). Level 9 yielded ten lithic pieces and eight burned rocks, with a hearth (F 1) encountered at 89 cmbs and extended to 102 cmbs. The hearth consisted of a single layer of 44 burned rock confined to the eastern half of the unit (Figure 5.117). Maximum excavated dimensions were 100 x 52 cm. This hearth was not exposed in the north or south walls of BT 4, however, the planview suggests that it likely extends south beyond the limits of the test pit. The burned rocks (mixed angular, rounded, and tabular) were horizontally laid, very few overlapped, and ranged in size from 60 cm^3 (5 x 4 x 3 cm) up to 2240 cm^3 (20 x 16 x 7 cm). No charcoal or artifacts were directly from the hearth fill, but the lithic debitage and scattered burned rocks from level 9 were probably associated with this hearth and represent an occupation zone. Below the hearth, one flake was in level 15. Excavation was terminated at 180 cmbs.

To provide some measure of chronometric control and potential integrity of the archeological assemblage, a suite of eight *Rabdotus* snail shells from TP 1, level 12 was submitted for epimerization analysis. The resulting ratios ranged from 0.186 to 0.511, with the two smallest values clustered at ±5% (Appendix C). These two shells, which exhibited A/I ratios of 0.186 and 0.199, are interpreted as best representing the age of deposition. They equate to a mean radiocarbon-equivalent age of approximately 6580 BP using the method of Ellis et al. (1995) and 8500 BP using the method of Abbott et al. (1995). While these dates should not be taken too literally (see Section 7.4), the data does support the interpretation that the fan fill is of early to middle Holocene age.

Table 5.51 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	8	0.8	2.0	T2 terrace
BT 2	9	1.5	3.4	T2 terrace
BT 3	10	1.5	3.3	alluvial fan
BT 4	9	1.5	3.0	alluvial fan
BT 5	8	0.8	2.5	T1 terrace
BT 6	7	0.8	1.6	T2 terrace
BT 7	4	0.8	0.5	T2 terrace
BT 8	5	0.8	2.0	T2 terrace
BT 9	5	0.8	1.3	T2 terrace
BT 10	5	0.8	1.8	T1 terrace
BT 11	7	1.5	2.8	T1 terrace
BT 12	7	0.8	2.4	T1 terrace
BT 13	8	0.8	2.8	T1 terrace
BT 14	7	0.8	1.7	T1 terrace
BT 15	5	0.8	2.0	T1 terrace
BT 16	5	0.8	2.1	T1 terrace
TP 1	1.00	1.00	1.80	alluvial fan
TP 2	1.00	1.00	1.50	alluvial fan
TP 3	1.00	1.00	1.20	alluvial fan
TP 4	1.00	1.00	0.90	alluvial fan

Test pit 2, excavated to 150 cmbs, recovered a total of three lithics and two burned rocks in levels 2, 3, and 10. This material was interstratified in relatively high-energy fan deposits, and is considered in questionable context.

Test pit 3, excavated to 120 cmbs, yielded scattered lithic debitage (n=24) and a few shell fragments primarily in levels 7 through 12. An apparent rodent den was noted 100 to 110 cmbs and contained several pieces of debitage. Dense gravels were exposed at 120 cmbs and excavation was halted.

In TP 4, which was dug to 90 cmbs, 41 pieces of debitage and three burned rocks were recovered in the upper 20 cm, with only six more flakes from 20 to 50 cmbs. Levels 6 through 9 were culturally

Table 5.52 Artifact Recovery by Test Pit, 41CV378.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	9	-	8	0.5	0	0	0	0	10	0	0	-	unspec.
	10	F1	44	30.0	0	0	0	0	2	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	12	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	13-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	16-19	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		52	30.5	0	0	0	0	32	0	2		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	2	0.3	0	0	0	0	1	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	11-15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		2	0.3	0	0	0	0	3	0	0		
3	1-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	8	-	0	0.0	1	0	0	0	2	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	2	0	2	-	unspec.
	10	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	8	0	0	-	unspec.
	Total		0	0.0	1	0	0	0	24	0	3		
4	1	-	3	1.0	0	0	0	0	22	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	19	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		3	1.0	0	0	0	0	47	0	0		

sterile, and excavation was halted at marl and gravels at 90 cmbs.

5.27.3 Analysis and Interpretations

5.27.3.1 Definition of Analytical Units

The four test pits yielded one hearth (F 1) from TP 1, 89 to 102 cmbs and sparse cultural material, but no diagnostic artifacts or charcoal. Consequently, no absolute age parameters were available for this data which was mostly derived from thick gravelly fan deposits. Thus, all cultural material is conservatively considered unclassifiable to any specific age category. However, soil development and stratigraphic relationships suggest that the fan deposits are early to middle Holocene in age, which would imply an Early Archaic or possible late Paleoindian age for the occupation. This proposition is supported by a suite of epimerization analyses of snail shells from roughly 10 cm below F 1.

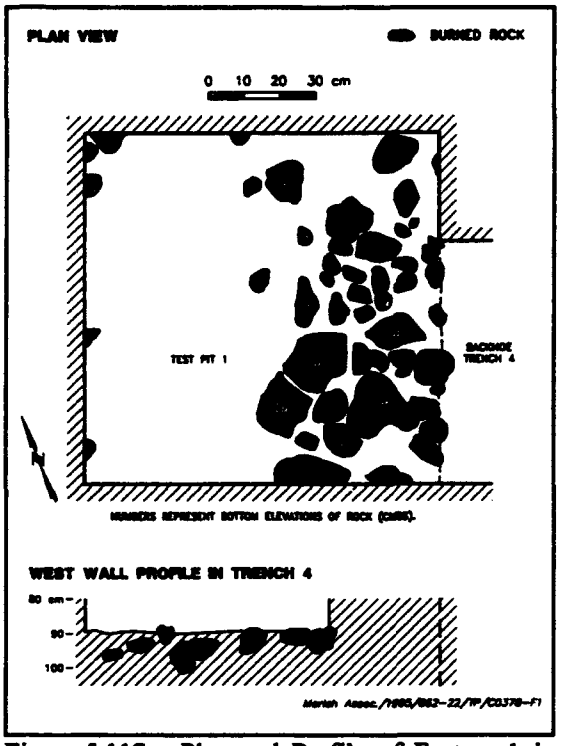


Figure 5.117 Plan and Profile of Feature 1 in Test Pit 1, 41CV378.

5.27.3.2 Temporally Unspecified Material

Testing yielded 106 pieces of lithic debitage, five stone tools, one mussel shell umbo, and 57 burned rocks (31.8 kg). The 106 specimens of lithic debitage represent seven identified and seven unidentified chert types (Table H-227). Only 29% of the cherts were identifiable. The indeterminate light brown cherts dominate the total assemblage (28%) as well as the unidentifiable cherts (40%). The North Fort province material with four types and 71% dominates the identified debitage. The combined indeterminate cherts occur in higher than expected frequencies, Heiner Lake Tan chert occurs in expected frequency, and all other materials occur in less than expected frequencies (Table H-228). The exclusion of the indeterminates results in all types occurring in expected frequencies. The 0.5 to 0.9 cm size category contains the highest percentage of debitage at 31%; however, the next two larger categories are very close in percentage. As would be expected from previous analyses the highest numbers of debitage in the smallest sizes are the indeterminate cherts, especially, light brown. Combined with the high numbers of small flakes, light brown cherts have the highest numbers of tertiary debitage (Table H-229). Only 25% of the debitage has remnants of cortex and in this case the majority is not identifiable as to abrasion.

The five stone tools consist of three utilized specimens, a medial section of a finished biface, and a spokeshave (Table H-230). Since the finished biface was manufactured from chert located in the Southeast Range chert province it undoubtedly came in as a finished product since there are only seven specimens of Heiner Lake Tan. The two other named chert types are locally available and the manufacture of those artifacts produce less debitage.

The one umbo was identified as Unionacea and showed no sign of cultural modification.

The burned rock was primarily (77%) from Feature 1, 44 pieces which weighed 30 kg (see feature description above). Three pieces were in TP 4 level 1 (1.0 kg), and another eight pieces were in TP 1, level 9 (0.5 kg) just above the hearth. These later pieces may have some association with this feature. Their discrete horizontal locations imply some cultural context and random disturbance from cultivation.

5.27.4 Conclusions

Matrix deposits on this site include Pleistocene terrace gravels that have been truncated to a moderately developed K horizon; aerially-restricted, possible late Pleistocene/early Holocene loam that may represent a remnant of the Georgetown fill; extensive, early-middle Holocene alluvial fan sediments that are believed to be roughly time-synchronous with the Fort Hood alluvial fill (but may include more recent sediments, especially in the upper meter); relatively thin colluvial and slopewash deposits that were probably deposited episodically through the late Pleistocene and Holocene; and stratified, late Holocene Ford alluvium. All cultural material observed was associated with the early to middle Holocene alluvial fan, and thus may have some antiquity.

Although the quantity of recovered cultural material is sparse (less than 20 lithics/m^3), the intact burned rock hearth at 80 to 100 cmbs in TP 1 implies a buried occupation that may well be Early Archaic in age. There is no evidence of vandalism but the top 30 cm may have been plowed. On this basis, site 41CV378 is evaluated as containing limited intact archeological deposits with some potential to address some issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts therefore should include measures to prevent mechanical or manual excavations by military personnel, minimize the impact of vehicular traffic on the surface, and prevent subsurface disturbance by vandalism.

5.28 SITE 41CV379

In February and March 1995, we conducted formal test excavations at prehistoric archeological site 41CV379. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two backhoe trenches were mechanically dug and four test pits totaling 3.5 m^3 were manually excavated. The test excavations demonstrate the presence of buried, stratified cultural components, with one Late Archaic component, which has potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.28.1 Introduction

5.28.1.1 Site Location and Description

Site 41CV379 is in northeastern Fort Hood, Training Area 2. This small open site is on a northwest sloping toeslope just south of Owl Creek (Figure 5.118). Maximum site dimensions, as defined in 1993, measure an oblong 90 x 25 m with a northeast-southwest long axis. The site covers an area of only 0.3 hectare (0.7 acre). For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.28.1.2 Previous Work

Thomas initially recorded this site in 1982 as a burned rock scatter with flakes visible on the surface. The site was revisited by Moore and Ensor on 13 June 1984 and was described as a burned rock midden and lithic scatter on a bench above Owl Creek. Material observed included abundant burned rock, bifaces, flakes, cores, chips, and mussel shell. The site was estimated to be 15% disturbed by vandalism and erosion.



Figure 5.118 View Southeast Across 41CV379.

On 5 March 1992, Quigg and Frederick evaluated the site based on archeological potential and geomorphic context. Only limited amounts of scattered burned rock were observed along the lower part of the toeslope, however numerous potholes were across this surface. Based on the potential for buried archeological deposits, a shovel testing crew returned on 24 March 1992 and excavated three shovel tests. All three tests encountered buried cultural material up to 80 cmbs. A total of 67 pieces of debitage, a few mussel shell fragments, and several burned rocks were recovered. The significance of this cultural material was unknown and formal testing was recommended to determine NRHP eligibility. A minimum testing effort of three trenches was recommended (Trierweiler 1994:A830-A833).

5.28.1.3 New Work

On 17 November 1994, G. Eckrich (Fort Hood, Fish and Wildlife) visited the site to check its location in the endangered species protected area. Based on this inspection, mechanical trenching was restricted to open areas at the base of the toeslope (Figure 5.118). However, manual test pits were permitted on the upper parts of the slope since they were not considered to be an adverse impact to the habitat. Formal testing was completed 1 March 1995 with the excavation of two backhoe trenches and four test pits. Unit size and depth are presented in Table 5.53.

Table 5.53 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	7	1.5	2.8	T1 terrace
BT 2	8	0.8	2.3	colluvial toeslope
TP 1	1.00	1.00	1.00	colluvial
TP 2	1.00	1.00	0.60	colluvial
TP 3	1.00	1.00	0.90	colluvial
TP 4	1.00	1.00	1.00	T1 terrace

5.28.2 Results

As noted above, numerous potholes are present across the mid-slope, the results of which has exposed burned rock midden debris. This midden was designated F 1 and, based on shovel testing results and exposures created by vandalism, measured about 80 m east to west and 20 m north to south. It extended across most of the colluvial toeslope.

Both mechanical trenches were excavated from the lower part of the toeslope to the contact with Owl Creek terrace. Trench profiles were similar and consisted of a thin, downslope thickening colluvial drape (0 to 45 cmbs) over silty alluvium (45 to 280 cmbs) that contained several interbedded gravel lenses (Figure 5.119). Overall, the trenches exhibited A21-A22-2AB-2Bw-2Bwk-2Bk profiles. The colluvium and slopewash (the A21-A22 sequence) consisted of very dark gray (10YR 3/1) blocky clay loam, and contained common burned rock and flakes. The underlying alluvial soil was developed in weakly stratified, massive to weak blocky, yellowish brown (10YR 5/4 to 10YR 6/4) gravely loam and gravely silt loam alluvium. Although the trenches spanned the lower toeslope, the gravel lenses in the alluvial fill were flat-lying, indicating deposition by Owl Creek. An abundance of burned rock and debitage (F 1 material) was observed in the colluvial mantle in each trench, but this material was considered to have been reworked from upslope. Several fragments of chert were also in the gravel lenses in the alluvial fill.

Test pits 1 through 3 were about 25 m west of BT 2 (Figure 5.120). Test pit 1 was at the mid-slope near the most vandalized area of the site, and excavated to 100 cmbs. The upper level yielded 15 flakes and burned rocks. Recovery increased substantially in level 2, where 20 flakes, 20 burned rocks, and a complete untyped dart point were recovered (Table 5.54). This material was considered the upper part of burned rock midden F 1 which continued to 50 cmbs. Level 3 produced a peak in artifact recovery with over 100

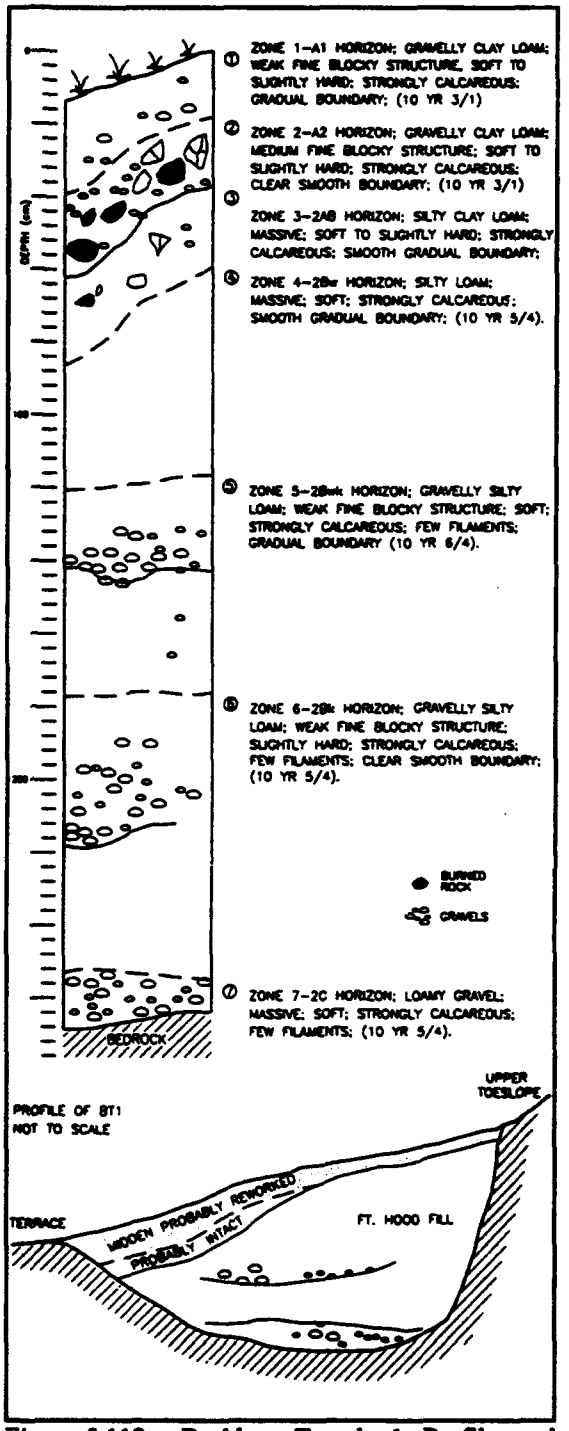


Figure 5.119 Backhoe Trench 1 Profile and Schematic Cross-section of 41CV379.

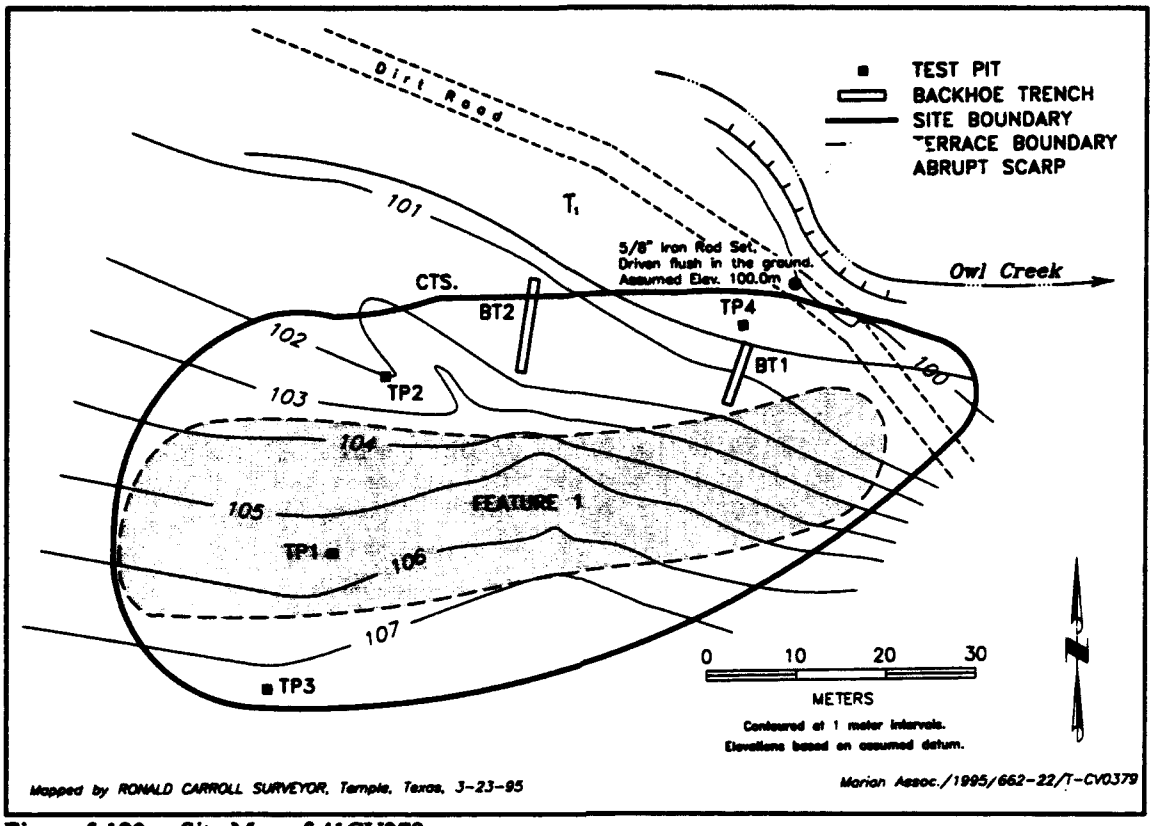


Figure 5.120 Site Map of 41CV379.

flakes, 104 burned rocks, and a mussel shell. The majority of sizable rock in this level was burned. The following level also yielded many artifacts (33 burned rocks and more than 70 flakes), however, the sizable rock in this level was unburned. A very small (0.25 g) charcoal sample from level 5 was identified as oak wood and provided a $\delta^{13}C$ (-23.2‰) corrected charcoal assay of 130 ± 60 BP (Beta-83347). A soil change from a dark gray stony clay loam to a brown stony loam was encountered at the base of level 5. Due to a substantial decrease of artifact recovery (20 flakes and 12 burned rocks) coinciding with this soil change, the base of F 1 was considered to be at 50 cmbs. Interestingly, the following two levels (50 to 70 cmbs) contained more than 150 chert artifacts, although few other materials were associated (20 burned rocks and a mussel shell). Many large percussion and thinning flakes at this depth, contrasts with the recovery from F 1. Therefore, although continuous cultural material was found from surface to 70 cmbs, the items recovered from 50 to 70 cmbs may represent differing functions associated with a separate, earlier occupation. From 70 to 100 cmbs, eight flakes and four burned rocks continued in the dense colluvium.

Test pit 2 was downslope from TP 1 and excavated to 60 cmbs. Abundant cultural material mixed in with dense colluvial gravels was recovered. Most artifacts, which included over 360 flakes, 22 burned rocks, and two mussel shells, were in the upper 30 cm. Although context is dubious, this material is considered to be included in F 1. As in the backhoe trenches, this material appeared to have been reworked. From 30 to 60 cmbs, 24 flakes and six burned rocks were recovered.

Table 5.54 Artifact Recovery by Test Pit, 41CV379.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	3	0.5	0	0	0	0	6	0	0	-	mixed
	2	F1	20	3.0	0	0	0	0	22	1	1	?dart	mixed
	3	F1	104	16.0	1	0	0	0	182	0	6	-	mixed
	4	F1	33	7.5	0	0	0	0	105	0	2	-	mixed
	5	F1	12	2.0	0	0	0	0	30	0	1	130±60	mixed
	6	-	8	2.0	0	0	0	0	109	0	3	-	unspec.
	7	-	12	3.0	0	0	0	0	175	0	6	-	unspec.
	8	-	1	0.2	0	0	0	0	12	0	0	-	unspec.
	9	-	2	0.3	0	0	0	0	1	0	1	-	unspec.
	10	-	1	0.1	0	0	0	0	1	0	0	-	unspec.
	Total		196	34.6	1	0	0	0	643	1	20		
2	1	-	0	0.0	0	0	0	0	0	0	5	-	mixed
	2	F1	5	0.9	0	0	0	0	206	0	2	-	mixed
	3	F1	17	2.5	2	0	0	0	104	0	5	-	mixed
	4	-	2	0.4	0	0	0	0	12	0	0	-	unspec.
	5	-	2	0.4	0	0	0	0	4	0	2	-	unspec.
	6	-	2	0.4	0	0	0	0	3	0	0	-	unspec.
	Total		28	4.6	2	0	0	0	329	0	14		
3	1	-	2	0.4	0	0	0	0	0	0	0	-	mixed
	2	-	2	0.4	0	0	0	0	0	0	0	-	mixed
	3	-	3	0.9	0	0	0	0	1	0	0	-	mixed
	4	-	3	0.9	0	0	0	0	1	0	0	-	unspec.
	5	-	3	0.4	0	0	0	0	0	0	0	-	unspec.
	6	-	3	0.4	0	0	0	0	5	0	0	-	unspec.
	7	-	6	2.0	0	0	0	0	5	0	0	-	unspec.
	8	-	3	0.9	0	0	0	0	0	0	0	-	unspec.
	9	-	3	0.9	0	0	0	0	1	0	1	-	unspec.
	Total		28	7.2	0	0	0	0	13	0	1		
4	1	-	3	0.2	0	0	0	0	22	0	5	-	mixed
	2	-	3	0.2	0	0	0	0	40	0	5	-	mixed
	3	-	0	0.0	0	0	0	0	18	0	4	-	mixed
	4	-	1	0.1	0	0	0	0	19	0	0	-	unspec.
	5	-	2	0.1	0	0	0	0	18	0	1	-	unspec.
	6	-	0	0.0	0	0	0	0	11	0	0	-	unspec.
	7	-	3	0.5	0	0	0	0	9	0	0	-	unspec.
	8	-	3	0.4	0	0	0	0	35	0	0	-	LA
	9	-	0	0.0	0	0	0	0	73	1	0	Frio	LA
	10	-	2	0.2	0	0	0	0	20	0	0	-	LA
	Total		17	1.7	0	0	0	0	265	1	15		

Test pit 3 was about 25 m upslope of TP 1, at the top of the toeslope, and excavated to boulders at 90 cmbs. The entire unit consisted of extremely stony colluvium. Cultural material included two to six burned rocks and one to four flakes per level.

Test pit 4 was near the eastern margin, several meters downslope from BT 1, placed to investigate the potential of an intact part of F 1 in the alluvial deposits. Test Pit 4 was excavated to 100 cmbs. As observed in the trenches, the colluvial drape occurred from 0 to 30 cmbs in this TP. Fifteen to 20 flakes and a few burned rocks were in each of these levels. The deposits in the remainder of the unit consisted of a "clean" black alluvial silt loam from 30 to 80 cmbs and a dark brown loam with gravels from 80 to 100 cmbs. Although the deposit had changed from colluvial to alluvial, about the same amount and type of cultural material was recovered in each level excavated, the only exception being a Frio dart base at 80 to 90 cmbs.

5.28.3 Analysis and Interpretations

5.28.3.1 Definition of Analytical Units

The four test pits yielded a total of 1,250 pieces of lithic debitage, 52 stone tools, three dart points, three mussel shell umbos, 269 pieces of burned rock (48.1 kg), sparse charcoal, and quantities of snail shells. Three Analytic Units were defined. Because there has been considerable vandalism to upper three levels of TPs 2-4 and the upper four levels of TP 1, these materials are considered out of context and therefore mixed, despite the charcoal date of 130 BP from level 4 of TP 1. Only the lowest part of TP 4 (levels 8-10) is assigned to the Late Archaic period based on the presence of one Frio dart point. The cultural material between the Late Archaic materials and the mixed materials is considered unknown as to its age. It is possible that these unknown materials, and possibly the mixed materials, are all part of the Late Archaic period. However, without direct evidence through diagnostic artifacts and absolute dates, these materials are conservatively separated into these three analytical units, and are discussed below.

5.28.3.2 Late Archaic Materials

The sparse Late Archaic materials include 128 pieces of lithic debitage, one Frio dart point, and five burned rocks (0.6 kg), but no charcoal, bone, mussel shells, or other stone tools. The 128 specimens of lithic debitage represent six identified and nine unidentified chert types (Table H-231). Only 32% of the lithic debitage was identified. Gray/Brown/Green chert dominates the identified materials while the light brown materials dominate the indeterminates. However, they contribute approximately the same percentage to the total assemblage. The dominance of Gray/Brown/Green strengthens the overall prevalence of North Fort materials with 88% of identified types at four. The combined indeterminates occur in higher than expected frequencies, Gray/Brown/Green occurs in expected frequencies and all others occurring in less than expected amounts (Table H-232). The exclusion of the indeterminates results in Gray/Brown/Green still occurring in higher than anticipated frequencies, Heiner Lake Tan, Fort Hood Gray, and Owl Creek Black occurring in expected frequencies, and all others occurring in less than expected amounts. This distribution and statistical analysis is not unexpected since the site lies in the Owl Creek Site group within the North Fort Chert province, but also reflects the exploitation of the Southeast Range chert province directly to the south.

No true modal peak occurs in the size groups as the debitage is almost evenly distributed from 0.5 to 2.6 cm in size. However, 98% of the debitage is less than 2.6 cm in size and 77% of the total debitage is tertiary (Table H-233). Of the debitage still retaining cortex 70% can not be determined to be abraded or unabraded. These data indicate intense biface reduction, possibly with imported flake-blanks that were finished on-site.

The fragmented Frio point was made of Gray/Brown/Green chert and it came from level 9 of TP 4. A finished biface of Owl Creek Black and a late stage biface made of Gray/Brown/Green were also recovered.

The sparse burned rock was not in any identifiable feature with nearly equal numbers from level 8 and 10. No charcoal was associated with the burned rocks.

5.28.3.3 Mixed Materials

The mixed materials include 736 pieces of lithic debitage, 36 stone tools, one dart point, two mussel shell umbos, 207 burned rocks (34.5 kg), sparse charcoal, and lots of snail shells. The 736 specimens of lithic debitage represent 11 identified and nine unidentified chert types reflecting all four chert provinces (Table H-234). The Gray/Brown/Green chert dominates (68%) the identified types, whereas the miscellaneous category dominates (35%) the unidentified materials. Both these materials contribute about the same percentage to the total assemblage. The dominance of Gray/Brown/Green strengthens the overall prevalence of North Fort materials with 87% of the identified in four types. As might be expected given the high counts of Gray/Brown/Green, this chert type occurs in higher than expected frequencies along with the combined indeterminates; all other cherts occur in less than expected amounts (Table H-235). The exclusion of the indeterminates results in Gray/Brown/Green and Fort Hood Yellow occurring in higher than expected amounts, Heiner Lake Tan occurring in expected frequencies and all other cherts to be in less than expected.

The modal peak for the size distribution of debitage is 0.9 to 1.2 cm with a slow drop off to the larger size categories (Table H-234). However, 78% is less than 1.8 cm in size and 92% is less than 2.6 cm. As one would expect with this kind of size distribution, tertiary debitage is 74% of the total (Table H-236). There are also significant numbers of debitage retaining partial cortex (21%). The size and cortex data indicate that extensive on-site tool production was accomplished with most of it apparently late reduction and probably tool resharpening.

A fragmented untyped dart point was made of indeterminate dark brown chert. The stone tools consist of 17 utilized specimens, four Type A choppers, one Type B chopper, one hammerstone, one crushing/abrading stone, eight biface fragments, one graver, two spokeshaves and one edge modified flake (Table H-237). Forty-two percent of these tools were manufactured from indeterminate chert types, although the North Fort and Southeast Range chert provinces are represented by Gray/Brown/Green (19%), Heiner Lake Tan (17%), and Fort Hood Yellow (14%). These material types are roughly in the same frequencies as in the debitage.

The two umbos were identified as *Amblema plicata* and *Potamilus purpuratus*. Neither was burned or exhibited other cultural modifications. The limited number of umbos causes some uncertainty as to the use of these by the human population since various animals are known to eat these as well.

The 207 burned rocks were mostly (90%) from the midden deposit in TPs 1 and 2, although low frequencies (2 to 6) were scattered in all other levels. Half the burned rock came from the midden in TP 1, level 3. Sparse charcoal (0.25 g) were recovered from the lower midden deposit in TP 1 and 0.2 g were identified as oak wood and provided a $\delta^{13}C$ (-23.2‰) corrected charcoal assay of 130 ± 60 BP (Beta-83347). This recent age from the lower part of the midden (TP 1, level 5) supports the interpretation that this area was mixed. A float sample from the same level as the dated charcoal sample yielded five tiny (smaller than 0.8 mm) carbonized seeds of unknown type.

Although vandals have disrupted much of the upper midden, it is possible this material still dates to the Late Archaic based on the lack of arrow points. If this is true, then the tiny dated charcoal flecks would represent an intrusion from the

surface. This is quite possible given the open matrix of a midden and the results obtained by Quigg and Ellis (1994) on various burned rock mounds.

5.28.3.4 Temporally Unspecified Materials

These materials include 386 pieces of lithic debitage, 14 stone tools, 57 burned rocks (13 kg), and snail shells. The 386 specimens of lithic debitage represent seven identified and eight unidentified chert types from three chert provinces with 16% of the materials identifiable (Table H-238). Indeterminate light brown and mottled dominate the total assemblage as well as the unidentified types, contributing roughly equal percentages. The high amounts of Gray/Brown/Green and Fort Hood Yellow strengthen the dominance of the North Fort materials with four types and 68% of the identified debitage. As anticipated the combined unidentified types occur in higher than expected frequencies whereas all other types are in less than expected amounts (Table H-239). The exclusion of the indeterminates results in Heiner Lake Tan, Fort Hood Yellow, and Gray/Brown/Green to occur in higher than expected amounts, Fort Hood Gray and Owl Creek Black to occur in expected amounts, and all others to occur in less than expected amounts. This is not surprising considering the site's location between the North Fort and Southeast Range chert provinces.

The modal peak for size is 1.2 to 1.8 cm; the distribution drops off more slowly to the smaller sizes than the larger. Over 70% of the debitage is less than 1.8 cm in size and just over 90% is less than 2.6 cm in size. The size data coupled with the 80% rate of decortification (Table H-240) indicates intense biface manufacture but possibly with large roughed-out flake blanks being imported. A higher rate of less than 0.9 cm sized debitage would more accurately reflect tool resharpening/refurbishing than the current distribution does.

The 14 stone tools consist of six utilized flakes, two finished bifaces, two middle stage bifaces, two late stage bifaces, on early stage biface, and one edge modified flake (Table H-241). These tools were manufactured from mostly indeterminate chert types (57%) with Fort Hood Yellow, Heiner Lake Tan, and Gray/Brown/Green also represented. These material type frequencies are similar to those identified in the debitage.

The burned rocks were much less frequent than the mixed midden deposits with about three pieces per level. This is similar to the frequency in the Late Archaic levels. No charcoal was associated with these pieces.

Since TPs 1 through 3 were dug on colluvial slopes, this landform may account for the light scattering of cultural material throughout the various levels. The lack of diagnostics and charcoal hinders assignment of this data to a general time period, but if the material from TP 4, levels 8 through 10 is any indication then most of this material could be of similar age.

5.28.4 Conclusions

Two depositional units, colluvial and alluvial deposits, were detected. All cultural material is associated with mid- to late Holocene colluvial/slopewash deposits on the toeslope. Substantial alluvial deposits underlie the Owl Creek terrace and are mantled with colluvium and slopewash. Based on the manual excavation results, a vandalized, mostly disturbed burned rock midden (Feature 1) is present in the colluvial deposits in the upper 50 cm of the toeslope. Because the colluvial matrix also contains reworked cultural material from upslope, context of the midden materials is problematic. Nonetheless, intact cultural materials dating the Late Archaic period are present in primary context in the underlying colluvial deposits in the mid-toeslope area. Although no other features were detected, the lithic debitage implies a lithic workshop occupation associated with the midden.

We conclude that site 41CV379 contains intact archeological deposits with potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Protection efforts should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.29 SITE 41CV380

In early January and early February 1995, we conducted formal archeological test excavations at prehistoric site 41CV380. Testing was designed to evaluate eligibility for inclusion to the NRHP. One trench was mechanically dug and one test pit (0.5 m^3) was excavated by hand. Test excavations demonstrate buried and intact cultural components of the Late Archaic period that have potential to inform on key research questions including prehistoric technological and economic systems. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.29.1 Introduction

5.29.1.1 Site Location and Description

Site 41CV380 is in the northeastern section of Fort Hood in Training Area 2. Owl Creek lies to the north and an unnamed tributary to the east, with a two track road to the south (Figure 5.121). Maximum site dimensions as defined in 1993, measure 55 x 50 m and cover only 0.3 hectare (0.3 acre). For purposes of analysis, this site is considered a member of the Owl Creek site group.

5.29.1.2 Previous Work

An unknown person first recorded the site on 18 May 1982. The second page of this site record is missing and no sketch map was included. A light scatter of lithics and a few burned rock concentrations were noted and the site was assigned to the Archaic period. On 19 November 1987 Mesrobian, Callum, and Thomas visited the site. The site was recorded as being on a flat, bench-like terrace and consisted of an non-vandalized, buried midden. The only observed disturbance was animal burrows, which had exposed cultural material. Site dimensions were not recorded, but were based on landform and visible artifacts. A specific recommendation was to avoid clear cutting the site to help protect it.

On 6 March 1992, Quigg and Frederick evaluated the site based on archeological potential and geomorphic context. The site consisted of a 10 m diameter burned rock midden (F 1) on a small midslope bench, and a steep colluvial slope, toeslope, and terrace overlooking Owl Creek. A few depressions (possible potholes) were noted in the midden deposit which appeared to be shallowly buried. A Castroville dart point was collected whereas lithics and burned rocks were observed across the surface of the colluvial slope and toeslope below the midden. No cultural material was noted in the Owl Creek cutbank or its tributary. Based on the potential for buried archeological deposits, a crew excavated one shovel test (ST 1) in the midden on the midslope bench to 40 cmbs and two (STs 2 and 3) in the alluvial terrace (T_1) paralleling Owl Creek to 40 cmbs. Shovel test 1 contained 105 cultural items including a Castroville point. Artifact counts were low (n=16) in the other two shovel tests. Intact cultural deposits appeared to be present, particularly in the midden area. These deposits were judged to be of unknown eligibility for NRHP inclusion and formal testing was recommended, to include a trench and two to three test pits (Trierweiler 1994:A834-837).

5.29.1.3 New Work

Because the site was in an endangered species habitat (Figure 5.122), Gil Eckrich (Fort Hood, Fish and Wildlife) visited the site to check its location on 17 November 1994. Based on this inspection, Eckrich determined that mechanical

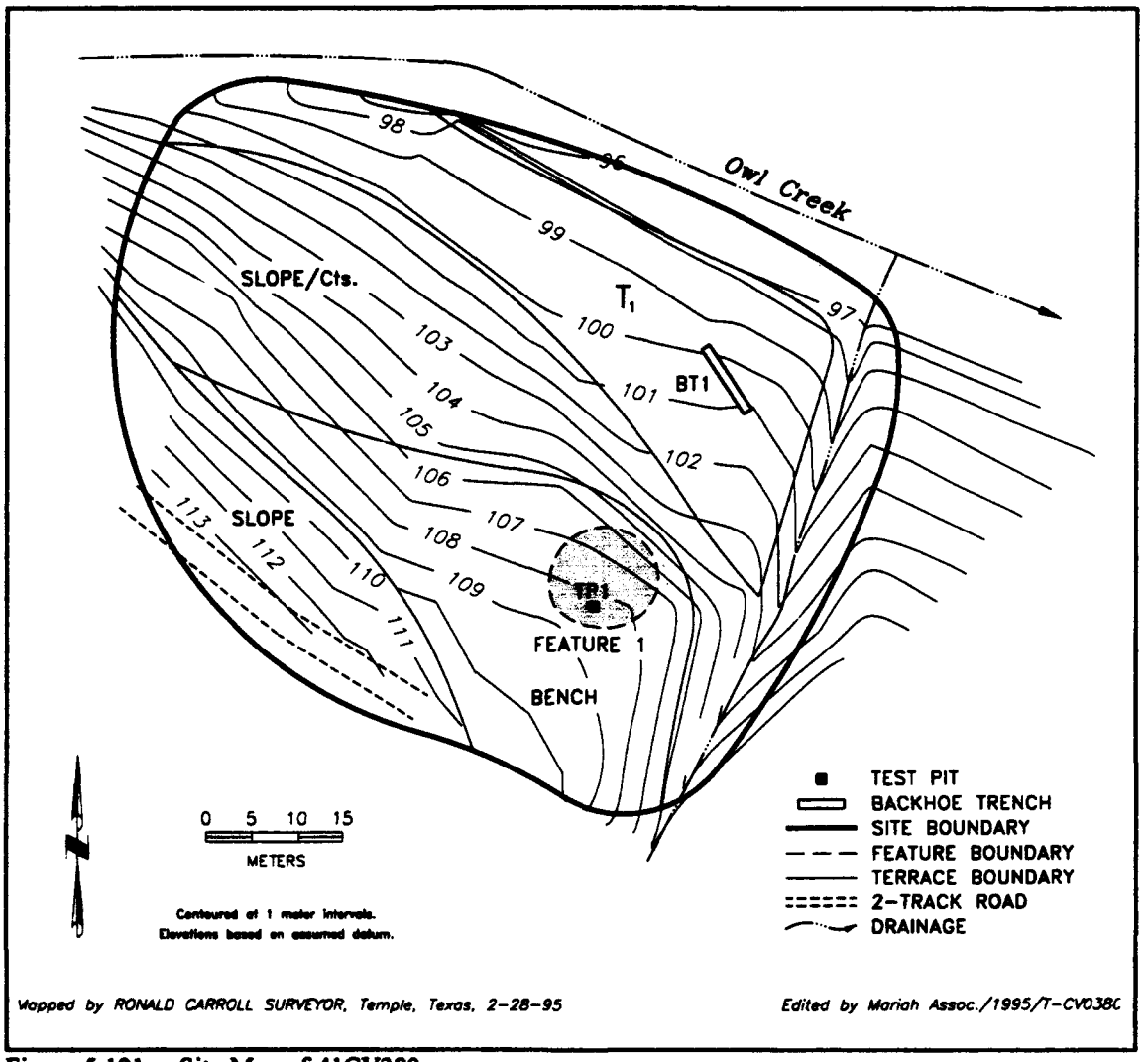


Figure 5.121 Site Map of 41CV380.

trenching should be restricted to the lower terrace and adjoining toeslope (at the very base of the steep colluvial slope) along Owl Creek. Permission to mechanically trench was denied on the midslope bench and steep colluvial slopes since this was prime bird habitat. However, test pits could be manually excavated in these areas since they were not considered to be adverse impacts.

Formal testing was completed 7 February 1995. One backhoe trench and one test pit were excavated. Trench 1 was on the colluvial toeslope, below the midslope bench near the northeast site margin. Test Pit 1 was dug in F 1 in an area that appeared undisturbed on the midslope bench. Unit sizes and depths are presented in Table 5.55.



Figure 5.122 View Southwest Across Midslope Bench With Feature 1, 41CV380.

5.29.2 Results

5.29.2.1 Excavations in the Colluvial Toeslope

Backhoe trench 1 revealed an A-Bw-C-2Cox-2K profile developed in Holocene colluvium overlying a truncated Pleistocene terrace. The colluvial wedge was up to 120 cm thick and consisted of gravely loam to gravely silty clay loam. The black (10YR 2/1) A horizon was 25 cm thick, exhibited weak blocky structure, and contained a few colluvially reworked burned rocks. The Bw horizon was 30 cm thick, very dark grayish brown (10YR 3/2), and also contained colluvial burned rock. The C horizon was 65 cm thick, brown (10YR 5/3) gravely silty loam; once again, dispersed colluvial burned rock was present. The underlying Pleistocene terrace consisted of calcrete-cemented gravels (2K) overlain by a thin (10 cm) transitional zone that exhibited substantial leaching of carbonate and reduction of iron. No in situ cultural material was detected in this trench.

5.29.2.2 Excavations in the Colluvial Bench

Test Pit 1 revealed a cultural sequence in a colluvial A-Bk-R profile. The test exhibited burned rock from the surface to a maximum depth of 53 cmbs, all considered part of burned rock midden F 1. High artifact counts were in levels 1 through 4 (Table 5.56), with the majority (about 90%) of recovered material consisting of angular burned rocks and lithics, many of which exhibited discoloration and pot-lid fractures indicative of burning. Two arrow point fragments, a dart point fragment, and a complete Scallorn arrow point came found level 1. A very small (0.3 g) sample

Table 5.55 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	8	0.80	1.30	colluvial
TP 1	1.00	1.00	0.53	colluvial

Table 5.56 Artifact Recovery by Test Pit, 41CV380.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	160	27.5	1	0	0	0	608	4	0	Scallorn, ?dart, ?arrow	mixed
	2	F1	140	46.0	0	1	0	0	683	0	6	-	LA
	3	F1	92	35.0	0	0	0	0	326	2	1	Darl, Lange, 1250±50	LA
	4	F1	35	9.0	1	11	0	0	203	0	4	-	LA
	5	F1	4	1.0	0	0	0	0	18	0	0	-	LA
	Total		431	118.5	2	12	0	0	1,838	6	11		

of wood charcoal from 20 to 30 cmbs was identified as Oak and yielded a $\delta^{13}C$ (-26.7‰) corrected age of 1250 ± 50 BP (Beta-83348). Level 1 burned rocks were small and medium sized (less than 10 cm), whereas in all other levels the burned rocks were fist-sized and larger (up to 15 cm). In addition, some burned rocks were a fossiliferous conglomerate, as opposed to the typical limestone. An irregular, sloping bedrock surface was encountered across the unit from 30 to 53 cmbs (Figure 5.123).

Based on exposed material across the midslope bench surface, Feature 1 measures approximately 10 m in diameter. The midden deposit in TP 1 appeared generally undisturbed and based on evidenced by a few shallow depressions noted in 1992 only a small portion (possibly 20%) of the entire midden may have been impacted by vandalism. Because the deposits in TP 1 demonstrated considerable data potential, further test units were not warranted.

5.29.3 Analysis and Interpretations

5.29.3.1 Definition of Analytical Units

The cultural material from TP 1 excavated through burned rock midden F 1 was assessed and divided into one identified time unit, the Late Archaic, and one mixed data unit. Levels 2 through 5 were determined to represent the Late Archaic period based on a Darl and a Lange projectile point from level 3, plus a $\delta^{13}C$ charcoal date of 1250 ± 50 BP from level 3. The top 10 cmbs contained a complete Scallorn, two arrow point fragments and one dart point fragment. It was unclear if this level actually represented a use episode by the Scallorn point using people or these items had accumulated on the midden surface. Therefore, level 1 was conservatively determined to represent mixed data. The following presents the data analyses and interpretations by analytical unit.

5.29.3.2 Late Archaic Materials

Levels 2 through 5 of TP 1 yielded 1,230 pieces of debitage, 271 burned rocks (403.5 kg), 11 stone tools, a Lange and a Darl projectile point, one mussel shell, 12 bone fragments, and some charcoal flecks. Only the midden deposit itself was recognized with no other indication of cultural features in TP 1. No internal patterning or structure was recognized. The largest burned rocks, 20 to 15 cm in diameter, were in levels 2 and 3 with smaller pieces above and below. This feature rests on sloping limestone bedrock. One light fraction from the only analyzed float sample

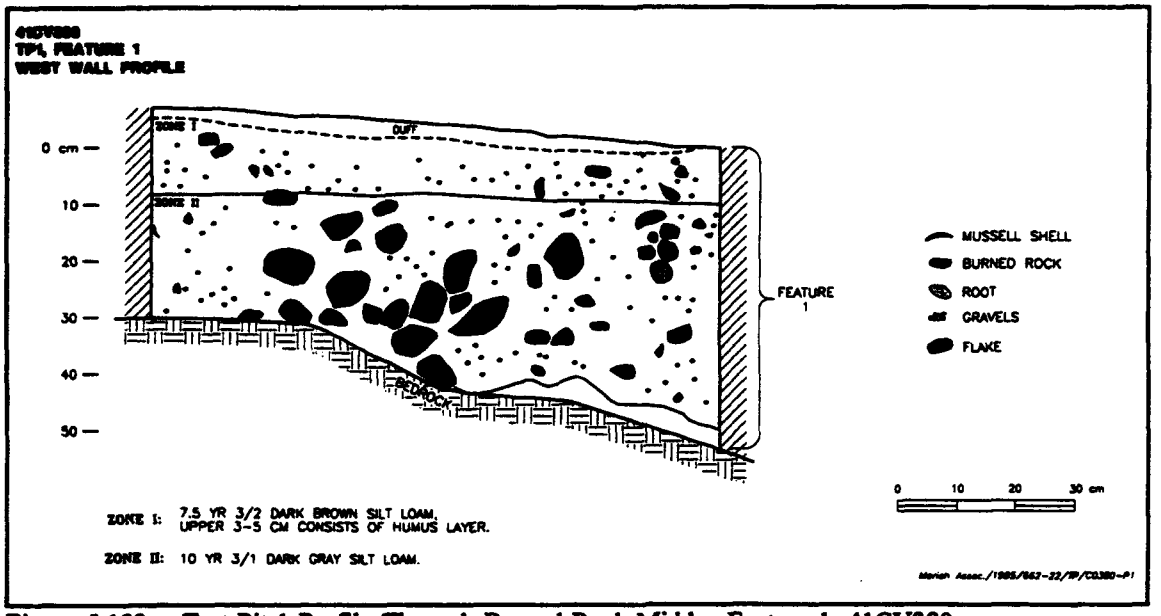


Figure 5.123 Test Pit 1 Profile Through Burned Rock Midden Feature 1, 41CV380.

did not yield any carbonized plant remains. One piece of charred wood weighing 0.3 g from 20 to 30 cmbs, identified as Oak wood provided a $\delta^{13}C$ (-26.7‰) corrected age of 1250 ± 50 BP (Beta-83348). It is assumed this charred wood was associated with one of the events associated with this burned rock midden accumulation.

The 1,230 specimens of lithic debitage represent five identified and nine unidentified chert types with a mere 3% identifiable (Table H-242). Even though there is a very low identification rate, North Fort cherts dominate with four types and 95% of the materials. The sheer quantities of indeterminate cherts (n=1,192) result in their over-representation with all the identified cherts at less than expected levels (Table H-243). The exclusion of the indeterminates results in Fort Hood Yellow at higher than expected levels, Fort Hood Gray, Gray/Brown/Green, and Owl Creek Black at expected levels, and Heiner Lake Tan and Cowhouse Dark Gray at less than expected rates. This is not unexpected since the site is in the midst of the North Fort chert province and more specifically in the heartland of the Owl Creek type. The modal peak of size is at the 0.5 to 0.9 cm category. Ninety-seven percent of the debitage is less than 1.8 cm in size. Over 90% of the debitage is classified as tertiary (Table H-244). The small size and lack of cortex on the debitage implies dominance of tool finishing and/or rejuvenation over core reduction.

The recovery of the stem of a Darl and the blade/stem of a Lange from level 3 also indicate a Late Archaic period of use for this midden. Both points were manufactured of indeterminate cherts, a light brown and a dark gray, respectively. Other tools consist of nine utilized flakes, and two late stage biface fragments (Table H-245). These tools were dominated (54%) by indeterminate types of cherts, although local cherts from Southeast Range, and North Fort chert provinces are present. The tools represent broad range of chert source localities as does the debitage.

Bone fragments were recovered from levels 2 and 4 with the single burned fragment from level 2 representing a small to medium sized animal (Table H-246). The 11 unburned fragments from

level 4 represent medium to large size animals, deer size. No cut marks or other indication of cultural modifications were observed. A single, unburned mussel shell umbo was Unionacea. No modification was detected and it is unclear if this represents a human food resources or something else. A few mussel shell fragments were in all four levels. All four levels contained snails, mostly *Rabdotus*, with 10 to 30 cmbs yielding over 500 snails while the lower 20 cm yielded roughly 100. Samples of snails were collected but it is unclear if these were utilized by humans.

The 1250 BP date and associated Darl and Lange projectiles from this burned rock midden indicate a Late Archaic use period. Although Prewitt (1981; 1985) does not include burned rock middens with his Driftwood phase he did have middens associated with the earlier Middle Archaic phases. Recent dated burned rock middens have shown a high frequency of occurrence in the Late Archaic period (Gearhart 1987:117-119; Treece 1992; Treece et al.1993; Quigg and Ellis 1994:203-274; and Ricklis and Collins 1994).

5.29.3.3 Mixed Materials

Level one, constituting the mix assemblage on top/in the midden deposit included 618 pieces of lithic debitage, 160 burned rocks weighing 27.5 kg, one mussel shell umbo, two arrow point fragments, a Scallorn point, and a untyped dart fragment. The 608 specimens of lithic debitage represent five identified and eight unidentified chert types with less than 2% identifiable (Table H-247). The North Fort materials dominate with four types and 90% of the debitage. The combined indeterminates are over-represented with all identified chert types at less than expected rates (Table H-248). When the indeterminates are excluded all types fall into expected ranges. Only the specimen of Heiner Lake Tan chert is a non-North Fort material. Given the small sizes of the debitage recovered it is of note that dark and light gray, light brown and miscellaneous indeterminate cherts are in high proportions. These materials may indicate higher amounts of any of the identified chert types already present but lacking diagnostic features of the documented types. Ninety-three percent of the material lack cortex while a mere 7% have evidence (Table H-249). The modal peak for sizes is the 0.5 to 0.9 cm.

The untyped dart was the blade and stem section manufactured from indeterminate light gray chert. The complete Scallorn was of indeterminate light brown chert, as was one of the distal arrow point segments. The other distal arrow point was again an indeterminate white chert.

The quantities of burned rock, mostly pieces less than 10 cm in diameter, indicate the presence of the burned rock midden. No bone fragments or charcoal were recovered. The one umbos was identified as Unionacea and showed no sign of cultural modification.

5.29.4 Conclusions

Backhoe trench 1, dug at the rear of the lower terrace, revealed a thick (1 m) wedge of colluvium over indurated gravels of probable late Pleistocene age. No in situ cultural material was observed. Test Pit 1 excavated into a burned rock midden feature on a colluvial bench overlooking Owl Creek, revealed a 40 cm thick intact burned rock midden. This midden was charcoal dated to 1250 BP with a Darl and Lange point associated. This Late Archaic period feature may belong with the Driftwood phase (Prewitt 1981; 1985) which Prewitt did not associate with middens. Although a slightly uneven midden surface suggests some previous vandalism, no evidence of internal disruption was detected in TP 1. It appears that significant parts of the midden remain intact and undisturbed.

Because burned rock middens have a demonstrated high potential for informing on multiple key research issues outlined in the research design for Fort Hood (Ellis et al. 1994), site 41CV380 is evaluated as containing significant data potential. Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved

and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.30 SITE 41CV389

In December 1994, we conducted formal test excavations at prehistoric archeological site 41CV389. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Five backhoe trenches were mechanically dug and two test pits totaling 4.9 m^3 were excavated by hand. These tests demonstrate the presence of intact, buried, and stratified cultural components dating to the Middle and Late Archaic, and the Late Prehistoric II periods, which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.30.1 Introduction

5.30.1.1 Site Location and Description

Site 41CV389 is in west central Fort Hood, Training Area 35. Many roads criss-cross the site, with a heavily disturbed area (military excavations and push piles) abutting the northwestern site boundary and extending down to the confluence (Figure 5.124). Maximum site dimensions, as defined in 1993, measure 280 x 200 m with a north-south long axis and cover an area of 5 hectares (12.4 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.30.1.2 Previous Work

This site was initially recorded by Thomas on 27 October 1980. It was recorded on an alluvial terrace south of Cowhouse Creek, about 100 m downstream of the confluence of Cowhouse and Table Rock Creeks. A burned rock and shell midden, with an associated lithic scatter, were noted and a Bulverde dart point was collected. The site was estimated to be impacted 80% by a road, bulldozing, and vandalism. Thomas revisited the site on 9 and 10 August 1983 and recorded a small, organic deposit with flakes, shell, and burned rock (a probable burned rock midden). The site had been further impacted by ditch construction for a creek crossing.

On 1 August 1985, Turpin and Bradle recorded the site. At this time, the setting was noted as a series of terraces overlooking the Cowhouse Creek and Table Rock Creek confluence. Burned rock scatters, burned rock concentrations, and mounds/middens were noted, but no locations were provided. Other cultural material included bifaces, scrapers, flakes, manos, hammerstones, cores, and choppers, with an Ensor dart point and a keeled end scraper collected. Recent disturbances were noted at this time. Overall, the site was estimated to be 80% impacted by the creek crossing, tank trails, roads, tank traps, vandalism, and erosion.

On 19 January 1993, Abbott and Mehalchick visited the site and evaluated it based on geomorphic context and archeological potential. Two subareas were defined. Subarea A consists of a high (T_2) terrace 15 to 20 m above the modern stream underlain by extremely thick (up to 15 m) rubified Pleistocene alluvium (the Jackson Alluvium of Nordt 1992) that may represent one or more discrete alluvial fills. The surface of this terrace was noted to slope markedly, and the scarp separating it from the lower Holocene fills was sharply beveled and gullied. The terrace extended several hundred meters away from the creek and it was thought likely that the thickness of the deposits decreased abruptly with distance from the stream. Beveling of the terrace surface and a cutbank on Cowhouse Creek revealed that the terrace is mantled with an extremely thick (up to about 4 m), rubified soil exhibiting an A/Bw/Bk/Cox profile. The surface was



Figure 5.124 View Southeast Across 41CV389.

criss-crossed with vehicle trails and evinced considerable disturbance due to tracked and wheeled vehicle traffic, ubiquitous sheet erosion, gullying, road erosion, and floral/faunal turbation. Burned rock scatters, flakes, bifaces, unifaces, scrapers, and a hammerstone were observed across the surface. Two deflated burned rock concentrations were defined. Feature 2 was along the eastern edge of a tank trail with dimensions about 3 x 3 m. Feature 3, about 1 x 3 m, was exposed on the south edge of another tank trail. Most burned rocks in both features were fist-sized. Whereas Subarea A was a strongly disturbed erosional Pleistocene terrace that had no potential for intact archeological deposits, shovel testing was not conducted.

Subarea B consisted of two Holocene terraces separated by a low, subtle scarp. The higher of the two terraces (T_{1A}) was a fairly narrow wedge that lies about 12 m above the stream. The surface, and the lower part of the beveled Pleistocene scarp directly behind the surface, had been extensively disturbed by recent vandalism, creating a hummocky appearance. The lower, more extensive Holocene terrace (T_{1B}) was about 10 m above the modern stream. Both surfaces were underlain by very thick (up to 10 m) graded alluvial deposits. The T_{1B} terraces were strongly disturbed by extensive, deep bulldozing, heavy vehicle traffic, cutbank erosion, and vandalism. Flakes, burned rock, scrapers, and a burned rock midden F 1, were exposed in this subarea. The F 1 was primarily on the T_{1A} surface and measured about 4 x 6 meters. Dimensions were difficult to ascertain due to leaf litter and the presence of backdirt piles from vandalism. The midden was also bisected by an east-west oriented tank trail. The feature fill, which contained flakes and snail shells in addition to burned rocks, was visible surface to about 30 cmbs in the road cut. Because buried cultural deposits were possible, a shovel testing crew excavated 15 shovel tests in Subarea B on 19 and 26 February 1993. Of 15 shovel tests, seven were placed on the T_{1A} and eight on the T_{1B}. Three tests on the T_{1A} contained a high density of cultural material. One test was a few meters east of where F 1 was exposed but it contained material from

surface to 70 cmbs (excavation was halted due to difficulty of digging). These positive results indicated that F 1 extended further east than what is presently visible. A second shovel test was along the southern edge of F 1 near the tank trail. Lithics, shell, bone, and/or burned rock were recovered from surface to 100 cmbs. Excavation was halted at 100 cmbs due to difficulty of digging.

A third test, 50 to 60 m southwest of F 1 and near the edge of the T_{1A}, contained a moderate to high density of burned rocks from 10 to 60 cmbs. Of the remaining four tests on the T_{1A}, three contained light artifact densities and one was culturally sterile. Of the eight tests excavated on the T_{1B}, seven were sterile. Of particular interest were the findings the positive shovel test, located near the base of the T_{1A} and 20 to 25 m from a large bulldozed area. From surface to 40 cmbs, debitage, burned rock, recent material, gravels, and four soil changes were discovered at various depths. This seems to be indicative of flooding sequences and recent impacts. Two flakes were recovered 40 to 50 cmbs in an undisturbed context. Based on shovel testing results, the T_{1A} part of Subarea B contained buried cultural components, whereas the T_{1B} (and the T_{1A}) could contain intact deposits below the level of shovel testing. These deposits were of unknown significance and formal testing was recommended to determine NRHP eligibility. Testing was recommended to include at a minimum three backhoe trenches and two to four square meters of manually excavated test pits, particularly in the areas of the buried features (Trierweiler 1994:A851-857).

5.30.1.3 New Work

Formal testing of Subarea B was completed in December 1994. Five backhoe trenches were mechanically excavated and two test pits were manually excavated, offset from trenches. Unit sizes and depths are presented in Table 5.57.

5.30.2 Results

5.30.2.1 Excavations on the Toeslope

Trench 1 was situated on the T_{1A}/toeslope, through an area where Feature 1 was exposed (Figure 5.125). The trench revealed a moderately thick Ap-Bwk-Bk-C profile developed in gravelly loam to gravelly silty loam (Figure 5.126). The Ap horizon (roughly equivalent to the potted portion of Feature 1) was 40 cm thick and consisted of black (10YR 2/1), mottled stony loam that contained abundant burned rock. The underlying Bwk horizon, which represents a relatively unvandalized part of F 1, extended to 95 cmbs and was composed of blocky structured, very dark grayish brown (10YR 3/2) stony loam with common fine carbonate filaments. The horizon contained dense midden debris, including burned rock, mussel shell, land snails, and flakes. The underlying Bk horizon was about 110 cm thick and consisted of grayish brown (10YR 5/2), blocky stony silty loam. It contained abundant dispersed cultural material (burned rock, mussel, charcoal, and flakes), several discrete burned rock strata, and abundant carbonate filaments. It graded into a massive to weakly blocky, yellowish brown (10YR 5/4) stony silt loam C horizon that contained sparse dispersed burned rock. Trench 5 exposed a similar profile but lacked the interstratified cultural material.

Test Pit 2, offset from the west wall of BT 1 and above F 1, was dug into a previously recorded

Table 5.57 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	22	1.5	3.4	T1a terrace
BT 2	9	1.5	3.0	T1b terrace
BT 3	9	1.5	3.3	T1b terrace
BT 4	5	1.5	3.2	T1b terrace
BT 5	9	0.8	2.4	T1a terrace
TP 1	1.00	1.00	2.20	T1b terrace
TP 2	1.00	1.00	2.70	T1a terrace

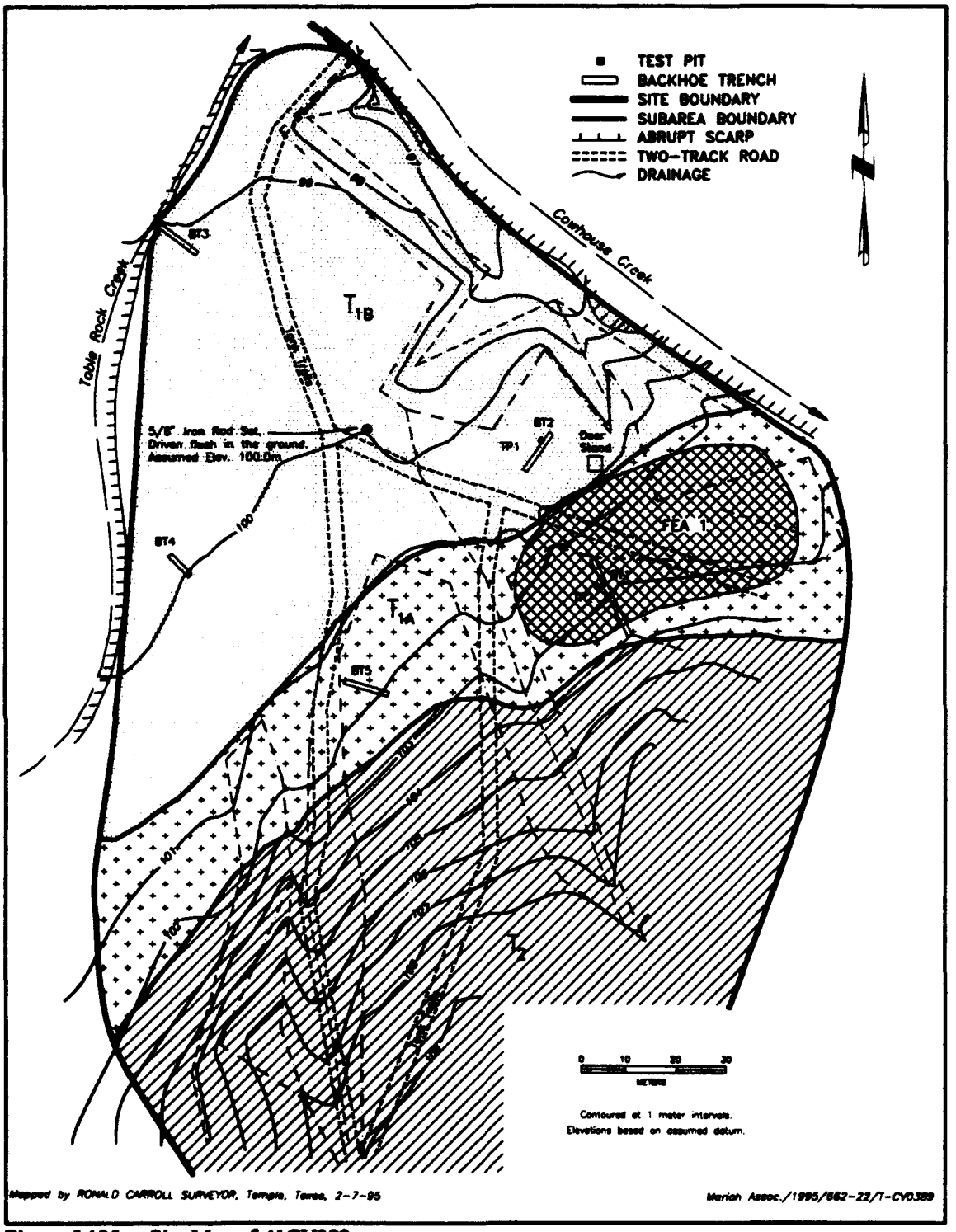


Figure 5.125 Site Map of 41CV389.

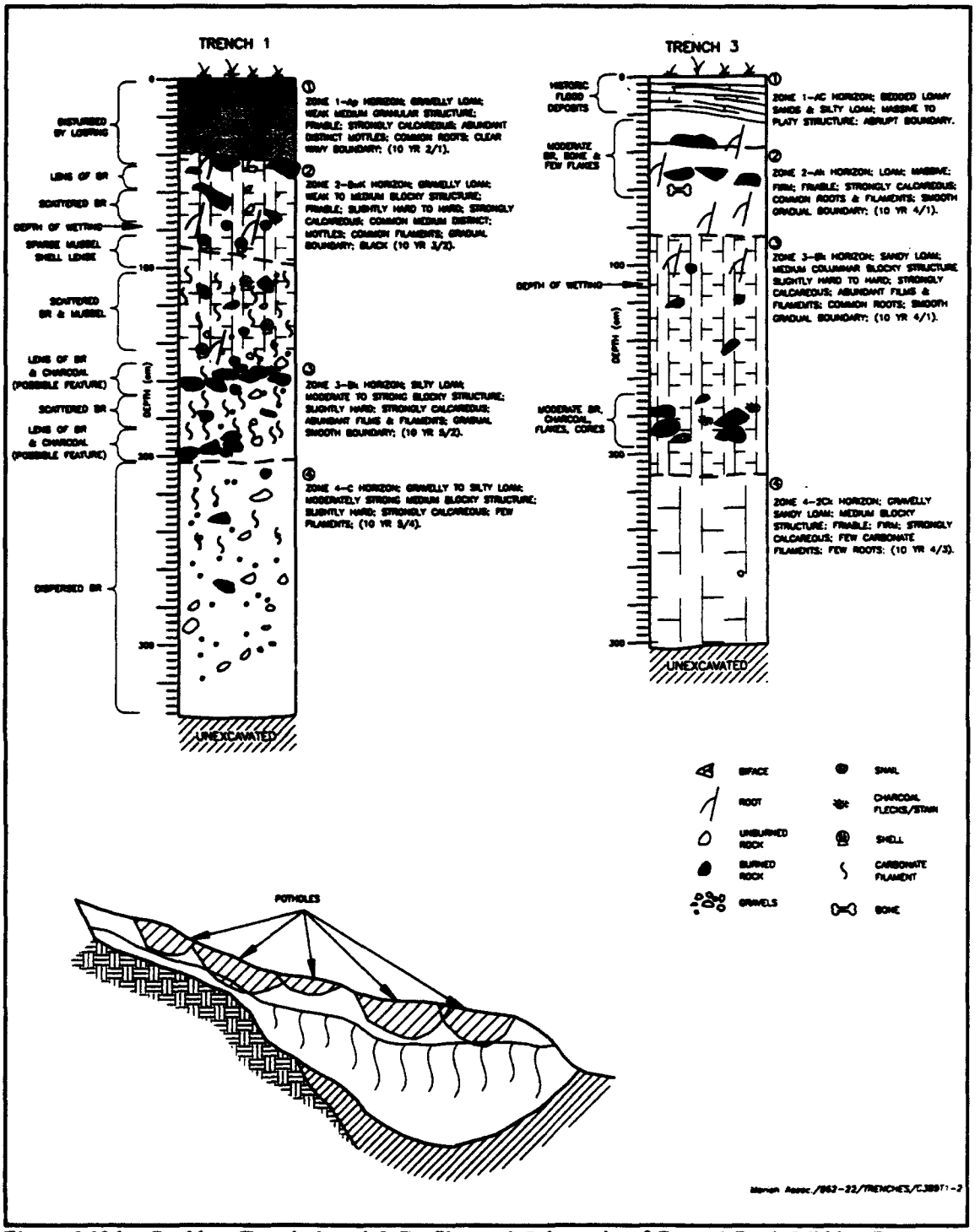


Figure 5.126 Backhoe Trench 1 and 3 Profiles and Schematic of Burned Rock Midden Feature 1, 41CV389.

burned rock midden (F 1), and through two separate, discrete burned rock concentrations (probable hearths) in the lower section. The upper 20 cm was disturbed by vandalism activity, with bottle caps from level 2. This disturbed matrix was removed and unscreened, however, a Montell dart point fragment was collected from level 2. The intact part of F 1 began at 20 cmbs and continued to 90 cmbs. Recovery included 638 burned rocks, over 1000 lithic debitage, 117 bone fragments, and 19 mussel shell umbos. A very small (0.2 g) sample of unidentified wood charcoal from 70 to 80 cmbs provided a $\delta^{13}C$ (-27.1‰) corrected assay of 2490 ± 60 BP (Beta-83349). Dart points, a Castroville, an Ellis, untyped dart and a Castroville, came from levels 4, 5, and 8 respectively. Sixteen stone tools were also in the midden deposits. Burned rocks were angular and tabular, and ranged from 3 to 15 cm in size. Root intrusion and rodent activity minimally disturbed these deposit.

From 90 to 150 cmbs, moderate amounts of cultural material including 164 flakes, 71 burned rocks, 13 mussel shell umbos, four stone tools and no points were recovered. Near the base of 150, the tops of two burned rocks were exposed and left in situ. These rocks were about the same level as the previously noted burned rock concentrations exposed in the trench profile. From 150 to 160 cmbs, a shallow, basin shaped hearth, F 3, was encountered. This hearth was confined to the northeast quadrant, with maximum excavated dimensions of 50 cm east-west x 45 cm north-south (Figure 5.127). The feature extended 55 cm north beyond the unit boundaries as evidenced by rocks still visible in the trench profile. The hearth consisted of a single burned rock layer (n=34, 10 kg), with a few rocks sloping toward the feature center. Most rocks were tabular, averaged 5 to 10 cm in size, and a few were noted as cracked in situ. A very small (0.01 g) sample of indeterminate wood from level 16 yielded a $\delta^{13}C$ (-29‰) corrected assay of 4190 ± 60 BP (Beta-83350). Aside from the burned rocks, no other cultural material was observed in the feature fill. The remainder (non-feature matrix) of level

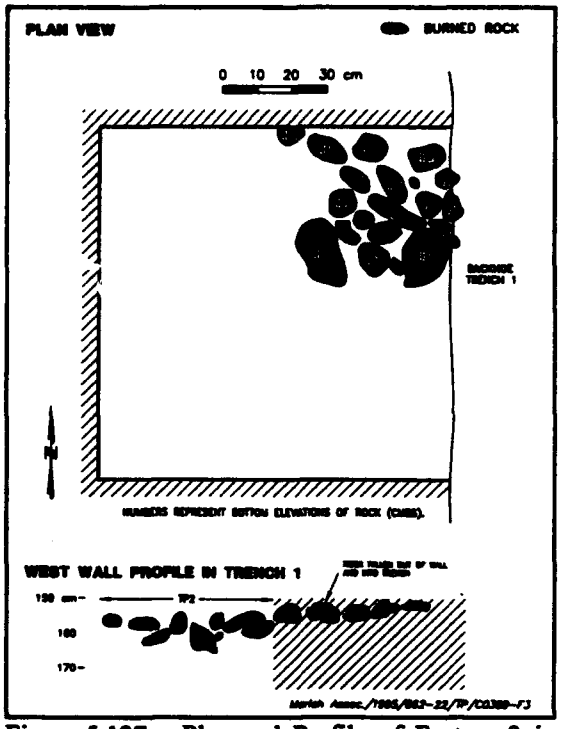


Figure 5.127 Plan and Profile of Feature 3 in Test Pit 2 Profile, 41CV389.

16 yielded scattered burned rocks, 15 lithics, 12 mussel shell umbos and no bones. Other than the backhoe disturbance, the feature appeared undisturbed. In level 17, a noticeable decrease of in lithic debitage and burned rock, but not mussel shell occurred.

From 170 to 200 cmbs, an increase in artifact density occurred. At 185 cmbs, the tops of burned rocks were exposed and were at the same level as the second burned rock concentration exposed in the trench profile. From 185 to 200 cmbs, F 4, a shallow, basin shaped hearth, was encountered. Only a small section of the feature was in the unit over an area 38 cm east-west x 31 cm north-south (Figure 5.128). However, the hearth was visible in the trench profile south of the unit and in the opposite (east) trench wall. Based on these exposures and TP 2 excavations, the feature is estimated to be 156 cm north-south x 118 cm east-west. The excavated hearth was primarily

constructed of one to two layers of large, flat tabular rocks (n=18, 8 kg) that averaged 10 x 5 x 3 cm, with some smaller, angular rocks usually atop the larger pieces. The same construction style was noted in the trench profiles. Charcoal flecking was noted in the feature fill. A very small (0.2 g) sample of unidentified wood charcoal from level 20 provided a $\delta^{13}C$ (-30.1‰) corrected assay of 4430 ± 50 BP (Beta-83335). Except for trench bisection, no other disturbances were noted. Recovery from the remaining matrix in levels 19 and 20 yielded 68 lithic pieces, three bones, and two mussel shells. An untypable dart was recovered from level 19.

Levels 21 through 22 revealed a sharp decrease in materials with only ten flakes, three umbos, and three burned rocks. Levels 23 through 26 yielded a moderate quantity of lithic debitage, (n=68), mussel shell umbos (n=20), bones (n=1), burned rocks (n=70). A moderate density of unburned rocks (slightly higher ratio to burned rocks) and some unmodified chert cobbles were in these levels. Artifact counts decreased and unburned rock counts slightly increased in level 27, and excavation terminated at 270 cmbs.

A burned rock stratum exposed in BT 1 was recorded but not excavated. This concentration, designated F 6, was visible in the trench's east wall profile, the south wall of the trench's safety bench, and the contiguous east wall profile above the safety bench. Feature 6 may represent a hearth similar to Fs 3 and 4. Maximum visible dimensions were 140 cm north-south x 70 cm east-west x 15 cm thick. This feature was about 90 to 105 cmbs (elevations referenced to TP 2 datum), which is only a few centimeters below F 1 (midden). Feature 6 was one to two rock layers thick, with about 60% medium sized and angular, and the remainder as tabular and large. No clearly defined basin shape was apparent in profile, however, its morphology was similar to Fs 3 and 4, which both proved to be basin hearths. Some mussel shell fragments and a flake were in association. A snail shell sample was collected, 95 to 105 cmbs, from the east wall profile of the trench.

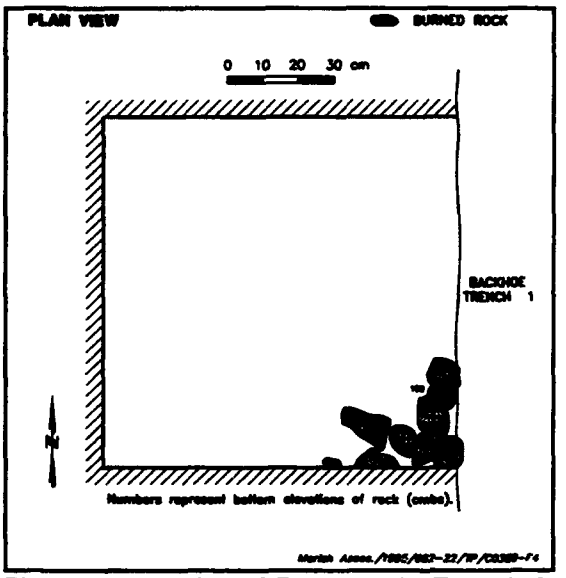


Figure 5.128 Plan of Feature 4 in Test Pit 2, 41CV389.

5.30.2.2 Excavations on the T_{1B} Terrace

Three trenches (BTs 2, 3, and 4) were excavated into the T_{1B} Terrace. Trench 2 was about 25 m downslope (northwest) of BT 1, and exposed a thick loamy profile interpreted in the field as a thin drape of modern alluvium over thick West Range alluvium. The trench exhibited an AC-2Ak-2Bk-2Ck profile developed in very dark gray to dark brown (10YR 3/1 to 10YR 4/3) sandy loam (Figure 5.129). Cultural strata were noted in the Ak horizon (about 50 to 70 cmbs) and in the lower Bk horizon (about 170 to 200 cmbs). Radiocarbon data from a feature in the Ak horizon suggests that cumulic overbank muds associated with the Ford fill are welded to the West Range fill by soil development.

Test pit 1, offset from the north wall of BT 2, was placed above two exposed cultural lenses. A recent flood drape of 50 cm was removed unscreened. At 52 cmbs, F 2, a basin shaped hearth, was encountered. This feature measured 60 x 30 cm with its base at 68 cmbs, but it extended

beyond the northern limits of the test pit (Figure 5.129). This hearth consisted of a single burned rock layer (n=44, 11.5 kg), although a few rocks did overlap. Most rocks were angular and sloped toward the center of the hearth, with rocks ranging from 5 to 20 cm in size. A 2.0 g charcoal sample from level 7 was identified as oak wood and yielded a $\delta^{13}C$ (-26.8‰) corrected assay of 640 ± 130 BP (Beta-83419). Only four bone fragments came from the feature fill. Other than bisection by the trench, this feature was intact. From 50 to 70 cmbs, the non-feature fill contained charcoal flecks, two lithic pieces, and five bone fragments (Table 5.58). From 70 to 170 cmbs, a light density of cultural material includes 27 flakes, one graver, 27 bones, and one mussel shell umbo. Artifact frequencies increased between 130 through 170. At 170 cmbs a burned rock midden deposit, F 5, was encountered and it continued to 200 cmbs. It extended horizontally beyond this unit. Recovery included burned rocks (n=167, 19.5 kg), charcoal, 73 bone fragments and 68 flakes, a Darl and an untypable dart point from level 18, and a few mussel shells. A 5.9 g charcoal sample was identified as hackberry wood and provided a $\delta^{13}C$ (-27.3‰) corrected assay of 1620 ± 60 BP (Beta-83424). The burned rocks ranged from 2 to 12 cm and were angular, subangular, and rounded. Levels 21 and 22 contained very limited cultural material, and excavation halted at 220 cmbs.

Backhoe trenches 3 and 4 revealed thick deposits of the Ford alluvium overlain by a thin, modern flood drape. About 70 m northwest of BT 2, BT 3 was excavated above the confluence of Table Rock and Cowhouse Creeks. About 70 m west of BT 2, BT 4 was excavated above Table Rock Creek. Both trenches 3 and 4 exhibited AC-2A-2Bk-2C profiles developed in weakly stratified sandy loams and loamy sands. No cultural material was noted in either trench.

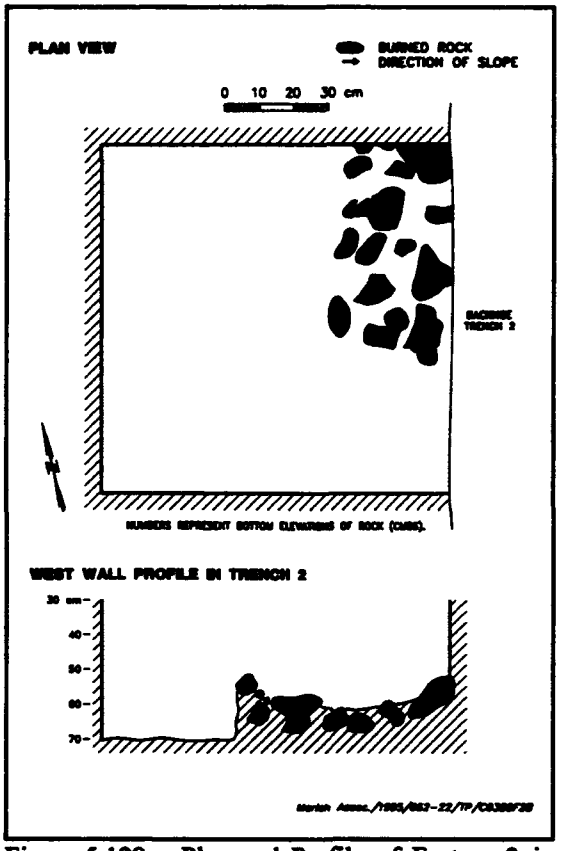


Figure 5.129 Plan and Profile of Feature 2 in Test Pit 1, 41CV389.

5.30.3 Analysis and Interpretations

5.30.3.1 Definition of Analytical Units

The two test pits yielded five features, 1,557 pieces of debitage, nine points, 28 stone tools, 267 bone fragments, 95 umbos, 1,137 burned rocks, sparse charcoal, and snail shells. These materials were assigned to three time periods - Middle and Late Archaic and the Late Prehistoric II - plus an unclassified grouping. The Middle Archaic assignment is based on two charcoal dates of 4430 and 4190 BP on Fs 4 and 3 respectively, and two (untypable) dart points from TP 2, 90 to 270 cmbs. The Late Archaic is based on two charcoal dates of 2490 and 1620 BP from Fs 1 and 5, and two

Table 5.58 Artifact Recovery by Test Pit, 41CV389.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	F2	4	0.4	0	0	0	0	1	0	0	-	LP-II
	7	F2	11	1.5	0	5	0	0	1	0	0	640±130	LP-II
	8	-	3	0.3	1	0	0	0	1	0	0	-	LP-II
	9	-	2	0.3	0	0	0	0	1	0	0	-	LP-II
	10	-	2	0.2	0	0	0	0	0	0	0	-	unspec.
	11	-	4	0.3	0	0	0	0	1	0	0	-	unspec.
	12	-	2	0.2	0	0	0	0	0	0	0	-	unspec.
	13	-	8	0.7	0	2	0	0	5	0	0	-	LA
	14	-	5	0.3	0	4	0	0	3	0	0	-	LA
	15	-	11	0.7	0	4	0	0	3	0	0	-	LA
	16	-	10	0.7	0	2	0	0	5	0	1	-	LA
	17	-	20	3.5	0	15	0	0	8	0	0	-	LA
	18	F5	50	5.0	1	30	0	0	32	2	2	Darl, ?dart	LA
	19	F5	95	11.0	3	33	0	0	24	0	1	1620±60	LA
	20	F5	22	3.5	0	12	0	0	12	0	0	-	LA
	21	-	12	0.5	0	7	0	0	2	0	0	-	LA
	22	-	8	0.3	1	7	0	0	1	0	0	-	LA
	Total		269	29.4	6	121	0	0	100	2	4		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	0	1	0	Montell	mixed
	3	F1	114	10.0	2	25	0	0	227	0	6	-	LA
	4	F1	100	5.0	1	26	0	0	257	1	2	Castroville	LA
	5	F1	77	6.9	0	33	0	0	244	2	3	Ellis	LA
	6	F1	163	15.0	2	13	0	0	96	0	1	-	LA
	7	F1	91	8.5	3	10	0	1	112	0	3	-	LA
	8	F1	59	4.0	5	3	0	0	92	1	1	Castroville, 2490±60	LA
	9	F1	34	3.0	6	7	0	0	34	0	0	-	LA
	10	-	18	3.0	3	0	0	0	40	0	2	-	MA
	11	-	21	4.0	1	0	0	0	35	0	0	-	MA
	12	-	3	1.5	2	11	0	0	41	0	2	-	MA
	13	-	12	3.0	4	2	0	0	21	0	0	-	MA
	14	-	8	2.5	1	0	0	0	19	0	0	-	MA
	15	F3	9	1.5	3	0	0	0	8	0	0	-	MA
	16	F3	42	11.5	12	0	0	0	15	0	0	4190±60	MA
	17	-	3	1.0	12	12	0	0	7	0	0	-	MA
	18	-	3	1.0	5	3	0	0	56	0	1	-	MA
	19	F4	8	2.0	1	0	0	0	32	1	1	?dart	MA
	20	F4	24	4.0	1	0	0	0	36	0	1	4430±50	MA
	21	-	4	1.0	2	0	0	0	8	0	0	-	MA
	22	-	1	0.3	1	0	0	0	2	0	0	-	MA
	23	-	3	1.0	3	0	0	0	20	0	0	-	MA
	24	-	6	1.0	3	0	0	0	17	1	0	?dart	MA
	25	-	41	3.5	9	1	0	0	18	0	0	-	MA
	26	-	20	2.5	5	0	0	0	13	0	1	-	MA
	27	-	4	0.5	2	0	0	0	7	0	0	-	MA
	Total		868	97.2	89	146	0	1	1,457	7	24		

Castroville, a Darl, an Ellis, and two (untypable) dart points from TP 1, 120 to 220 cmbs and TP 2, 30 to 90 cmbs. The Late Prehistoric II is based on a charcoal date of 640 BP from Feature 2 in TP 1, 50 to 90 cmbs. Each of these divisions is discussed below.

5.30.3.2 Middle Archaic Materials

These materials include Fs 3 and 4, 394 pieces of debitage, two dart points, eight stone tools, 29 bone fragments, 70 mussel shell umbos, 230 burned rocks, sparse charcoal and many snail shells that represent two or more occupations.

The 394 specimens of lithic debitage represent 11 identified and nine unidentified chert types with only 19% of the materials identifiable (Table H-250). Heiner Lake Tan and Gray/Brown/Green dominate the identified materials at 33% and 29%, respectively. Among the indeterminates only light brown debitage is a dominating presence at 53%. The North Fort chert province materials are slightly higher in number (n=36) with four types than the Southeast Range materials (n=30) with three types. As anticipated the combined indeterminates occur at higher than expected frequency, Heiner Lake Tan and Gray/Brown/Green occur in expected frequencies, and all other types occur in less than expected frequencies (Table H-251).

The modal peak for the size category occurs at the 0.9 to 1.2 cm with the 1.2 to 1.8 cm category having only a few specimens less than the peak. Fifty-two percent of the materials are less than 1.2 cm and 82% are less than 1.8 cm. Only the smallest and largest size categories are not represented. Coupled with the size data, the incidence of 78% of the materials being tertiary flakes (Table H-252) indicates intense biface reduction over core reduction. However, the lack of very small flakes may indicate the end-products are as finished bifaces.

The two dart points are untyped distal and medial sections made of Gray/Brown/Green and indeterminate dark brown. These occurred in TP 2, 190 in association with F 4 and 240 cmbs. The eight stone tools consist of four utilized flakes, a graver, a spokeshave, a distal middle stage and a proximal late stage biface (Table H-253). These were made of two Heiner Lake Tan, two Heiner Lake Translucent Brown, two indeterminate mottled, an indeterminate dark gray, and a Cowhouse Mottled with flecks. The material type of one biface also dominates the identified debitage indicating on-site manufacture.

The 29 bone fragments represent large to very large mammals (41%), deer to bison size, and indeterminate fragments (38%), one medium size mammal, two very large pieces probably of bison, and one turtle plastron (Table H-254). Four elements were burned and include the turtle plastron. About 76% revealed marked weathering. The large game animals appear to have supplemented the mussels as 70 umbos were also present. The shells represent four identified species and include *Amblema* sp. (n=27), *Lampsilis* sp.(n=5), *Quadrula* sp. (N=2), *Tritigonia verrucosa* (n=1) with 35 unidentifiable (Table H-254). Apparently the food resource was varied during the occupations.

The 230 burned rocks weighed 44.8 kg with F 3 yielding 19%, F 4 yielding 8% with the others scattered over 150 cm of vertical proveniences. Although another 18% were between 240 through 260 of TP 2, no feature was recognized there. Charcoal flecks were recovered from floats out of both features but no other carbonized plant parts were identified. A 0.01 g of charcoal could not be identified as to wood type but yielded a $\delta^{13}C$ (-29‰) corrected assay of 4290 ± 60 BP (Beta-83350) for F 3. Another 0.2 g of diffuse pours wood provided a $\delta^{13}C$ (-30.1‰) corrected assay of 4430 ± 50 BP (Beta-83335) from F 4.

The two charcoal dates both fall into the Clear Fork phase (Prewitt 1981; 1985) which has Nolan and Travis points as the key index markers. Although this phase is known for Central Texas, this is one of the better stratified sites known for

Fort Hood. The well separated features and good context provides at significant opportunity to increase our understanding of this phase.

5.30.3.3 Late Archaic Materials

The Late Archaic materials include two burned rock midden Fs 1 and 2, 1,158 pieces of lithic debitage, six projectile points, 20 stone tools, 233 bone fragments, 24 mussel shell umbos, 879 burned rocks, sparse charcoal, and many snail shells which represent multiple occupations.

The 1,158 specimens of debitage represent 11 identified and nine unidentified chert types with only 10% of the materials identifiable; one specimen each of quartz and quartzite are also present (Table H-255). Heiner Lake Tan and Fort Hood Yellow are the dominant materials in the identified assemblage at 21% and 32%, respectively. The dominating material among the indeterminates is light brown (34%); however, dark brown (13%), dark gray (17%), and miscellaneous (12.5%) also play dominate roles. The North Fort materials dominate the identified materials with four types and 54% due to the numbers of Fort Hood Yellow and Fort Hood Gray. Only the combined indeterminates occur in higher than expected frequency (Table H-256). The exclusion of the indeterminates results in Heiner Lake Tan, and Fort Hood Yellow to occur in higher than expected amounts, Heiner Lake Translucent Brown, Fort Hood Gray, Gray/Brown/Green, Owl Creek Black, Cowhouse Mottled, Cowhouse Dark Gray occur in expected amounts and all others occur in less than expected quantities.

The modal peak for size category occurs at the 0.9 to 1.2 cm. Sixty-eight percent of the debitage is less than 1.2 cm in size and 90% is less than 1.8 cm. Tertiary debitage makes up 85% of the debitage, whereas 10% of the debitage has partial cortex (Table H-257). This evidence indicates that biface reduction was a major part of the lithic technology here. The breakdown of cortex presence by size category shows the expected drop in frequency of tertiary debitage as size increases with a large break between 1.2 to 1.8 and 1.8 to 2.6 cm categories (79% to 56%).

The six points consist of two complete Castroville, a proximal Darl, a complete Ellis, and one untyped dart fragment, and one indeterminate fragment (Table H-258). The former two were of Gray/Brown/Green and Heiner Lake a Translucent Brown as is the Ellis, with Owl Creek Black and indeterminate light brown for the two fragments, while the Darl is of indeterminate light gray. These materials are present in the debitage but not in large quantities and thus indicate they were brought in as finished pieces. The Darl and one dart fragment were associated with F 5, one level above the location of the obtained date. The two Castroville and the Ellis were from the older F 1.

The 20 tools include a diversified array with five late stage bifaces, three scrapers, two drills, two gravers, two utilized flakes, two middle stage bifaces, two edge modified flakes, one finished biface and one crushing/abrading stone (Table H-H-259). A single platform core of indeterminate dark brown, with partial cortex was found in TP 2, 60 to 70 cmbs. The material types are dominated by 11 pieces of indeterminate types, while the identifiable types are dominated by Cowhouse colors with two pieces of North Fort and Southeastern Range represented. These frequencies are roughly similar to those material types observed in the debitage. Only three tools, the late stage biface, an edge modified flake and a crushing/abrading stone were associated with F 5. All other tools were associated with F 1.

The 233 bone fragments are dominated (55%) by large to very large mammals, bison size, followed by medium to large mammals (23%) with deer, rabbit, bird, and turtle elements identified (Table H-260). Thirty-four percent of the fragments are burned and include one turtle carapace, thus definitely indicating cultural use. Most of these are unidentifiable long bone splinters with tooth fragments, scapula, phalanxes, vertebrae, ribs, tibia, definitely represented. The few small rodent bones are believed to be intrusive and not cultural.

About 50% of the bones were in each of the two test pits and directly or indirectly associated with the midden features. The 24 umbos were identified as *Amblema* sp. (50%), *Lampsilis* sp. (13%), and unidentifiable (37%) (Table H-260). Only 21% were associated with F 5 with the other 95% with F 1. The bones and umbos indicate diversity in the food resource base during these events.

The 879 burned rocks weighed 78.6 kg with 72.5% in F 1 and 19% in F 5. The reset were scattered above and below F 5 in TP 2. Bulk matrix samples (n=3) were collected from both features and floated. The three light fractions were submitted to Phil Dering for analysis, but no carbonized plant materials was in either sample. A 5.9 g charcoal sample from F 5 was identified as hackberry wood and provided a $\delta^{13}C$ (-27.3‰) corrected assay of 1620 ± 60 BP (Beta-83424). A 0.2 g charcoal sample from F 1 was of unidentifiable wood, but provided a $\delta^{13}C$ (-27.1‰) corrected assay of 2490 ± 60 BP (Beta-83349). The 1620 BP age falls in the Twin Sisters phase (Prewitt 1981; 1985) which is reportedly associated with Ensor points. The 2490 BP age falls in the San Marcos phase (Prewitt 1981; 1985) period reportedly associated with the Marshall/Williams/Lange points. The recovered Castroville and Ellis points of the Late Archaic appear not to be directly with the obtained ages and therefore more cultural phases and use periods are represented in F 1 than is reflected by the one radiocarbon assay. It may be that there is some disturbance in the lower midden and it is not a clear boundary. The 1620 BP age for F 5 falls in the Twin Sisters phase (Prewitt 1981; 1985) is slightly older than the one Darl point from a level above the date would indicate. This again may indicate multiple occupation events.

The Late Archaic period is well represented by many occupations throughout Fort Hood and the surrounding region with many burned rock middens dating to this period. The well-buried F 5 with a Darl point and a 1620 BP age provides an excellent context to investigate this particular time. Although midden F 1 is partially disturbed, it appears much of the buried, earlier part is in relatively good condition with points and charcoal present. But the lower boundary between the Late Archaic and the Middle Archaic materials is not obvious with some possible mixing.

5.30.3.4 Late Prehistoric II Materials

These materials include F 2, five specimens of lithic debitage, five bone fragments, one mussel shell umbo, 20 burned rocks, sparse charcoal and snail shells that appear to represent one occupation. No points, other stone tools, or bone fragments were recovered.

The limited debitage sample consists of five specimens: two identified (Heiner Lake Tan and Fort Hood Gray, 1 specimen each) and two unidentified materials (dark brown [n=2] and dark gray [n=1]). Only the 1.8 to 2.6 cm size category has more than one specimen. Two specimens are tertiary flakes and two have partial, whereas the fifth specimen has partial cortex.

The five bone fragments are in the medium to large and larger to very large size groups that probably represent deer to bison size animals (Table H-261). The one unburned umbo was identified as *Lampsilis* sp. and it was one level below the feature. Apparently a diverse resource base was utilized.

The 20 burned rocks weighed 2.5 kg with 11 from the basin hearth and the others were scattered. A float sample from inside this feature yielded a light fraction that was analyzed, but no identifiable plant remains were present A 2.0 g charcoal sample from F 2 was identified as oak wood and provided a $\delta^{13}C$ (-26.8‰) corrected assay of 640 ± 130 BP (Beta-83419). Other charcoal pieces from this same sample were identified as elm, and unidentified diffuse porous wood indicating that multiple sources were used for fuel.

The charcoal assay from this basin hearth feature places this occupation in Prewitt's (1981; 1985) Toyah phase. Although this is the most recent

prehistoric phase identified in the regional record, it is not well represented at Fort Hood. This is an apparent change from areas just south and west of this, and therefore provides an interesting occupation in which to investigate this regional settlement change. Most often in other areas this time is represented by quantities of bison bones and many Perdiz arrow points.

5.30.3.5 Temporally Unspecified Materials

These materials include one piece of debitage and eight burned rocks, but no diagnostic tools, datable materials from these three levels between the Late Archaic and the Late Prehistoric II materials in TP 1. The one debitage piece is of indeterminate mottled chert that is 0.9 to 1.2 cm in size. This material type is represented in the Late Archaic zone below and may be disturbed from there. The eight burned rocks weighed 0.7 kg and were scattered over all three levels. It is probable that this scattered material represents rodent disturbanced materials from other occupations and is not a separate occupation.

5.30.4 Conclusions

This site is underlain by and developed in Late Holocene alluvial deposits of Table Rock Creek, with some colluvial additions noted near the margin of the fill. Two Holocene alluvial surfaces are present: a relatively small, higher surface (T_{1A}) underlain by mixed colluvium and West Range alluvium. A more extensive lower surface (T_{1B}) is underlain by sediments representing West Range and Ford alluvium. Pleistocene age deposits (e.g., Jackson alluvium) are also present upslope, but were not examined. All cultural material detected was associated with the West Range and Ford alluvium spanning at least the last 5,000 years.

The Middle Archaic events represented by charcoal dated Fs 3 and 4 of the Clear Fork phase are relatively frequent in Fort Hood. These stratified, intact features and associated materials in good context provide an excellent opportunity to investigate this period.

Feature 1, a surface exposed burned rock midden dating to the Late Archaic period, measures about 30 m north-south x 20 m east-west. This midden spans the lower toeslope and distal T_{1A} terrace, and is underlain by intimately intermixed alluvial and colluvial sediments that contain stratified burned rock features dating to the Middle Archaic. F 1 has been heavily impacted by vandalism, road cuts, and subsequent erosion along the roads. At least 60%, the lower 60 to 70 cm of this buried midden, remains intact. Feature 5, a 30 cm thick burned rock midden in the lower part of TP 1, also dates to this period and represents the Twin Sisters phase. These Late Archaic occupations are well represented across Fort Hood and beyond.

The buried Toyah phase event, represented by the F 2 basin hearth, is relatively rare in Fort Hood. Further, the hearth lacks the bison remains which are often associated with such occupations. Further exploration of this feature may provide clues as to why, or during what season, this event occurred.

On the basis of the above, site 41CV389 is evaluated as containing important, intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because some of the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.31 SITE 41CV397

In December 1994 and late February through mid-March 1995, we conducted formal test excavations at prehistoric archeological site 41CV397. Testing was designed to evaluate eligibility for inclusion to the NRHP. Four trenches were dug by backhoe and four test pits totaling 6.3 m^3 were hand excavated. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.31.1 Introduction

5.31.1.1 Site Location and Description

Site 41CV397 is a large lithic resource procurement (LRP) site in the northwestern corner in Fort Hood Training Area 52. The site is delimited by Shoal Creek to the south and southeast, (Figure 5.130). Generally north to south trending, unnamed tributaries of Shoal Creek dissect the western area, with three springs located near the south-central part. Many roads criss-cross the site. Maximum site dimensions, as defined in 1992, measured 1,300 m by 700 m with an east-west long axis, and cover an area of about 89 hectares (220 acres). For purposes of analysis, the site is considered a member of the Shoal/Turnover site group.

5.31.1.2 Previous Work

Original Fort Hood surveys were conducted by individual grid units. This site lies in six different grid units and therefore was not surveyed and documented at the same time. At least six different visits to parts of the site were documented prior to 1992. By 1992, the various records and field identification numbers had been lumped under the current site designation.

On 30 December 1980, Thomas recorded the first part as a lithic procurement area, noting preforms, flakes, bifaces, scrapers, unifaces, cores, one possible metate fragment, and a chopper. One biface was collected and the site was judged to be 10% disturbed. On 25 March 1981, Bement and C. Nightengale classified their area as a lithic procurement/quarry site, with lithics and a light burned rock density (possibly resulting from surface fires) observed. Collections included one dart point medial fragment and the site was estimated to be disturbed 5% by vehicles. Nightengale again recorded the site as a lithic procurement area on 18 May 1981. This part of the site was judged to be impacted 50% by erosion and vehicles. On 17 December 1985, Moore and Strychalski monitored the area and considered it a chert field. Not enough cultural material was observed to consider it a site, but, a dart point fragment, flakes, and burned rocks were noted. They also reported that 10% of the area was disturbed. The area was recorded as a lithic procurement area by Dureka and Masson on 15 October 1986. Bifaces, scrapers, burned rock scatters, unifaces, cores, and flakes were all noted. Site disturbance was estimated at 60% by erosion, vehicles, and military activity. On 19 January 1988, Kirkland and Callum monitored the site and noted "burned rock mounds close to Shoal Creek." Their site map showed areas of burned rock in a tank trail near Shoal Creek, but were not labeled as mounds. Site impacted was estimated at 60% by erosion, roads, military activity, bulldozing, and burning.

On 21 October 1992, Abbott and Mehalchick visited the now unified (six grid) site and evaluated it on the basis of geomorphic context and archeological potential. It was recorded as a very large lithic resource procurement (LRP) site with a dense scatter of lithic debris, residual chert, and three springs spread across the crest and gentle slopes of a low rounded hill on the intermediate upland (Killeen) surface, and included a series of low terraces of Shoal Creek on the eastern and southern margins. This site was divided into three subareas on the basis of geomorphic observations.

Subarea A consists of a dominantly stable to erosional rolling upland surface, which was

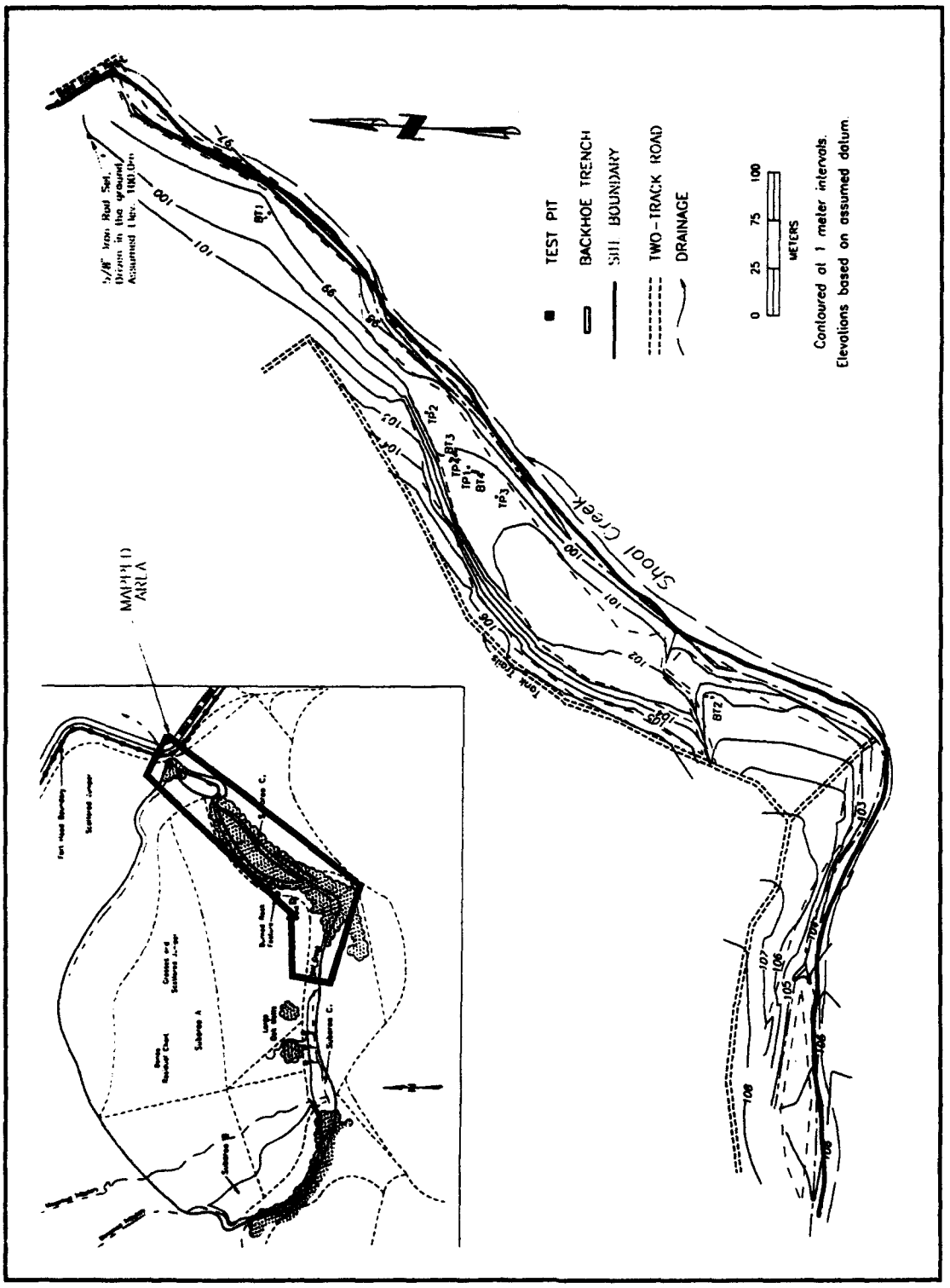


Figure 5.130 Site Map of 41CV397.

mantled with a moderately thick residual soil developed in the limestone. The soil consisted of a black stony clay A horizon underlain by a stony Bwk or weak Btk horizon containing dispersed matrix carbonate. Both soil horizons contained large quantities of residual chert cobbles that appeared to have been utilized as a prehistoric lithic resource, resulting in the high density of cultural material; flakes, cores, bifaces, retouched flakes, and burned rocks all visible on the surface. The A horizon varied from relatively thin on the crest of the knoll (where the densest concentrations of chert were located) to as much as 60 to 70 cm on the lower sideslopes (where the density of surficial lithics were considerably lower), suggesting that redistribution of the horizon through sheet erosion and slopewash deposition was quite active through the recent past. Bulldozing, historic occupation debris, and deep ruts caused by tracked vehicles marred most of this surface, which indicate near total disturbance. This destruction is evident through Feature 1, an impacted burned rock concentration exposed in a tank trail overlooking Subarea C below. This feature measured about 7 x 4.5 m.

Although there certainly were small areas of slopewash deposition that had some cultural potential, the very large size of this subarea and the impossibility of distinguishing in situ stony black clay from slopewash deposited stony black clay, indicated that this subarea contained extremely limited archeological potential, excluding F 1. Shovel testing was judged to be warranted only in the immediate area of F 1.

However, Abbott and Mehalchick returned on 3 June 1993 to evaluate the utility of Subarea A for addressing lithic resource procurement issues. Chert and impact zones were identified, mapped, and described, and chert samples collected. Because impacts to the non-depositional parts were so severe, no further resurvey was conducted.

Subarea B, on the southwestern margin, consists of a relatively level bench underlain by limestone and older alluvial gravels mantled with a relatively thick accumulation of black stony clay derived from, and essentially identical to, the A horizon in Subarea A (Figure 5.131). It was thought this black stony clay represented an admixture of deposits delivered as alluvium from Shoal Creek and as slopewash from upslope. The deposits variously overlaid nodular limestones and clays and thin, rubified alluvial gravels. Thickness ranged from 20 to 100 cm. It was thought the fines represented low-energy Holocene deposition. A moderate scatter of flakes, burned rock, bifaces, scrapers, and cores was exposed across the entire surface. Erosion, roads, and tracked vehicles were judged to have impacted 40% of this subarea. Based on the potential of the Holocene deposits to contain intact archeological components, shovel testing was considered warranted.

Subarea C, along the southeastern margin, subsumes several long, discontinuous segments of a low late Holocene alluvial terrace adjacent to Shoal Creek. The alluvial terrace consisted of an abrupt fining upward sequence composed of clay and clay loam over imbricated gravels. The fine-grained upper fill consisted of up to 1 m of somewhat structured, black clay and stony clay exhibiting marked deep drying cracks overlying a grayish brown stony Bwk horizon that may represent gleying of the lower profile. The alluvium was derived from erosion of the A horizon mantling the upland Killeen surface, and showed relatively little pedogenic modification other than weak gleying and carbonate accumulation in the Bwk horizon, suggesting that it represents a late Holocene fill. A low density of lithics and burned rocks was scattered across the terrace surface. Shovel testing was considered warranted due to the presence of alluvial deposits of probable culturally-relevant age.

A crew returned in January 1993 and excavated a total of 91 shovel tests in the three subareas. One shovel test (ST 76) was placed adjacent to F 1 in Subarea A and excavated to 40 cmbs. The majority (78%) of burned rocks and lithics recovered from ST 76 were recovered from the upper 20 cm. Of 60 shovel tests excavated in

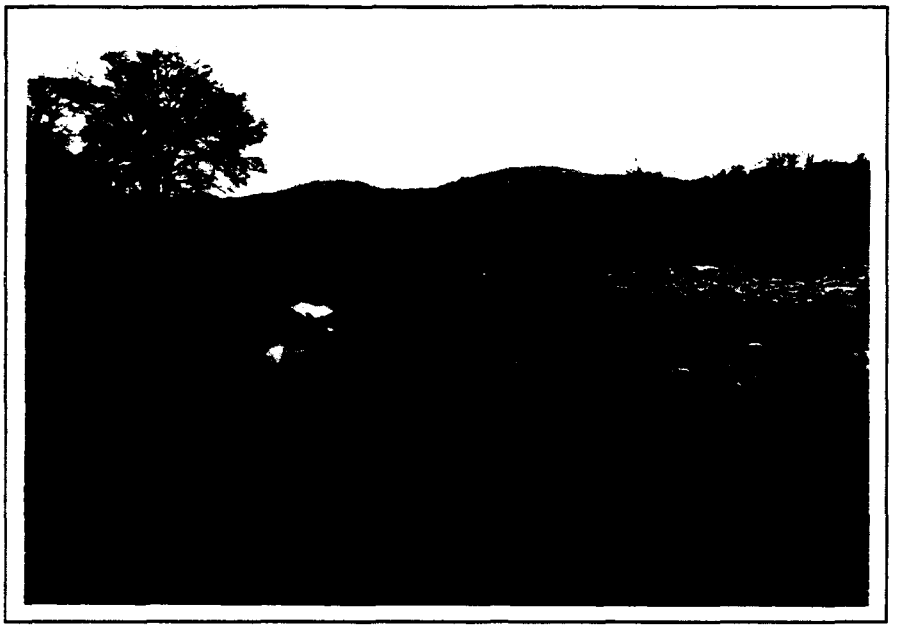


Figure 5.131 View Northwest Across Western Edge of 41CV397.

Subarea B, only six (10%) were positive. At least half of the shovel tests contained dense gravels in all levels and/or a soil change, from a dark gray to an olive clay loam, that occurred 30 to 40 cmbs. None of the 30 shovel tests excavated in Subarea C recovered prehistoric cultural material. Sandy deposits encountered from surface to 30 cmbs in about 30% of the tests represented recent flooding episodes. In addition, a piece of metal found 10 to 20 cmbs in one test suggested disturbance or very recent surface aggradation. Based on these shovel test results, it was concluded that F 1 in Subarea A and all of Subarea B had limited archeological potential and no further work was recommended for these portions of the site. In Subarea C, the upper 40 cm of deposit similarly had limited archeological potential, but buried cultural deposits were thought to be possible below the limits of shovel testing and formal testing was recommended to evaluate NRHP eligibility. A minimum testing effort of two backhoe trenches was recommended, with three to six square meters of manually excavated test pits to follow if trenching produced evidence of buried occupations (Trierweiler 1994:A873-877).

5.31.1.3 New Work

Formal testing of Subarea C was completed 23 March 1995. Four backhoe trenches (BTs 1 through 4) and four test pits (TPs 1 through 4) were excavated. Test pits 1 through 3 were free standing units with TP 4 offset from the west wall of BT 3. The unit sizes and depths are presented in Table 5.59.

5.31.2 Results

Trench 1 was centrally located on the easternmost terrace wedge. The trench revealed a thin, dense deposit of black to very dark brown (10YR 2/1 through 10YR 2/2) stratified gravelly clay and gravelly sandy clay over bedrock. The sediment exhibited an A-C-2R soil profile. This deposit is interpreted as an admixture of colluvial and sheetwash sediment shed off the Killeen surface and alluvial deposition from Shoal Creek, and was probably deposited no earlier than the late

Holocene. No cultural material was observed in BT 1.

Trench 2 was dug on a small section of terrace situated near the south-central margin of the site. The deposits in BT 2 were very similar in morphology, soil development, and apparent age to the deposits in BT 1. It also lacked cultural material.

Trench 3 was centrally placed on a lower, arc shaped terrace located between the discontinuous sections of the strath terraces containing BT 1 and 2. The trench was 10 to 15 m north of and perpendicular to Shoal Creek. It revealed a sequence of two stacked alluvial deposits with a minimum thickness of more than 3 m, and exhibited an A-C-2AC profile. The surface horizon was 40 cm thick and consisted of very dark brown (10YR 2/2), blocky clay loam. It graded into about 1 m of stratified and crossbedded gravel, sand, and loam. Collectively, the two upper horizons are interpreted as the Ford fill or Nordt (1992). The underlying AC horizon, tentatively interpreted as either more of the Ford fill or the upper West Range fill, consisted of black to very dark brown (10YR 2/1 through 10YR 2/2), weakly blockly gravelly clay loam. Like the uplands, this unit contained abundant chunks of fractured chert; However, none of this material was clearly culturally modified.

Subsequent to the manual excavations, a fourth trench (BT 4) was excavated between TP 1 and the bank of Shoal Creek to further investigate the cultural material recovered in TP 1 between 140 and 180 cmbs. This trench was not examined by the geomorphologist, but in profile was broadly similar to BT 3. Manual testing was concentrated on the same arc-shaped terrace where BTs 3 and 4 were excavated. Test pit 1 was located 15 to 20 m west-southwest of BT 3 and was excavated to 200 cmbs. Levels 1 through 14 were culturally sterile. Level 15 contained 19 bone fragments (a few burned), 15 pieces of lithic debitage, and charcoal samples (Table 5.60). The three levels below 150 cmbs (levels 16 through 18) contained a total of 19 pieces of lithic. From 140 to 155 cmbs, a diffuse deposit of aquatic snails and small gravels were noted, and dark staining with charcoal flecking (thought to have resulted from a range fire), was observed. Levels 19 and 20 contained no cultural material and excavation was stopped at 200 cmbs.

Table 5.59 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	1.0	T1 terrace
BT 2	5	0.8	1.1	T1 terrace
BT 3	10	0.8	3.1	T1 terrace
BT 4	5	0.8	2.5	T1 terrace
TP 1	1.00	1.00	2.00	T1 terrace
TP 2	1.00	1.00	1.70	T1 terrace
TP 3	1.00	1.00	1.00	T1 terrace
TP 4	1.00	1.00	1.60	T1 terrace

Test pit 2 was about 40 m east-northeast of BT 3. Of 170 cm excavated in TP 2, only one unburned bone fragment (shattered into six pieces during excavation) was recovered from 110 to 120 cmbs within a bedded sand and gravel deposit.

Test pit 3, about 30 m west-southwest of TP 1, was excavated to 100 cmbs. A few ribs, a skull fragment, and associated bone fragments (n=49) of a large mammal were found between 20 to 30 cmbs. No cultural material was recovered in association with these bones and they are interpreted as recent and/or natural occurrence. Moderate to heavy densities of gravels, fossil oysters, and chert nodules were noted from 40 to 90 cmbs, with a dense gravel deposit, which contained large, tabular pieces of limestone, encountered 100 cmbs. Two heavily abraded flakes, possibly of natural origin, were recovered from 90 cmbs.

Test pit 4, offset from BT 3, was excavated from 110 to 160 cmbs. Based on the findings in TPs 1 through 3, and the presence of bedded sands and gravels exposed in the trench profiles, the upper

Table 5.60 Artifact Recovery by Test Pit, 41CV397.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	19	0	0	15	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	12	0	0	-	unspec.
	18	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	19-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	19	0	0	34	0	0		
2	1-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	0	0.0	0	6	0	0	0	0	0	-	unspec.
	13-17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	6	0	0	0	0	0		
3	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	49	0	0	0	0	0	-	unspec.
	4-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	49	0	0	2	0	0		
4	1-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9-16	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	0	0	0		

110 cm of deposit in TP 4 were removed unscreened. Based on BT 3 profile, the contact between the C horizon (bedded sands and gravels) and the 2AC horizon appeared to be at a depth of 110 cmbs in TP 4. No cultural material was recovered from 110 to 160 cmbs. Excavation was halted at 160 cmbs due to the water table at 170 to 175 cmbs. Backhoe trench 4 did not reveal any cultural material and thus restricted the horizontal area in which the cultural material in TP 1 could be recovered.

5.31.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences from this site are grouped together as a single unclassifiable Analytical Unit. The four test pits yielded a total of 36 pieces of lithic debitage, 74 bone fragments, and 27 snail samples. Of the faunal remains, most pieces were in the medium to large size mammal category with three burned pieces. No burned rocks, stone tools, or cultural features were identified.

The 36 specimens of lithic debitage represent two identified and two unidentified chert types. These represent at least two chert provinces, the Heiner Lake Tan from the Southeast Range and the Gray/Brown/Green from the North Fort chert province (Table H-262). The indeterminate cherts occur in higher than expected frequencies with the two identified types in expected frequency (Table H-263). The exclusion of the indeterminates leaves the identified chert types occurring in less than expected amounts. Only the largest size class is not represented; the debitage clusters in the 0.5 to 1.2 cm range. Little more than half the assemblage (61%) is tertiary debitage with the other materials being partially cortex covered (Table H-264).

5.31.4 Conclusions

Two basic depositional settings were identified. Trenches 1 and 2 were on limestone strath terraces of Shoal Creek, and were mantled with thin deposits of stony black clay of mixed alluvial/colluvial origin. No in situ cultural material was detected in this context. Trenches 3 and 4 and all four test pits were on a Late Holocene terrace underlain by stratified Ford and possibly West Range alluvium. Sparse cultural material was recovered from this fill in a gravelly alluvium. No features were detected. Despite the presence of sparse lithic debitage and bone at 140 to 180 cm in TP 1, and because of the high-energy depositional context if this alluvium, it is doubtful if these cultural remains are an interpretable cultural context. On this basis, we conclude that site 41CV397 contains no significant archeological materials in primary context, and, as a result, has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

5.32 SITE 41CV403

Beginning in late October 1994 and continuing through early December, we conducted formal test excavations at prehistoric archeological site 41CV403. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Eight trenches were mechanically excavated and three test pits totaling 3.7 m^3 were dug by hand. Formal test excavations demonstrate the presence of intact, buried, and stratified cultural components with some dating to the Middle and Late Archaic periods. These occupations have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.32.1 Introduction

5.32.1.1 Site Location and Description

Site 41CV403 is in northwestern Fort Hood, in Training Areas 45 and 51. The site consists of a broad, gently sloping segment of the high Manning surface cut by several minor stream valleys at the headwaters of Henson Creek. A northeast-southwest underground pipeline bisects the site and many roads criss-cross the area. Other impacts include a stock pond and corral. Site boundaries as defined in 1993 measure an irregular circle with a 1 km diameter (Figure 5.132) and cover an area of about 78 hectares (193 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.32.1.2 Previous Work

This site was initially recorded by Thomas on 10 June 1981 as a burned rock midden at the base of a slope. No collections were made and types of cultural material were not described. Further investigations were suggested. On 2 February 1986, Dureka and Rotunno recorded the area as burned rock features in a very large lithic

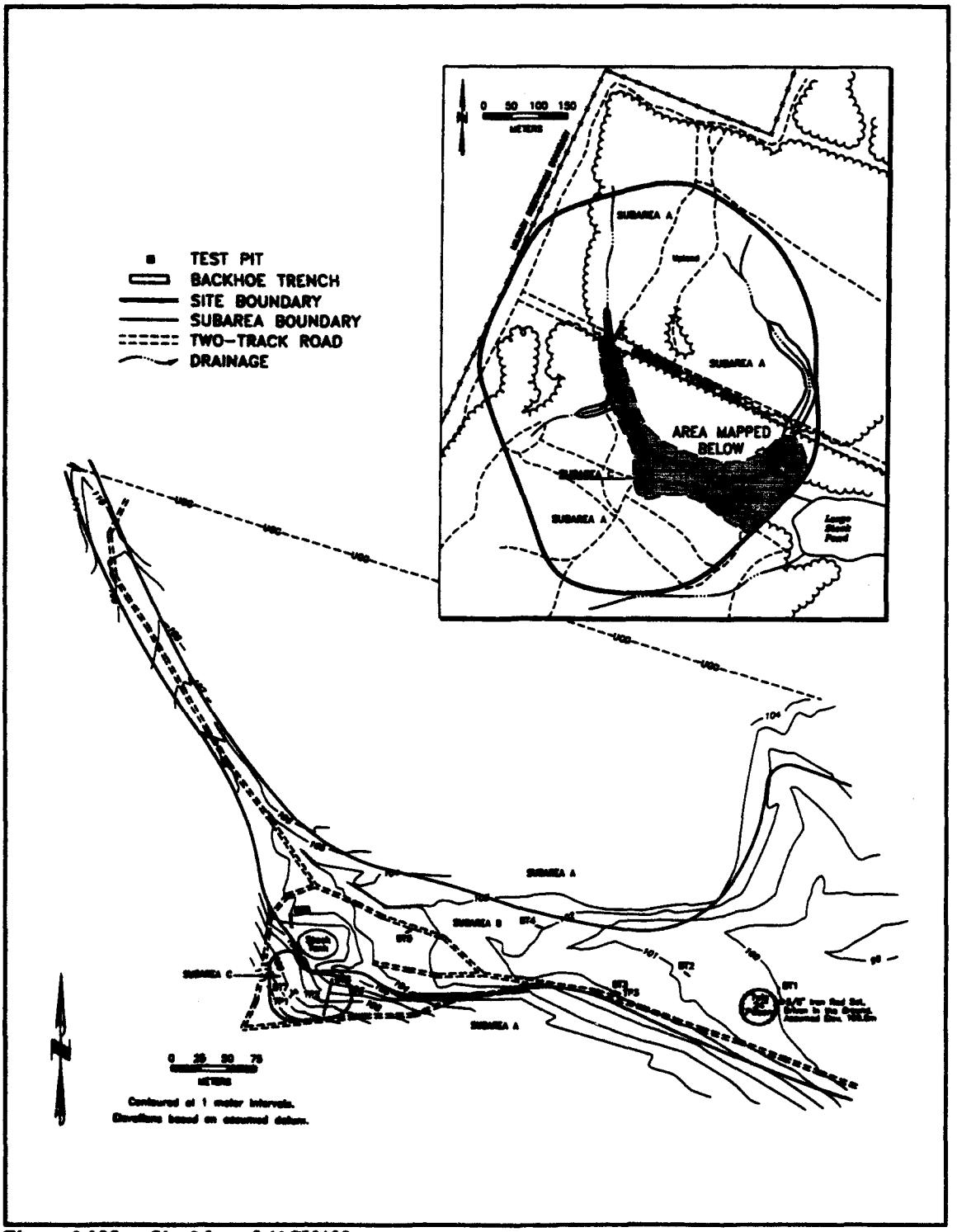


Figure 5.132 Site Map of 41CV403.

procurement area measuring 1,250 x 1,075 m in size (1.3 x 10^6 m^2). Dart and arrow points were reported and two large burned rock mounds were described, one of which was vandalized (Kock et al. 1988). Other on-site disturbances included vehicle traffic, erosion, military, and historic habitation, adding up to a total of 80% disturbance. The site was interpreted as a large and complex multi-component occupation based around the Henson Creek headwater spring with extensive chert outcroppings in the surrounding uplands. For management purposes, the site was later classified as a lithic resource procurement site.

On 12 October 1992, Turpin and Abbott reevaluated the site based on archeological potential and geomorphic context and subdivided the site into three subareas. Area A encompasses the majority area and consist of a level to gently sloping Manning upland surface mantled with a thin, discontinuous residual soil exhibiting an A/Bt/K horizon sequence. The uplands here represent an ancient stable surface subjected to ongoing erosive stripping of the thin soil. Residual chert and lithics, including a collected Pedernales point, were noted, but the potential for buried deposits was considered to be negligible. Any cultural material occurring on the surface was judged to represent a surficial palimpsest in probable secondary context.

Subarea B includes the alluvial valley fills of upper Henson Creek above Henson Lake and a narrow, unnamed tributary. The Henson Creek valley consists of an alluvial flat about 100 m wide and 400 m long extending from an active spring near a dry stock tank down to the present upper limit of Henson Lake. A light scatter of lithics was observed in this area. Exposures provided by incision of the channel indicated that the fill is at least 1 m thick and consists of predominantly fine-grained deposits. In many locations, a colluvial mantle of coarse limestone and chert gravels mantles the surface of the fine-grained fill, indicating a recent increase in colluvial activity (possibly post-dating historic settlement). Upstream from the seep, the Henson Creek valley narrows to about 25 m. In this reach, shallow, predominantly gravelly alluvium is preserved as a low, undulatory floodplain. Similar deposits are preserved in the tributary that extends northwest from the upper margin of Henson Lake. Although all alluvial deposits have the potential to contain preserved occupation surfaces, the probability of discovering material in good context here was considered to be highest in the larger valley below the spring conduit.

Subarea C consists of mixed cultural-colluvial deposits composed of large burned rock middens in unknown states of preservation around the margin of the spring conduit. The midden deposits were partially exposed in shallow gullies initiated by erosion of several two-track roads, and consist of up to 40 cm of angular burned limestone in a dark grayish brown loamy matrix. These burned rock features have been affected by vehicle traffic, historic habitation, and probable vandalism, but surficial evidence indicated that there might be intact deposits in both features.

Accordingly, a crew excavated 100 shovel tests in Subareas B and C from 19 through 22 October 1992. Ninety-four of the tests (STs 7 through 100) were excavated in Subarea B. Cultural material (almost exclusively lithic debitage) was recovered from 86% of the holes and the distribution suggested that the highest lithic density is adjacent to the midden-spring complex; much of the material is probably colluvially reworked from the midden. Several additional high density loci were apparent in the middle of the broad terrace. The frequency declined sharply from the upper level downward, yet spatial clustering was still apparent in the distribution from level four. Although a degree of linearity exists to the artifact distribution (suggesting these may be the result of natural reworking by channelized flow), there was also a good possibility that a substantial buried component is present in Subarea B.

Six shovel tests (STs 1 through 6) were excavated to between 20 and 100 cmbs in Subarea C. All six yielded moderate to high quantities of artifacts.

Burned rocks, lithics, and bone were recovered in large quantities from STs 1, 3, 5, and 6 and in moderate amounts from two shovel test. Shovel tests 2 and 4 were beyond the limits of the burned rock midden feature, but still yielded moderate amounts of debitage. However, historic artifacts were also present to 40 cmbs in TP 6 indicating intensive disturbance (probably vandalism) of some parts of the midden complex. Shovel tests 1 through 3 provide the best sample of midden deposits with materials extending to 100, 50, and 70 cmbs respectively. On this basis, formal testing of Subareas A and B was recommended to determine NRHP eligibility (Trierweiler 1994:A878-A905).

On 17 March 1993, Abbott, Frederick, Mehalchick, and Kleinbach returned to evaluate the potential utility of the upland (Subarea A) for addressing questions of lithic-resource procurement and reduction. Two chert (1 and 2) and two impact zones (1 and 2) were identified, mapped, and characterized, and chert samples were collected. Impact Zone 1 (incorporating two similar, but non-contiguous areas designated 1A and 1B) was characterized by intense disturbance (in excess of 75%) and excluded from the LRP resurvey process. Impact Zone 2 consist of islands of relatively intact, albeit erosional slopes cut with a dense network of vehicle roads and tracks. The damaged areas were judged to be less than 50% of the total area and the Impact Zone 2 was consequently resurveyed from 1 through 6 April 1993. A total of 1096 observations of surface diversity and ubiquity were made along 86 transects spaced at 30 m intervals.

Impact Zone 2 was delineated into six management units on the basis of localized impacts and chert ubiquity. Management Unit 1 is the depositional deposits in Subarea B and C. Most of the western upland area exhibited very low archeological potential and no further work was recommended. At the same time, several small parts of the upland contain a diverse and ubiquitous surface lithic assemblage which may yield data relevant to questions of lithic-procurement behavior (Ellis et al. 1994). Non-excavation testing was recommended to resolve this potential. Finally, one small area demonstrated to contain a remarkably diverse and ubiquitous surface lithic assemblage was recommended for protection (Trierweiler 1994:A885).

5.32.1.3 New Work

Formal subsurface testing of Subareas B and C was conducted on 7 December 1994. Eight backhoe trenches and three test pits were excavated to examine site stratigraphy and prospect for buried cultural material. All manually excavated test pits were offset from trenches. Test pit 3 and BTs 1-5 were excavated on the broad alluvial flat, while BTs 6 and 7 and TPs 1 and 2 were excavated into the burned rock midden surrounding the seep (Figure 5.133). Trench 8 was excavated into a narrower part of the flat alluvial valley upstream from the northwestern part of the midden complex. Unit sizes and depths are presented in Table 5.61.

5.32.2 Results

5.32.2.1 Excavations in the Alluvial Fill of Subarea B

Six trenches (BTs 1 through 5 and 8) were excavated in the level to gently concave alluvial fill in the valley of upper Henson Creek. These trenches revealed a variety of relatively thin but moderately to strongly developed soils formed in a combination of trunk stream alluvium and colluvium/slopewash. The most common profile observed in this valley was associated with an early-middle Holocene fill observed in BTs 1, 4, 5, and possibly 8. This soil was roughly 70 cm thick in BTs 1, 4, and 5 and exhibited an A-Bt-Btk-Bk profile developed in gravelly alluvium and resting on dense alluvial/colluvial gravels. The A horizon was 25 cm thick and consisted of black (10YR 2/1), granular gravelly clay. It graded rather abruptly into the Bt-Btk horizon sequence, which was roughly 30 cm thick overall and consisted of very dark grayish brown (10YR 3/2), strong blocky to prismatic gravelly clay. These two horizons



Figure 5.133 View South Along Backhoe Trench 6, 41CV403.

were differentiated on the basis of fine carbonate filaments that occurred below about 45 cm; otherwise, the two zones appeared identical. The strong ped faces contained a few weak argillans, some slickensides, and common to abundant fine brownish mottles. The underlying Bk horizon was composed of dark brown (10YR 4/3) gravelly clay loam that was weak blocky structured to massive, contained a few fine carbonate filaments, common fine soft carbonate masses, and some fine, hard nodules composed of iron and/or manganese. Natural chert fragments and some probable reworked cultural debris were common throughout the profile in each trench, but no cultural strata were observed.

A slightly different profile developed in deposits of similar age and overlain by colluvially-reworked cultural sediments was observed in BT 8. Overall, the latter trench exhibited an Ap-2A-2Bwk-2C profile. The surficial sediments consisted of relatively typical midden sediments; namely black (10YR 2/1), massive to granular stony loam containing a high content of burned rock and flakes. However, many broken glass fragments were also in this unit, indicating historic disturbance. Because this trench was immediately downslope of a relatively strongly disturbed part of the midden complex (Subarea C), it is likely that

Table 5.61 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	0.8	T1a terrace
BT 2	5	0.8	1.2	T0 terrace
BT 3	6	0.8	1.5	T1 terrace
BT 4	5	0.8	0.7	T1a terrace
BT 5	5	0.8	0.7	T1a terrace
BT 6	30	0.8	2.5	colluvial
BT 7	10	0.8	2.0	colluvial
BT 8	12	0.8	1.7	T1 terrace
TP 1	1.00	1.00	1.20	colluvial
TP 2	1.00	1.00	1.47	colluvial
TP 3	1.00	1.00	1.00	T1 terrace

the deposit represents colluvial reworking of spoil piles from vandal excavations upslope. The underlying soil consisted of a very dark brown (10YR 2/2), weakly to moderately blocky gravelly clay loam A horizon 15 cm thick underlain by a very dark grayish brown (10YR 3/2), moderately blocky gravelly sandy clay Bwk horizon 65 cm thick. The latter horizon contains a considerable quantity of coarse sand, which appears to be dissolving, leaving clouds and filaments of carbonate in the matrix. The basal zone consisted of grayish brown (10YR 5/2), massive clayey gravel. Although a considerable quantity of chert was in the alluvial fill beneath the reworked midden deposit, no primary cultural strata were evident.

A slightly less well-developed profile, tentatively interpreted as Late Holocene alluvium, was observed in BT 2. It exhibited a 125 cm thick Ap-A2-AB-Bk-BCk profile developed in gravelly clay loam alluvium. The upper 30 cm appeared to be disturbed by plowing or some other type of historic activity, and consisted of a black (10YR 2/1) gravelly clay loam. The A2 horizon was also black gravelly clay loam, but exhibited a strong medium blocky structure. The AB horizon was very gravelly, black (10YR 2/1) clay loam that contained a few fine carbonate filaments and graded from weak blocky to massive with depth. The Bk horizon was dark grayish brown (10YR 3/2) gravelly clay loam that contained some faint brownish mottles and abundant dissolving limestone lithoclasts. The base of the trench consisted of coarse, saprolitic limestone and chert gravels in a dark grayish brown (10YR 4/3) clay loam matrix. Carbonate filaments, films, and diffuse clouds were extremely common in the fine-grained matrix. Like the other trenches, abundant amounts of chert were apparent throughout the profile.

Backhoe trench 3 exhibited an A-Bt-B-Ck profile tentatively interpreted as Late Pleistocene alluvium. Overall, the profile was about 160 cm thick. The A horizon was composed of about 35 cm of black (10YR 2/1) gravelly clay and exhibited a weak granular to fine angular blocky structure. The Bt horizon was 40 cm thick and consisted of very dark brown (10YR 2/2), strong blocky gravelly clay. It graded into a massive, dark brown (7.5YR 3/2) gravelly sandy clay loam B2 horizon which contained a few fine carbonate filaments. The Ck horizon consisted of massive, light yellowish brown (10YR 6/4) gravelly silty clay loam that contained abundant carbonate filaments and masses and dissolving limestone lithoclasts.

Test pit 3, offset from the south wall of BT 3, was excavated to 100 cmbs. Debitage, intermixed with naturally occurring, angular chert chunks, a biface fragment, chert nodules, and gravels, were recovered from the surface to 40 cmbs. From 40 to 100 cmbs the deposits were culturally sterile, with unmodified chert noted in all levels.

5.32.2.2 Excavations in the Midden Complex of Subarea C

Backhoe trenches 6 and 7 were excavated through the midden complex on the slope (Subarea C) and exhibited very similar A-Bkg-Bg-Cg profiles about 1.5 m thick. The upper zone consisted of the majority of midden deposits, and was composed of black (10YR 2/1), granular to massive loam that contained abundant burned rock, flakes, and some bone and mussel shell (Figure 5.134). Up to 50% of this zone appeared to be thoroughly disturbed by vandalism. The zone averaged about 50 cm in thickness, although some areas (probably corresponding to potholes) were up to 1 m thick. The underlying Bkg horizon was a much lighter grayish brown (10YR 5/2) and consisted of stony massive silty loam 30 to 35 cm thick. It too contained a considerable quantity of cultural material and gradually merged into an ungleyed, reddish-brown B horizon near the upslope end of BT 7, while it pinched out against bedrock upslope in BT 6. A hearth (F 2) was noted on the Bkg horizon beneath the midden in BT 6. The Bg horizon was texturally similar, light brownish gray (10YR 6/2) with distinct brownish and grayish mottles, and generally lacked cultural material. The basal Cg horizon consisted of light brownish

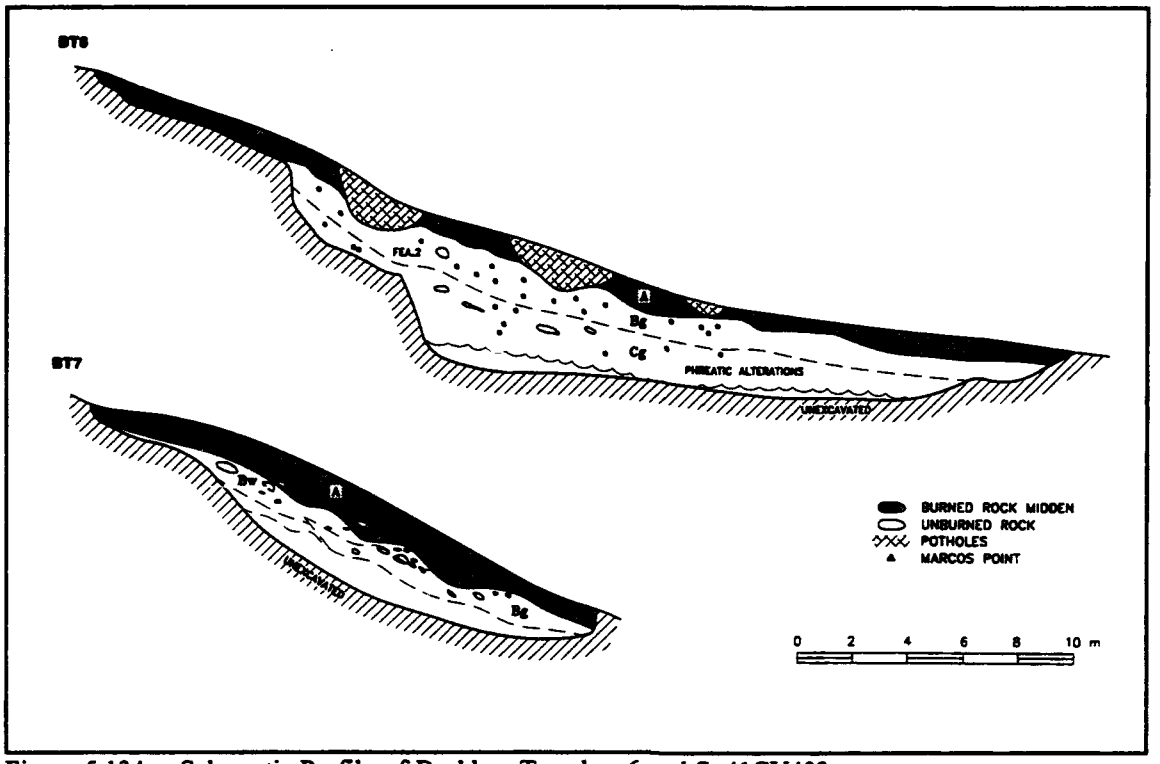


Figure 5.134 Schematic Profile of Backhoe Trenches 6 and 7, 41CV403.

gray to pale brown (10YR 6/2 to 10YR 6/3) stony sandy loam that contained abundant saprolitic limestone clasts. A Marshall point made of Heiner Lake Translucent Brown was recovered form BT 6, 30 to 40 cmbs and a complete Morrill point of Heiner Lake Tan came from 150 cmbs in the same trench. Backhoe trench 7 yielded a complete Pedernales point of Heiner Lake Tan from 30 to 40 cmbs.

Test pit 1, offset from the east wall of BT 7, was excavated to 120 cmbs. Feature 1 (the burned rock midden) was encountered from surface to 110 cmbs. Aside from root action, the deposit was apparently undisturbed. A 2.8 g sample of unidentified wood charcoal from 50 to 60 cmbs yielded a $\delta^{13}C$ (-26.5‰) corrected assay of 360 ± 60 BP (Beta-83420). Artifact recovery included over 1,000 burned rocks, over 600 pieces of lithic debitage, four dart points, 25 stone tools, three cores, 61 burned and unburned bone fragments, and two mussel shell umbos (Table 5.62). Burned rocks and lithic debitage comprised at least 90% of all cultural material. Overall, artifact frequencies dramatically decreased in levels 10 and 11. These two levels also yielded greater numbers of unburned (colluvial) to burned rocks. One flake and a moderate amount of decaying limestone were noted in level 12. The dart points include two fragmented Castroville points from levels 3 and 4 plus two Pedernales points from levels 4 and 6.

Test pit 2 was offset from the west wall of BT 6, above the buried hearth exposed in the trench profile at about 95 cmbs and dug to 150 cmbs. The upper 36 to 40 cm was determined to be spoil from vandal's holes and was removed unscreened. At 40 cmbs, the western half of the unit was undisturbed, whereas the eastern half still consisted of disturbed backdirt. The disturbed part was removed unscreened, but a proximal Montell point was collected from this area. The disturbed part

Table 5.62 Artifact Recovery by Test Pit, 41CV403.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	3	0.5	0	1	0	0	16	0	0	-	mixed
	2	F1	25	5.0	1	6	0	0	104	0	4	-	LA
	3	F1	143	19.5	0	4	0	1	246	1	4	Castroville	LA
	4	F1	150	21.0	0	17	0	0	299	2	13	Castroville, Pedernales	mixed
	5	F1	116	20.5	0	6	0	2	133	0	1	-	MA
	6	F1	200	33.0	0	3	0	0	232	1	3	Pedernales	MA
	7	F1	151	20.5	1	0	0	0	168	0	0	-	MA
	8	F1	149	31.5	0	6	0	0	94	0	0	-	MA
	9	F1	118	30.0	0	3	0	0	67	0	0	-	MA
	10	F1	48	6.5	0	9	0	0	13	0	0	-	MA
	11	F1	4	2.5	0	7	0	0	2	0	0	-	MA
	12	-	0	0.0	0	0	0	0	1	0	0	-	MA
	Total		1107	190.5	2	62	0	3	1,375	4	25		
2	1-4	F1	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	F1	123	12.3	0	79	0	0	1,124	3	1	Castroville, Montell, Scallorn	mixed
	6	F1	91	9.5	0	70	0	0	962	2	3	Castroville, ?dart, 360±60	mixed
	7	F1	100	14.0	0	12	0	1	238	0	6	-	LA
	8	F1	82	10.0	0	38	0	0	250	0	0	-	LA
	9	F1	135	32.5	0	30	0	0	106	3	0	Castroville, ?dart	LA
	10	F2	147	41.3	0	8	0	0	71	0	2	3890±40	MA
	11	F1	18	3.0	0	0	0	0	34	0	0	-	MA
	12	-	14	3.5	0	0	0	0	20	0	1	-	MA
	13	-	13	3.3	0	2	0	0	14	0	0	-	MA
	14	-	0	0.0	0	0	0	0	22	0	0	-	MA
	15	-	0	0.0	0	0	0	0	3	0	0	-	MA
	Total		723	129.4	0	239	0	1	2,844	8	13		
3	1	-	0	0.0	0	0	0	0	20	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	41	0	1	-	unspec.
	3	-	0	0.0	0	0	0	0	16	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	5-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	80	0	1		

continued to 60 cmbs, shrinking with depth. The intact part of Feature 1 began at 40 cmbs and extended to 95 cmbs. Nearly 250 burned and unburned bone fragments, scattered mussel shell fragments, over 500 burned rocks, scattered charcoal, and thousands of lithic debitage, 14 stone tools, a core, a Scallorn arrow point, and seven dart points (two Castroville, a Montell and an untyped specimen in levels 5 through 7; a Castroville and two untyped points in level 9) were recovered from this midden. Again, burned rocks and lithic debitage accounted for 90 to 95% of all recovered items, as artifact counts steadily decreased with depth. Moderate amounts of unburned rock were also contained in the deposit.

In TP 2, a hearth (F 2) was encountered directly below the midden between 96 and 110 cmbs. Maximum excavated feature dimensions were 85 cm north-south x 45 cm east-west, with the hearth restricted to the eastern third of the unit (Figure 5.135). The hearth had a shallow basin shape and consisted of two layers of burned rocks (26 kg, n=86). Roughly 50% of the rocks were large, tabular slabs (up to 10 x 20 cm in size), whereas the remainder were medium sized angular pieces. Large slabs were horizontally laid along the base of the hearth, with a few of the rocks along the outside edge placed upright. Any rocks that sloped did so toward the center of the hearth). A very small (0.2 g) charcoal sample from 90 to 100 cmbs was identified as juniper wood and yielded a $\delta^{13}C$ (-25.1‰) corrected assay of 3890 ± 40 BP (Beta-83352). A few flakes were recovered from the feature fill. Recovery from the non-feature matrix in level 10 (95 to 100 cmbs below the midden, F 1) included some burned rocks, lithic debitage, and bone fragments. The non-feature fill in level 11 contained scattered burned rocks and lithic debitage. Cultural material continued in levels 12 through 15, with bedrock encountered at varying depths (136 to 147 cmbs).

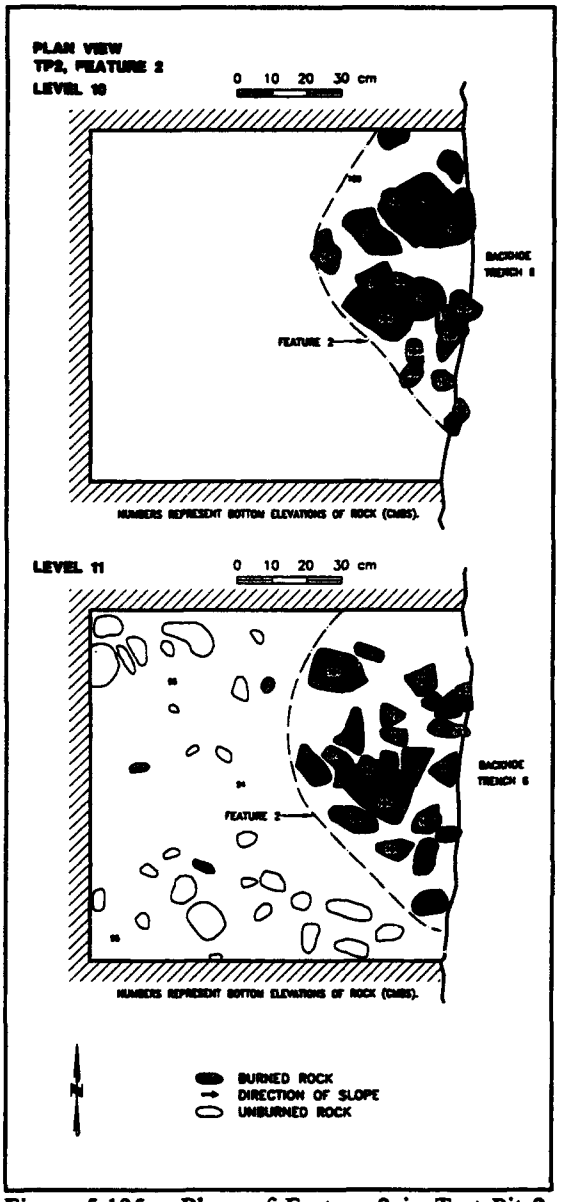


Figure 5.135 Plans of Feature 2 in Test Pit 2, 41CV403.

5.32.3 Analysis and Interpretations

5.32.3.1 Definition of Analytical Units

The three TPs yielded two features - a burned rock midden and a hearth, 4,299 pieces of lithic debitage, 12 projectile points, 39 stone tools, four cores, 303 bone fragments, two mussel umbos, 2,480 burned rocks (319.9 kg), sparse charcoal and some snail shells. These were assigned to two time periods - the Middle and Late Archaic periods, and two unknown groups - mixed materials and unclassifiable materials. The Middle Archaic period is based on one charcoal date of 3890 BP from hearth F 2 in TP 2, 100 to 110 cmbs and a Pedernales point from TP 1, 50 to 60 cmbs, and encompassed 40 to 120 cmbs in TP 1 and 95 to 150 cmbs in TP 2. The Late Archaic period is based on the presence of five Castroville, a Montell, and three untyped dart points in the burned rock midden deposits above the Middle

Archaic materials. These included TP 1, 10 to 30 cmbs and TP 2, 60 to 90 cmbs.

The mixed material comes from the top 10 cmbs of TPs 1 and 2, 30 to 40 cm in TP 1, 40 to 60 cmbs and 90 to 95 cmbs levels in TP 2 where points from different time periods were found together. The unclassifiable material was all from TP 3 where no diagnostics or absolute dates were available to assign these materials to a time period. A fragment of a Marshall point and a complete Morrill point were collected from the BT 6 at 40 and 150 cmbs. Also a complete Pedernales came from BT 7 at 30 to 40 cmbs in the burned rock midden.

5.32.3.2 Middle Archaic Materials

These materials include hearth F 2, 874 pieces of lithic debitage, one projectile point, seven stone tools, two cores, 44 bone fragments, a single mussel shell umbo, 978 burned rocks, sparse charcoal and some snail shells. The 874 specimens of lithic debitage represent 14 identified and nine unidentified chert types with 29% of the materials identifiable (Table H-265). Gray/Brown/Green (31%) and Fort Hood Yellow (21%) of North Fort province dominate the identified material while dark gray (21%) and light brown (28%) debitage dominate the indeterminate materials. The combined indeterminates along with Gray/Brown/Green occur in higher than expected frequencies, Fort Hood Yellow occurs in expected quantity, and all others occur in less than expected frequency (Table H-266).

The modal peak for size is the 0.5 to 0.9 cm category with the 0.9 to 1.2 cm category containing only 42 flakes less. The size data alone implies biface reduction as a major contributor of the debitage. The high percentage of tertiary debitage (86%) reinforces this interpretation (Table H-267).

The one point is the proximal end of a Pedernales made of Heiner Lake Tan. The seven other stone tools consist of two edge modified flakes, two complete Type A choppers, a medial section of a finished biface, a complete middle stage biface, and one complete crushing/abrading stone (Table H-268). Although these material types are represented in the debitage most tools appear to have been manufactured elsewhere and brought here. Two chert cores were present, one single and one multiple platform type.

The 44 bone fragments represent mostly large to very large mammals long bone pieces with deer positively identified (Table H-269). Only three pieces are burned with another 10 exhibiting spiral fractures. With only a single unburned umbo recovered, it appears that deer or deer size animals served as the principal food resource.

The 978 burned rocks weighed 195.6 kg. About 15% represent F 2 in TP 2 whereas 85% represent the midden F 1 in TP 1. Scattered charcoal flecks were amongst the burned rocks in F 2 with a 0.2 g sample from TP 2, 90 to 100 cmbs identified as juniper wood providing a $\delta^{13}C$ (-25.1‰) corrected assay of 3890 ± 40 BP (Beta-83352). A float sample from F 2 did not yield any carbonized plant

remains. Unfortunately the midden deposit in TP 1 did not yield charcoal and therefore no date was procured. As well, two float samples from 40 to 50 cmbs and 90 to 100 cmbs of F 1 in TP 1 failed to yield any carbonized plant remains.

The one charcoal date of 3890 BP places F 2 and associated material into the Marshall Ford phase (Prewitt 1981; 1985). The Pedernales point from 50 to 60 cmbs in TP 1 of F 1 indicates similar and continued use during the Round Rock phase. The midden deposits do not reveal obvious changes in phase association while only mixed levels in each TP, with points of different ages, indicate the continual build up of midden deposits did not stop as they continued into the Late Archaic period. Middle Archaic midden deposits are not often recognized at Fort Hood, although indications are, they are more common than presently revealed by our data.

5.32.3.3 Late Archaic Materials

These materials include the upper part of burned rock midden F 1, 944 pieces of lithic debitage, four dart points, 14 stone tools, two cores, 92 bone fragments, one mussel shell umbo, 485 burned rocks, sparse charcoal, and some snail shells. The 944 specimens of lithic debitage represents 14 identified and nine unidentified cherts with 22% of the materials identifiable (Table H-270). Fort Hood Yellow dominates the identified materials at 34% while dark gray and light brown debitage dominates the indeterminate materials at 30% apiece. The combined indeterminates occur in higher than expected frequency, Fort Hood Yellow occurs in expected quantity, and all others occur in less than expected frequency (Table H-271). The exclusion of the indeterminates results in Heiner Lake Tan, Fort Hood Yellow, Gray/Brown/Green, and Owl Creek Black occur in higher than expected frequencies, East Range Flecked and Cowhouse Dark Gray occur in expected frequency, and all others still occur in less than expected frequencies.

The modal peak for size is the 0.5 to 0.9 cm category. All size categories are present. Sixty-six percent of the materials are less than 1.2 cm in size and 95% are less than 2.6 cm in size. Of note is the presence of a fully cortexed specimen of debitage (Table H-272). Seventy-eight percent are tertiary flakes, while another 17% have partial cortex. The definite drop in percentage of tertiary debitage at the 1.8 cm size category; less than 1.8 cm represent 75% and greater than 1.8 cm represent 45%. These sizes indicate a high frequency of platform preparation flakes from either core or biface reduction, and/or resharpening flakes. The low incidence of cortex on the larger debitage implies the importation of flake-blanks or nodules that have already been roughed-out.

The four points consist of two fragmented Castroville types and two untyped dart point fragments (Table H-273). These material types are represented in the debitage, but in very low frequencies and apparently these points were manufactured elsewhere and brought in as finished products.

The 14 other tools consist of three utilized flakes, two late stage bifaces, two finished bifaces, two early stage bifaces, one middle stage biface, one Clear Fork Type B chopper, one crushing/abrading stone, and two edge modified flakes (Table H-274). These tools were made of one indeterminate type chert, two chert types from North Fort province, while 11 specimens (78.5%) were from Southeast Range chert province. Two multiple platform cores, one of Cowhouse Mottled chert and one of indeterminate mottled were present. The materials represented in the tools is opposite that reflected in the debitage and slightly different than the types represented in the points.

The 92 bone fragments reflect mostly large to very large mammals, deer to bison size with two definite deer elements (metatarsal and scapula) identified (Table H-275). The few medium size mammal fragments may also indicate deer size. No rodents or small mammal fragments were recovered. Nearly 30% are burned with 13%

showing spiral fractures. Whereas only one umbo was recovered, a *Megalonaias nervosa* species, it appears that deer served as the major food resource.

The 485 burned rocks weighed 81 kg and were from the top part of undisturbed midden F 1 in TP 1 and 2. Scattered charcoal fragments (0.5 g) occurred in these levels but none were dated. This deposit age is projected based on the presence of Castroville points which indicate these materials are part of the Uvalde phase (Prewitt 1981; 1985). Other Late Archaic middens are of similar age but discrete occupation zones in alluvial context are rare.

5.32.3.4 Mixed Materials

These materials include 2,401 pieces of lithic debitage, seven projectile points, 17 stone tools, 167 bone fragments, 367 burned rocks (43.3 kg), and snail shells which were from four different proveniences in the burned rock midden deposits.

The 2,401 specimens of lithic debitage represent 13 identified and nine unidentified chert types with 25% of the materials identifiable (Table H-276). All four chert provinces are represented with the dominating presence of Southeast Range materials with four types and 45% of the materials. Although North Fort has five types represented, it is only 35% of the identified sample. Heiner Lake Tan dominates in the identified sample at 31%, while dark gray (29%) and light brown (34%) dominate in the indeterminate sample. Light brown debitage by itself is 26% of the all the materials. The combined indeterminates occur in higher than expected frequencies, Heiner Lake Tan occurs in expected frequency, and all other types occur in less than expected quantities (Table H-277). The exclusion of the indeterminates results in Heiner Lake Tan, Fort Hood Yellow, and Owl Creek Black to occur in higher than expected frequencies, Fossiliferous Pale Brown, Cowhouse Mottled, Cowhouse Dark Gray, and Cowhouse Mottled with Flecks occur in expected amounts, while all others occur in less than expected quantities.

The modal peak for size is the 0.5 to 0.9 cm category. Eighty percent of all materials are less than 1.2 cm in size and 93% are less than 1.8 cm. The high rate of tertiary debitage (87%) and the size distribution heavily favor the interpretation of large amounts of late stage biface reduction along with platform preparation work as well as the resharpening of tools (Table H-278).

The seven points represent three major time periods; Middle and Late Archaic and the Late Prehistoric II, and include two complete and one fragmented Castroville, one complete Pedernales, one proximal end of a Montell, and one complete Scallorn point (Table H-279). The Castroville points were manufactured out of materials from North Fort and Southeast Range with the Montell material from the Southeast Range. The earlier Pedernales point material was an indeterminate chert type. The Scallorn was made of Heiner Lake Tan from Southeast Range.

The 17 stone tools consist of six utilized flakes, two edge modified flakes, one early stage biface, three late stage bifaces (medial and proximal sections), three finished bifaces (complete and distal sections), one complete middle stage biface, and one end scraper (Table H-280). Materials types represent North Fort Hood (n=3), Cowhouse Creek (n=5), and Southeast Range (n=4) and four unknown sources. These frequencies are different than those observed in the debitage and again reflect that these were manufactured elsewhere and brought here in their present state.

The limited faunal assemblage represents at least one rabbit, a turtle, a deer and probably a bison (Table H-281). Nearly 70% are unidentifiable long bone fragments with nearly 75% of those fragments with thick cortical walls that appear to be bison size.

The high frequency of burned rocks reflect the Feature 1 midden deposit. Sparse scattered

charcoal flecks were present. A 2.8 g charcoal sample of indeterminate wood from TP 2, 50 to 60 cmbs yielded a $\delta^{13}C$ (-26.5‰) corrected assay of 360 ± 60 BP (Beta-83420). Other charred wood samples from this feature were identified as willow indicating multiple wood sources. This age is too young for the Late Archaic period, and with the associated Castroville points it became obvious that this level reflected a mixed deposit.

In very general terms these materials were once part of the burned rock midden, but either from slow gradual mixing over time or the vandals actions became mixed with slightly older or younger deposits.

5.32.3.5 Temporally Unspecified Materials

These materials include 80 pieces of lithic debitage, four projectile point and one other stone tool all from TP 3. No features were identified and these deposits lacked diagnostics and charcoal. Consequently, the age of these are presently unknown.

The 80 specimens of lithic debitage represent seven identified and nine unidentified chert types with 30% of the materials identifiable (Table H-282). Although there are really dominating cherts among wither the identified or indeterminates, the North Fort materials have a slight advantage in frequency than the Southeast Range materials (n=10 versus n=7). The combined indeterminates occur in higher than expected frequency, Heiner Lake Tan, Fort Hood Yellow, and Cowhouse Dark Gray occur in expected frequencies, and all others occurring less than expected frequencies (Table H-283). The modal peak for size occurs at the 1.2 to 1.8 cm category with an even drop off toward both ends of the size spectrum. Sixty-five percent of the materials are tertiary with another 28% having partial cortex (Table H-284).

The four points consist of Marshall blade and stem fragment, a complete Morrill, a complete Pedernales, and one untyped dart point medial fragment (Table H-285). The one tool is a proximal fragment of a late stage biface made of Fossiliferous Pale Brown chert.

The position of TP 3 which contained this material was downstream from the large burned rock midden deposit, feature 1, and it appears this material may be a secondary deposit washed downstream from this feature.

5.32.4 Conclusions

Subarea A containing Management Units 2 through 6 in the upland, have various potentials to add to our understanding of prehistoric lifeways. Management Units 2, 3, and 5 have very low potential to yield cultural materials relevant to archeological problems requiring stratigraphic depositional context as outlined by Ellis et al. (1994). However, the chert material in these three units is judged to be potentially eligible for NRHP nomination as sources of data relevant to questions of lithic-procurement behavior as outlined in Ellis et al. (1994). Management Unit 4 is judged significant and eligible for NRHP nomination as it has the potential to yield substantial data relevant to questions of lithic-procurement behavior. Management Unit 6 is judged ineligible for NRHP nomination.

The alluvial deposits in Subarea B in Management Unit 1 consist of thin, gravelly sediments of a number of different ages underlying a smooth, undifferentiated surface. All deposits contain abundant chert and appear to consist of a combination of sheetflow and trunk stream sediments. No cultural material in primary context was detected in any of the trenches, although reworked cultural debitage are common throughout the matrix. Therefore, the overall archeological potential in Subarea B is extremely low.

Subarea C in Management Unit 1 consists of burned rock midden deposits surrounding a spring/seep which have been altered in their lower part by discharging groundwater. The midden deposit is mostly on the toeslope near the spring. Based on the previous shovel testing data and the

formal testing results above, the midden is estimated to have maximum dimensions of 50 m north-south x 30 m east-west. Although the midden has been extensively disturbed by vandalism and the construction of a stockpond, a major part of the lower midden remains intact. Multiple stratified occupations are present in this restricted area, as evidenced by Feature 2, a hearth buried below the Feature 1 midden. Additional features in and below the midden are considered extremely likely. This midden appears to have originated during the Middle Archaic and continued through the Late Archaic period with little or no change in the subsistence pattern and technological adaptations.

We conclude that Subarea B of site 41CV403 contains no significant archeological materials in stratified context and therefore very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge Subarea B to be not eligible for NRHP inclusion and recommend no further management for subarea B.

Concurrently, we judge Subarea C of site 41CV403 to be significant and eligible for NRHP inclusion by virtue of containing cultural and environmental data that can contribute substantially to the current state of development of prehistory for Central Texas in general and the Fort Hood area in particular. We therefore recommend that Subarea C be avoided and protected to prevent the loss of significant scientific information. Because known significant deposits occur in shallowly buried contexts, and because the site has a history of vandalism, the site requires measures to protect it against subsurface disturbance by vandalism, subsurface disturbance by mechanical and manual excavations performed by military personnel during training activities, and traffic by tracked and wheeled vehicles.

5.33 SITE 41CV478

In March 1995, we conducted formal test excavations at prehistoric archeological site 41CV478. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Four test pits totaling 2.7 m^3 were manually excavated. The formal test excavations demonstrate the presence of two intact, buried, and stratified cultural components of undetermined age which may have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.33.1 Introduction

5.33.1.1 Site Location and Description

Site 41CV478 is in west Fort Hood, Training Area 43. This site is southeast of the confluence of Two Year Old Creek and an unnamed tributary. Numerous roads criss-cross the site and disturbance via tracked vehicles is apparent (Figure 5.136). Maximum site dimensions, as defined in 1992, measure 140 m east-west by 100 m north-south, and cover about 1.2 hectares (3.0 acres). For purposes of analysis, the site is considered a member of the Stampede site group.

5.33.1.2 Previous Work

The site was first recorded on 18 March 1981 by Nightengale and Bement who noted a lithic scatter with two burned rock concentrations. One Nolan point was collected whereas burned rocks, flakes, bifaces, cores, and an end scraper were noted. At that time, the site was estimated to be 15% disturbed by tank trails.

Moore and Strychalski monitored the site on 19 December 1986. The original site dimensions of 77 x 74 m were expanded to 190 x 140 m. One Pedernales, one Darl, one untyped dart point, one Scallorn, one untyped arrow point, and a four



Figure 5.136 View Southwest Across 41CV478.

beveled knife were collected. The same types of cultural material observed in 1981 were again noted. The surface was estimated to be 50% disturbed by tank trails, roads, and erosion.

On 2 November 1992, Kleinbach and Abbott visited the site and evaluated it based on archeological potential and geomorphic context. Two subareas were recognized. Subarea A subsumes the outcrop of the Paluxy Sandstone on a sloping upland bench, where a truncated, strongly developed sandy soil was overlain by an accumulation of less than 40 cm of slopewash sediments. The ancient soil exhibits a 2Bw (or very weak Bt) -2R profile downslope, where it is overlain by up to 50 cm of slopewash sediments that formed a sandy A horizon containing cultural material. Upslope, the older soil had been completely truncated and the profile consisted of a thin A horizon (10 to 20 cm thick) developed in slopewash over relatively unmodified Paluxy sands. This subarea has been moderately impacted by vehicular traffic, gullying, and sheet erosion. Burned rock accumulations, with associated lithics, were apparent in road cuts. A 1 x 5 m burned rock concentration, containing a few lithics, was exposed within and along the southern edge of a road cut at the northeast corner of the site (Figure 5.137). Overall, a moderate density of burned rocks and lithics were observed in exposures. Due to the potential for buried cultural deposits, 12 shovel tests were dug in Subarea A. Four (33%) tests yielded cultural material including flakes and burned rocks.

Subarea B consists of the outcrop of the upper Glen Rose limestone on a side slope of the intermediate Killeen surface. The area was lacking in appreciable deposition, and often showed evidence of recent stripping of weathered bedrock. The surface had been strongly affected by tracked vehicle activity and sheet erosion, and typically displayed an A-R or R profile. A low density of flakes and burned rocks were noted across this deflated surface. Shovel testing was not considered warranted in this highly eroded area as

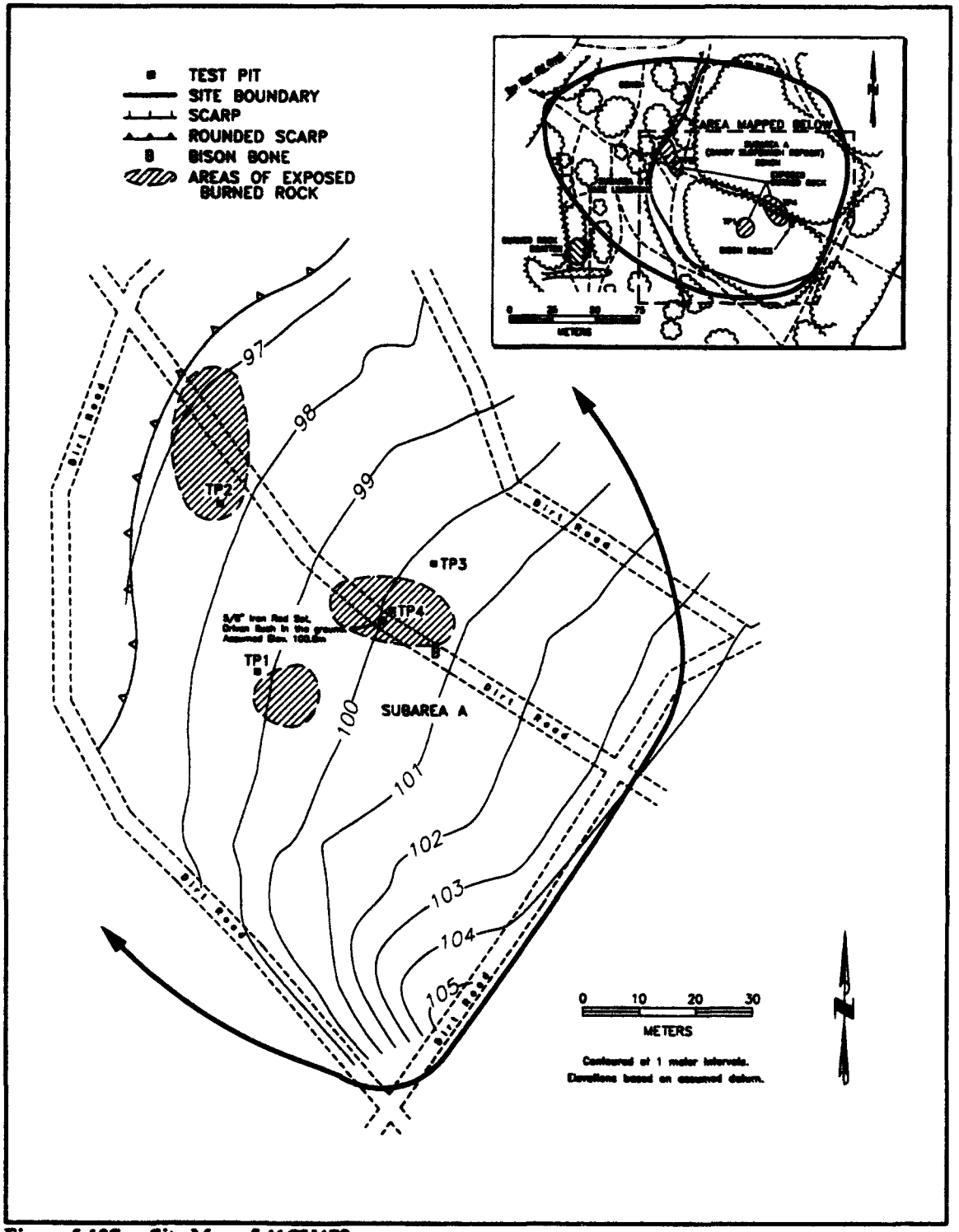


Figure 5.137 Site Map of 41CV478.

no deposits appeared intact.

On the basis of these results, only Subarea A was judged to have potential for buried and intact archeological deposits. These deposits were of unknown significance and formal testing was recommended to determine NRHP eligibility. Testing effort was recommended to minimally include two to three square meters of manually excavated test pits (Trierweiler 1994:A913-915).

5.33.1.3 New Work

Formal testing of Subarea A was completed 22 March 1995. Four isolated test pits were excavated. The size and Analytical Units are presented in Table 5.63.

5.33.2 Results

In order to delineate sections of Subarea A that possibly contained the potential for intact cultural deposits, an on-site inspection of the subarea was conducted and the previous shovel testing data were reviewed. In this process, two errors were identified, First, whereas 103 burned rocks were noted on the post-excavation summary tabulation and were reported in the 1992 letter report, examination of the original field data sheets suggests that only 30 burned rocks were actually present. Secondly, a few burned rock accumulations noted on the previous site map (Trierweiler 1994:A914) were incorrectly plotted, and were corrected on the current map.

Test pit 1 was about 20 m south of a southeast to northwest oriented road that bisects the site. This unit was in a generalized area that contains surficially scattered burned rocks. It exhibited a weak A-Bw-2R profile developed in relatively recent, sandy Paluxy sheetwash deposits over limestone and marl. Decaying Glen Rose bedrock was encountered at 40 cmbs, with only a single burned rock and two flakes recovered from level 2 (Table 5.64).

Test pit 2 was amongst a burned rock scatter, roughly measuring 15 x 8 m, along the west central margin of the subarea. It revealed a profile that was very similar to TP 1, but considerably thinner as excavation terminated at 20 cmbs.

About eight burned rocks and 38 lithics were in levels 1 and 2, with bedrock encountered 9 to 20 cmbs.

Test pit 3, 20 to 25 m north of TP 4, was excavated to 100 cmbs. Subsequent inspection by the geomorphologist revealed that the unit had been excavated through an intact, weathered Paluxy sand formation at the base of a truncated soil (BC horizon). No cultural material was recovered.

Test pit 4 was offset from the northern edge of a road cut where burned rock was exposed in an area measuring 10 x 3 m. This area was described in 1992 as having dimensions of 5 x 1 m, suggesting that severe erosion is ongoing. The surface of the unit sloped from 5 cmbs to 27 cmbs, north to south, due to the road cut. The test pit revealed a fairly strongly developed A-Bw-Bk-C-2R profile developed in Paluxy slopewash. A few cultural items were recovered from the upper three levels, with hearth Feature 1 encountered at 30 cmbs. Two separate, discrete areas of burned rocks were apparent in planview (Figure 5.138). One relatively tight cluster was primarily confined to the northeast quadrant and measured 57 x 30 cm. Along the southern quarter of the unit, a second cluster had dimensions of 100 x 28 cm. Both burned rock clusters extended beyond the limits of the test pit and consisted of a horizontally laid,

Table 5.63 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.40	Paluxy
TP 2	1.00	1.00	0.20	Paluxy
TP 3	1.00	1.00	1.00	Paluxy
TP 4	1.00	1.00	1.10	Paluxy

Table 5.64 Artifact Recovery by Test Pit, 41CV478.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	1	0.3	0	0	0	0	0	0	2	-	unspec.
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.3	0	0	0	0	0	0	2		
2	1	-	8	1.0	0	0	0	0	32	0	1	-	unspec.
	2	-	0	0.0	0	0	0	0	6	0	1	-	unspec.
	Total		8	1.0	0	0	0	0	38	0	2		
3	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	0	0	0		
4	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	3	-	1	0.2	0	0	0	0	1	0	0	-	unspec.
	4	F1	28	21.0	0	0	0	0	0	0	0	-	unspec.
	5	F1	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	2	0.5	0	0	0	0	0	0	0	-	unspec.
	7	F2	18	13.0	0	0	0	0	0	0	0	-	EA
	8	F2	49	46.0	0	0	0	0	0	0	0	-	EA
	9	F2	30	50.0	0	0	0	0	0	0	0	-	EA
	10-11	-	0	0.0	0	0	0	0	0	0	0	-	EA
	Total		129	131.0	0	0	0	0	1	0	0		

single burned rock layer, generally with no overlap. Rocks contained within the northernmost area were very angular and blocky, and averaged 10 x 10 x 7 cm in size. A few rocks along the southern edge were tabular, with the majority angular but comparatively much smaller than the rocks concentrated in the northeast quad. A few unburned rocks were also noted, with one comprised of ironite. Feature 1 gradually sloped from north to south, with a maximum depth of 15 cmbs near the southwest corner of the unit. The northernmost edge of the road cut, contiguous with the test pit, had a depth of 55 cmbs, whereas the rut approximately 25 cm south of the unit's southern edge, had a maximum depth of 67 cmbs. Aside from burned rocks (n=28, 21 kg), no other cultural material, charcoal or stains were in association. The feature's function is uncertain, but the rocks in the northeast quadrant may be remnants of a hearth based on morphology (more discernible outline), with an associated burned rock dump along the southern edge of the unit. In addition, due to proximity to the road cut, the concentration has probably been at least partially impacted, whereas no apparent disturbances were observed in the possible hearth area. No cultural material was recovered 45 to 50 cmbs, with a few burned rocks noted in level 6.

Between 65 and 90 cmbs a horizontally laid burned rock hearth, F 2 was encountered (Figure 5.139). Maximum excavated dimensions were 100 x 90 cm, however, the burned rock was densest across the eastern two-thirds of the unit. Feature 2 consisted of overlapping burned rocks (n=97, 109 kg), with about 70% being very angular and blocky, and measuring 10 to 15 x 10 x 5 to 10 cm in size. Roughly 20% of the rocks were smaller than these, and the remaining rocks (10%) were very large (averaging 25 cm long) tabular pieces, some of which along the test pit walls, were immovable. A few tabular pieces sloped toward the angular, blocky rocks which tended to be centrally located in the unit. It is not clear whether these larger rocks were part of the hearth perimeter. Feature 2 gradually sloped from north to south (as did F 1), with a few rocks, exposed along the south wall profile and extending beyond the unit's limits, continuing to dip to the south. No artifacts, charcoal, or staining were associated, and no evidence of disturbance was apparent. Levels 10 and 11 were culturally sterile and excavation was terminated at 110 cmbs.

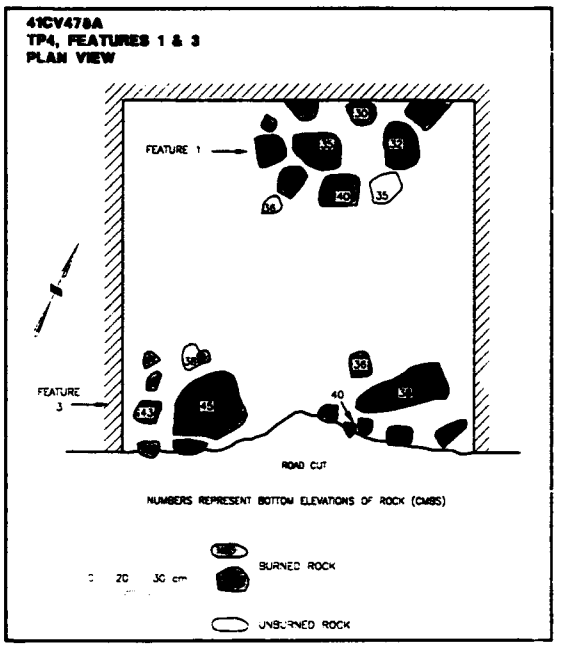


Figure 5.138 Plan of Features 1 and 3 in Test Pit 4, 41CV478.

Upon return to the site for mapping on 13 April 1995, recent rains had exposed bone fragments in a small (1 m radius) area in a road cut, about 3 m upslope from TP 4. One large element in many fragments, tentatively identified as bison, was collected.

Two suites of eight *Rabdotus* shells each were submitted from TP 4, level 5 (40 to 45 cmbs), and level 8 (70 to 80 cmbs). The suite of snails from level 5 yielded ratios ranging from 0.16 to 0.429. The suite contained one outlier on the low end, with the next three larger values forming a loose cluster at ± 5%, and the remainder exhibiting a considerable spread of values. In contrast, the ratios in the suite from 70 to 80 cm are much more tightly spaced (0.135 to 0.202), with the lowest three values clustering within ± 5% (Figure 5.140). Given these lines of evidence, the three lowest values from level 8 are interpreted as the best approximation of the age of deposition for this level, which equates to radiocarbon-equivalent ages

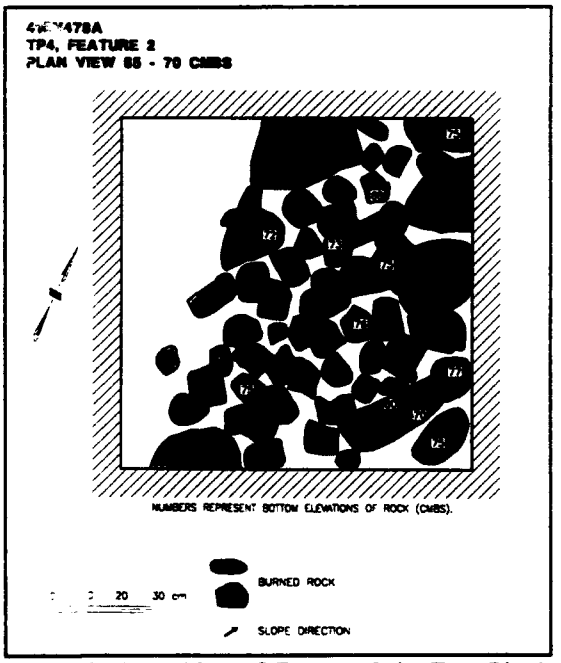


Figure 5.139 Plan of Feature 2 in Test Pit 4, 41CV478.

of approximately 4660 BP (per Ellis et al. 1995) and 6030 BP (per Abbott et al. 1995). Given that the lowest value from level 5 equates to radiocarbon-equivalent ages between 750 and 1000 years older than the level 8 estimates, the entire suite from level 5 is considered to be too old to represent the time of deposition. This discrepancy may be a result of either heating and/or colluvial reworking, as the level is developed in colluvial sediments and is in close physical proximity to a thermal feature.

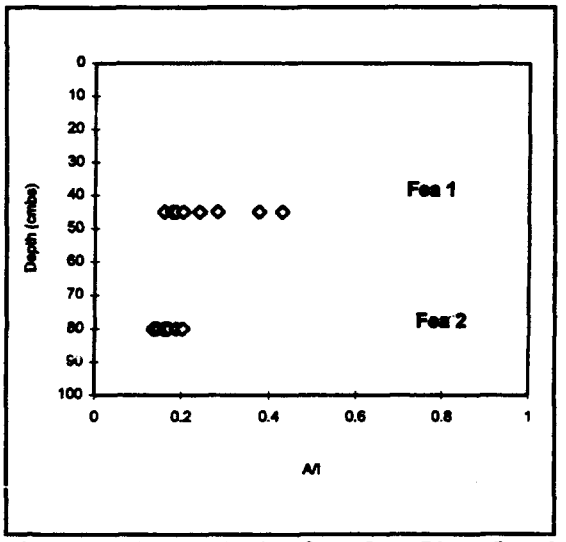


Figure 5.140 AI Ratios from Test Pit 4, Level 5, 41CV478.

5.33.3 Analysis and Interpretations

5.33.3.1 Definition of Analytical Units

Test pits 1 through 4 yielded two intact hearth features (both in TP 4 and vertically separated), 39 pieces of lithic debitage, four stone tools, 16 bone fragments, 138 burned rocks and lots of snail shells. No charcoal or diagnostic tools were recovered to indicate phase assignment. Assignment of Fs 1 and 2 to Prewitt's Early Archaic is based on 16 *Rabdotus* shell A/I ratios supported by three AMS dates on *Rabdotus* shells. The remaining lithic debitage, bone fragments, and scattered burned rock could not be assigned to a specific period. The sandy context which can allow movement of materials prevents the immediate assignment of these other materials to the Early Archaic period and association with the two vertically separated hearths.

5.33.3.2 Early Archaic Materials

These materials include both hearth Fs 1 and 2. Feature 1, 30 to 50 cmbs in TP 4 yielded 28 burned rocks that weighed 21 kg. Eight A/I ratios on Rabdotus shells associated with this feature indicate a range from 5119 to 14,373 BP with an average of 5409 BP and one *Rabdotus* AMS date of 4620 BP (Beta-88352). Feature 2, 60 to 90 cmbs in TP 4 contained 97 burned rocks which weighed 109 kg. Based on the A/I ratios of the *Rabdotus* shells, this event occurred around 4850 to 6029 BP. Two Rabdotus shells yielded AMS dates of 5080 and 5160 BP (Beta-88353 and Beta-88354). No other cultural items were discovered in association with these hearths. Although Features 1 and 2 are intact, and revealed no associated lithic debitage or stone tools on their immediate margins this does not negate their importance or imply that associated occupations are not potentially significant. It is clear that a larger area must be opened to obtain an understanding of these two occupations.

5.33.3.3 Temporally Unclassifiable Materials

These materials represent at least two cultural events and probably more, one near the surface in TPs 1 and 2 and one buried 0 to 30 cmbs in TP 4. The 39 specimens of debitage represent six identified and eight unidentified chert types with 25.6% of the materials identifiable (Table H-286). Among the identified cherts Anderson Mountain Gray, Heiner Lake Tan, and Fort Hood Yellow are nearly equal in number, and although the four chert provinces are all represented none of them dominate the others. However, light brown cherts dominate the indeterminates with 41.4%. Only the combined indeterminates occur in higher than expected frequency, Anderson Mountain Gray, Heiner Lake Tan, and Fort Hood Yellow occur in

expected amounts, and all other occur in less than expected frequency (Table H-287). The exclusion of the indeterminates results in all materials occurring in expected amounts.

The modal peak for size is really two categories separated by two specimens (0.5-0.9 and 0.9-1.2 cm). These two categories account for 56.4% of the materials, while 76.9% of the materials are smaller than 1.8 cm in size. Over three-quarters of the materials are tertiary in nature (Table H-288) supported the high numbers of small flakes accounting for biface reduction or tool resharpening.

Thirteen burned rocks (weighed 2.3 kg) were scattered over upper parts of TPs 1, 2, and 4. The four stone tools consist of a complete Fort Hood Gray chert side scraper, a fragment of a middle stage biface made of indeterminate light brown chert, a Fossiliferous Pale Brown edge modified flake, and a utilized flake of indeterminate miscellaneous chert.

The 16 bone fragments are of an unburned tibia section of a bison size animal which fragmented because weathering cracks. No spiral fractures or cut marks were observed, and thus it is unclear if this bone has been manipulated by humans.

5.33.4 Conclusions

This site is developed in slopewash sands up to a meter thick that were derived from the Paluxy Sandstone Formation. Soil development varies from very weak to moderately strong, suggesting that a range of ages are represented by the deposits. Test pits 1 and 2 were quite shallow with very sparse material, whereas TP 3 was sterile. However, TP 4 was relatively deep and contained stratified, intact buried burned rock features to a depth of 90 cm. No evidence of disturbance was observed. While this unit exhibited extremely low artifact density, the presence of two intact burned rock features suggests significant data content. Although no radiocarbon dates or diagnostic artifacts were recovered from TP 4, amino acid epimerization data on recovered land snails and three AMS assays on *Rabdotus* shells provide evidence that these two hearth features date to the middle Holocene (e.g., Early Archaic or initial Middle Archaic).

We conclude that site 41CV478 contains intact archeological deposits of a poorly represented and little known age with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that vulnerable to surface impacts, protection efforts therefore should include measures to minimize the impact of traffic on the alluvial surfaces, prevent subsurface disturbance by vandalism, and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.34 SITE 41CV481

In December 1994 and early January 1995, we conducted formal test excavations at prehistoric archeological site 41CV481. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Three trenches were dug by backhoe and four test pits totaling 6.4 m^3 were hand excavated. Formal test excavations demonstrate the presence of intact, buried, and stratified cultural components, some dating to the Early, Middle, and Late Archaic periods. These deposits have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.34.1 Introduction

5.34.1.1 Site Location and Description

Site 41CV481 is in northwestern Fort Hood, Training Area 44. A highly vandalized burned rock midden (F 1) is present at the central part (Figure 5.141). Maximum site dimensions, as defined in 1993, measure 150 x 100 m with a northwest-southeast long axis, and cover an area of 1.2 hectares (3.0 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.34.1.2 Previous Work

The site was recorded by Bement and Nightengale on 26 March 1981 as a burned rock midden. Burned rock concentrations were also listed as features and a large "potted" burned rock midden was noted as covering the entire site area. A high density of burned rock, flakes, scrapers, bifaces, and some mussel shell were observed on backdirt piles. A metate, mano, Marshall base, Marcos point, a Marcos base, an arrow point, and a biface tip were collected. The site was estimated to be 60% disturbed by vandalism, roads, and military activities. Moore and Strychalski monitored the site on 15 January 1986. The same types of cultural materials were relocated but no features were observed. The site was estimated to be 50% disturbed by vandalism, roads, military use, and erosion (Figure 5.142). It was concluded that this site had a long and varied occupation. A list of diagnostic points from this site include three Castroville, three untyped dart points, two Marcos, two Pedernales, three Ensors, a Marshall, an Angostura, a Darl, and an untyped arrow point.

Kleinbach, Mehalchick, and Abbott revisited the site on 16 December 1992 and divided the site into three subareas based on geomorphic context. The alluvial deposits of Clabber Creek were designated Subarea A, the colluvial toeslope was designated Subarea B, and the erosional bedrock slope lying above the colluvial toeslope was designated Subarea C. The latter area exhibits an R or very thin A/R profile and has no archeological potential. Because no intact deposits were possible on Area C, no further work was recommended there. Because the alluvial deposits in Subarea A and the colluvial deposits in Subarea B had the potential for intact deposits, a shovel testing crew returned on 6 January 1993 and excavated nine shovel tests (STs 1 through 9). Shovel tests 7 through 9 were excavated to 40 cmbs in Area A, and all were sterile. Of the six tests excavated in Area B, STs 1, 5, and 6 were outside the extant midden and STs 2, 3, and 4 were in the visible boundaries of the midden. The former were all sterile to depths between 1 to 40 cmbs, whereas recovery from the three inside the midden to depths up to 70 cmbs yielded 155 pieces of debitage, over 100 burned rocks, 11 bone fragments, a Darl point, and two bifaces. Based on these shovel testing results, the site was thought to contain possibly intact cultural deposits, but formal testing was recommended to determine NRHP eligibility. A minimum testing effort of at least two trenches in Subarea A and 4 to 6 m^2 manually excavated test pits and one to two trenches in Subarea B were recommended (Trierweiler 1994:A920-925).

5.34.1.3 New Work

Because the site was possibly in an endangered species habitat, a field check was conducted by Mr. Gil Eckrich (Fort Hood, Fish and Wildlife) and Mehalchick on 17 November 1994. Upon inspecting the areas in which excavations were to be undertaken, Mr. Eckrich granted permission for work to proceed, with the restriction that backhoe trenching be conducted only in the open areas.

Formal testing was completed in early January 1995. Three backhoe trenches, three 1 m^2 test pits (TPs 1, 2, and 3) and one 50 x 50 cm test pit (TP 4) were excavated. The backhoe trenches were designed to examine the site's alluvial and colluvial stratigraphy and to prospect for buried cultural material. Trench 1, TPs 2, and 3 were in Subarea A, with the remaining excavation units in Subarea B. The unit sizes and depths are presented in Table 5.65.

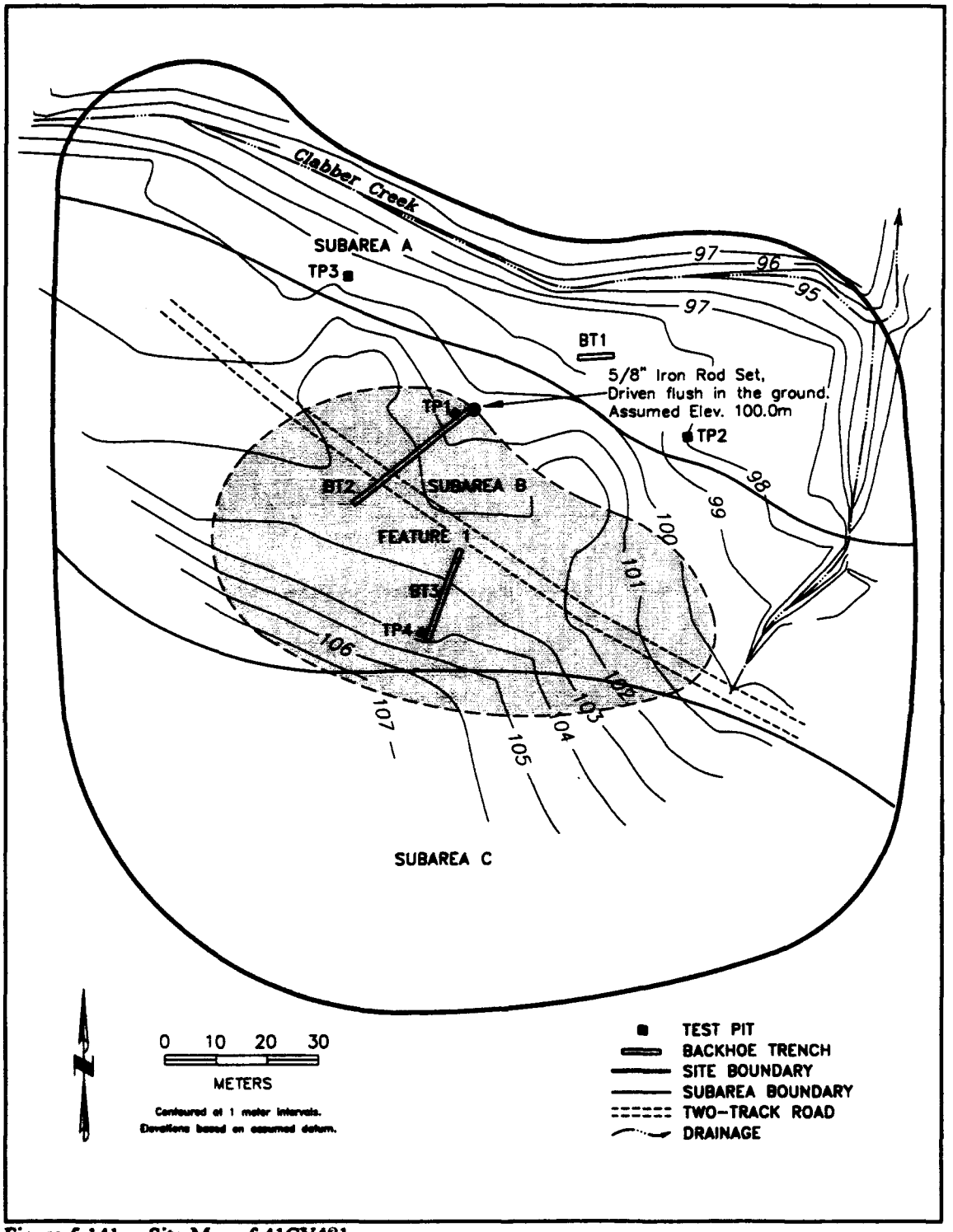


Figure 5.141 Site Map of 41CV481.



Figure 5.142 View East Across 41CV481.

5.34.2 Results

5.34.2.1 Excavations in the Alluvial Terrace

Trench 1 (10 x 1.5 x 2.7 m) was placed at the center of Subarea A, just above Clabber Creek. It exhibited an A-Bw-Bk-C-Cg profile developed in gravelly to very gravelly clay loam. The A horizon was 35 cm thick and consisted of very dark gray (10YR 3/1) granular gravelly clay loam. It graded into a similarly colored granular clay loam Bw horizon containing abundant amounts of fine gravel. This zone was about 25 cm thick and is interpreted as primarily colluvial in origin. The B1k horizon was 30 cm thick, consisted of light brownish gray (2.5Y 6/1) blocky gravelly clay loam, and contained common fine masses and "clouds" of carbonate in the matrix. It graded into a 45 cm thick B2k horizon that was a more highly structured, gray-brown (10YR 4/1) clay loam that contained common carbonate filaments. The C1 horizon consisted of light brownish gray (2.5Y 6/1), massive, very gravelly clay loam and was 25 cm thick. It graded into a 1 m thick, massive, slightly gravelly clay C2g horizon. This horizon was dominantly dark grayish brown (10YR 4/2), but contained abundant distinct brown redox mottles. A gravelly clay interpreted as a channel deposit was encountered 2.6 m bgs. Cultural material observed in the trench was limited to sparse burned rocks and flakes observed in the mixed alluvial/colluvial deposits, and were thought to have been reworked.

Table 5.65 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	0.8	2.7	T1 terrace
BT 2	31	0.8	4.0	colluvial toeslope
BT 3	18	0.8	1.1	colluvial
TP 1	1.00	1.00	3.60	colluvial
TP 2	1.00	1.00	1.50	colluvial
TP 3	1.00	1.00	1.10	T1 terrace
TP 4	0.50	0.50	0.80	colluvial

Test pit 3 was toward the northwestern side of Subarea A and excavated to dense gravels at 110 cmbs. Recovery was sparse, which included 15 flakes and five burned rocks from 0 to 20 cmbs, with the top 10 cm apparently disturbed (Table 5.66). A single flake was in each of the following five levels, and two burned rocks from 80 to 110 cmbs. A complete Montell was between 30 to 40 cmbs.

Test pit 2 was near the southeastern end of Subarea A, at the contact of the terrace and the toeslope (Area B), and excavated to 150 cmbs. Although 15 burned rocks and 12 flakes were in the upper 10 cm, two recent historic debris were also recovered, which indicate that this level was disturbed. From 10 to 70 cmbs, two to seven flakes were in each level. In addition, an occasional bone fragment and/or burned rock, and an arrow point midsection was 60 to 70 cmbs. No evidence of disturbance was observed in these levels. From 70 to 90 cmbs, a burned rock midden deposit was encountered. Although this material was thought to possibly be a buried part of F 1, it was designated F 6. This feature yielded over 100 burned rocks (17.5 kg), 40 bone fragments, and 33 flakes. Below F 6, a few flakes continued in each level from 90 to 150 cmbs; however, only a few burned rocks came from 100 to 110 cmbs.

5.34.2.2 Excavations in the Colluvial Toeslope

Trench 3 (18 x 0.8 x 1.1 m) was excavated at the mid-upslope through a highly vandalized area of F 1. It exhibited an Ap-A2-Bk-Ck profile slightly more than 1 m thick. As with other vandalized middens, the degree of disturbance was extremely difficult to determine. The Ap (vandalized) and A2 (probably intact) horizons extended to a depth of about 55 cmbs, and consisted of dense burned rock, flakes, and snail shells in a very dark gray (10YR 3/1) granular loam matrix. The Bk horizon was 30 cm thick and consisted of dark grayish brown (10YR 4/2), blocky structured silty loam. It too contained dense burned rock, flakes, and snail shells. This part of the midden appeared to be intact and it was considered possibly to be a separate feature from the above cultural material. The Ck horizon was 20 cm thick and rested on bedrock. It consisted of very pale brown (10YR 7/3) silty loam that contained abundant carbonate filaments and diffuse matrix carbonate, and contained no cultural material.

Test pit 4 (50 x 50 cm unit) was at the southern end of BT 3 and excavated through Feature 1 to 80 cmbs. Although 86 burned rocks, over 40 flakes, a midsection of an arrow point, distal section of a dart point, and about ten bone fragments were in the upper 20 cm, this material was determined to be vandals' spoil, as recent debris was also found. The following level also contained similar amounts of cultural material, but the matrix remained loose and a determination of disturbance could not be made. From 30 to 80 cmbs appeared to be undisturbed with 149 burned rocks, over 50 flakes, and about 15 bone fragments. This material began to decrease in frequency in levels 4 and 5, where the soil change occurred. Although the flake count remained relatively low in the following two levels, burned rock counts rose from 28 pieces at 60 to 70 cmbs to a peak of 54 pieces between 70 to 80 cmbs. The burned rocks in these lower levels were notably larger than those found in the upper darker matrix. From 70 to 80 cmbs (just above bedrock), a single flake and bone fragment were recovered.

Trench 2 (31 x 2.1 x 4 m) was at the mid-point of the toeslope, just west of the extant vandalism. It revealed a very thick, complex colluvial sequence that exhibited an A-Bw-Bk-C-2A-2C-3Ag-3Cg profile and three interstratified burned rock middens at depth of up to 350 cmbs (Figure 5.143). Zone 1 (the surficial A horizon) lay beneath a 2 to 5 cm thick veneer of recent slopewash, and consisted of massive, black (10YR 2/1) gravelly sandy loam. It was 40 cm thick and contained what initially appeared to be a moderate amount of colluvial burned rock and flakes, but was subsequently interpreted as sparse burned rock midden (F 5). Beneath this deposit, the sequence graded down through very gravelly colluvial

Table 5.66 Artifact Recovery by Test Pit, 41CV481.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	7	0.8	0	0	0	0	5	0	1	-	mixed
	2	F5	84	8.0	0	2	0	0	52	0	4	-	unspec.
	3	F5	48	8.0	0	3	0	0	47	0	1	-	unspec.
	4	F5	21	2.5	1	1	0	0	15	0	0	-	unspec.
	5	-	7	1.0	0	0	0	0	3	0	0	-	unspec.
	6	-	5	0.3	0	0	0	0	3	0	0	-	unspec.
	7	-	2	0.3	0	0	0	0	2	0	0	-	unspec.
	8	-	3	0.3	0	0	0	0	1	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	F2	6	0.5	0	0	0	0	0	0	0	-	unspec.
	11	-	15	0.5	0	0	0	0	2	0	0	-	unspec.
	12	-	27	1.0	0	0	0	0	3	0	1	-	unspec.
	13	-	15	0.5	0	0	0	0	9	0	0	-	unspec.
	14	-	32	1.0	0	0	0	0	2	0	0	-	unspec.
	15	-	8	0.5	0	0	0	0	7	0	0	-	unspec.
	16	-	41	8.0	0	0	0	0	13	0	0	-	MA
	17	F2	85	24.0	0	0	0	0	15	0	0	-	MA
	18	F2	230	97.5	0	0	0	0	19	0	0	-	MA
	19	F2	188	74.0	0	0	0	0	24	0	0	-	MA
	20	F2	335	124.0	0	12	0	0	41	0	0	-	MA
	21	F2	168	51.0	0	15	0	0	177	1	5	Nolan	MA
	22	F2	2	0.3	0	3	0	0	20	0	0	3940±220	MA
	23	-	1	0.3	0	0	0	0	2	0	0	-	MA
	24	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	25	-	0	0.0	0	2	0	0	0	0	0	-	MA
	26	-	0	0.0	0	0	0	0	3	0	0	-	MA
	27	F3	3	10.5	0	0	0	0	0	0	0	4430±60	MA
	28	-	0	0.0	1	0	0	0	2	0	0	-	MA
	29	-	0	0.0	0	0	0	0	2	0	0	-	MA
	30	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	31	-	3	1.5	0	0	0	0	6	0	0	-	EA
	32	-	7	2.0	0	5	0	0	17	0	0	-	EA
	33	F4	3	1.0	0	8	0	0	22	1	0	?dart	EA
	34	F4	70	32.0	0	0	0	0	6	0	1	4860±50	EA
	35	F4	12	4.5	0	0	0	0	1	0	0	-	EA
	36	-	0	0.0	0	0	0	0	9	0	0	-	EA
Total			1428	455.8	2	51	0	0	530	2	13		

Table 5.66 (Continued.)

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1	-	15	1.9	0	0	0	0	6	0	1	-	mixed
	2	-	2	0.3	0	0	0	0	15	0	0	-	unspec.
	3	-	1	0.3	0	0	0	0	9	0	0	-	unspec.
	4	-	0	0.0	0	3	0	0	7	0	0	-	unspec.
	5	-	1	0.3	0	0	0	0	5	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	7	-	1	0.3	0	0	0	0	7	1	0	?arrow	unspec.
	8	F6	51	9.0	0	8	0	0	16	0	0	-	unspec.
	9	F6	56	8.5	0	35	0	0	18	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	11	-	7	1.0	0	0	0	0	5	0	0	-	unspec.
	12	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		134	21.6	0	46	0	0	98	1	1		
3	1	-	3	0.5	0	0	0	0	5	0	2	-	mixed
	2	-	2	0.3	0	0	0	0	7	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	1	0	Montell	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	Total		7	1.2	0	0	0	0	15	1	4		
4	1	F1	34	4.5	0	7	0	0	19	2	4	?arrow, ?dart	mixed
	2	F1	52	5.5	0	4	0	0	28	0	1	-	mixed
	3	F1	42	4.5	0	3	0	0	33	0	1	-	LA
	4	F1	14	2.0	0	3	0	0	21	0	0	-	LA
	5	F1	11	1.5	0	3	0	0	15	0	0	-	LA
	6	F1	28	4.0	0	2	0	0	11	0	0	1580±60	LA
	7	F1	54	8.0	0	3	0	0	13	0	0	-	LA
	8	-	0	0.0	0	1	0	0	1	0	0	-	LA
	Total		235	30.0	0	26	0	0	141	2	6		

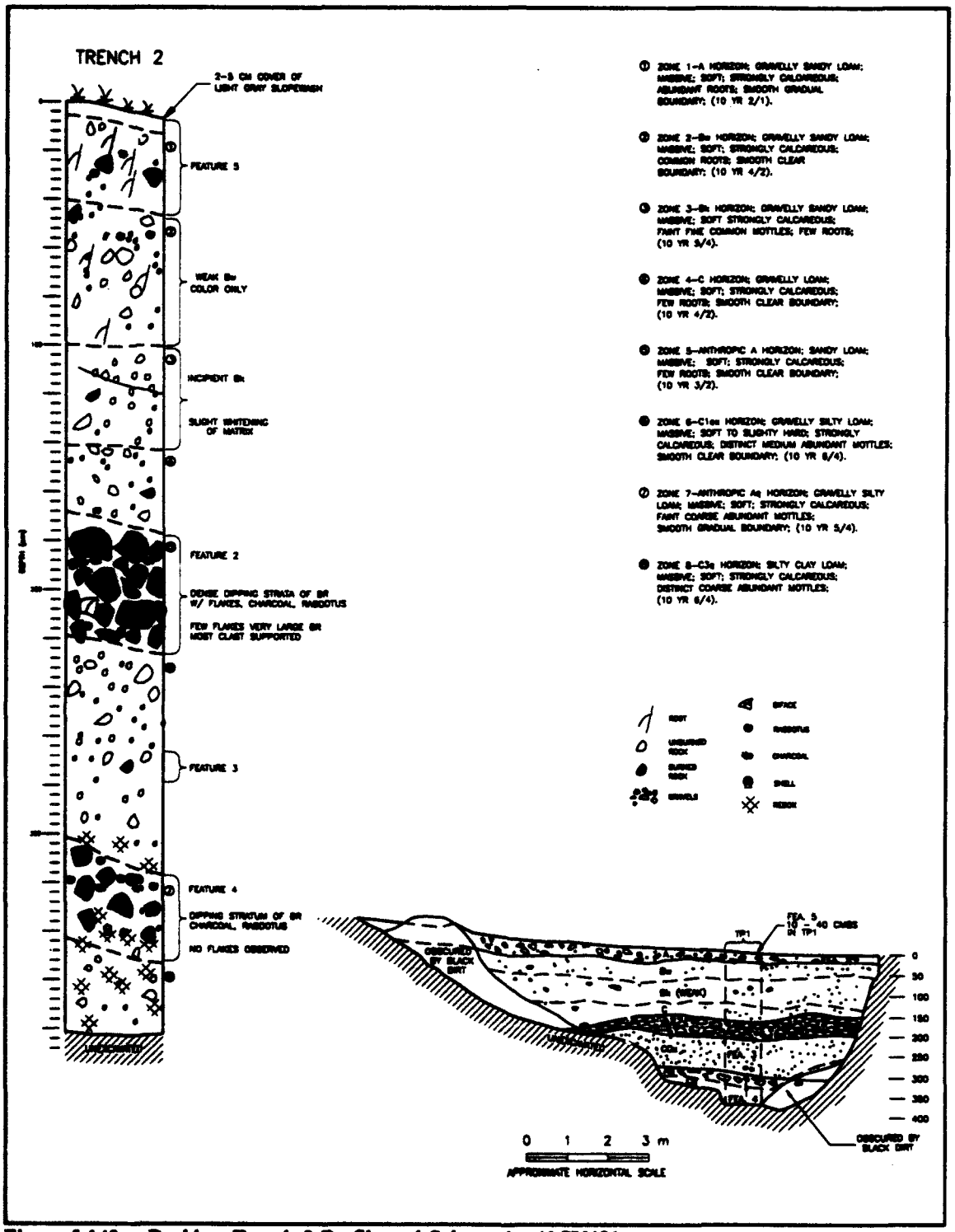


Figure 5.143 Backhoe Trench 2 Profile and Schematic, 41CV481.

deposits exhibiting a Bw-Bk-C sequence. This material consisted of gravelly sandy loam to loam and ranged from dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2). It contained occasional burned rock and flakes in probable secondary context.

At 170 cmbs, the first paleosol (PS 1) was encountered. This buried soil contained a very dense, thick deposit of burned rock, flakes, charcoal, and snail shells, and is probably due almost entirely to cultural additions/modifications to the colluvial matrix. This zone was identified as a buried midden and designated F 2. It was roughly 50 cm thick and consisted of relatively large, clast-supported burned rocks in a massive, very dark grayish brown (10YR 3/2) matrix.

From 220 to 300 cmbs, the 2C horizon consisted of light yellowish brown massive gravelly silt loam exhibiting common brownish redox mottles near the base. The second paleosol (PS 2) consisted of another anthropic soil containing burned rock midden/lens deposits and was encountered at 300 cmbs. The matrix was grayish brown (10YR 5/4) gravelly silty loam mottled with irregular orange and gray redox mottles, and was very wet due to phreatic discharge. The zone contained a considerable quantity of burned rock, snail shells, and charcoal flecking, and was designated as a buried midden (F 3). It was roughly 40 cm thick. Unlike the middle burned rock midden (F 2), the majority of rock was matrix supported. Below this zone, the sediments consisted of strongly mottled silty clay loam with little colluvial rock (Cg horizon). The trench was discontinued at 380 cmbs.

Test pit 1, offset from the west wall of BT 2, was excavated to 360 cmbs. The upper 40 cm of fill contained an apparent burned rock midden F 5 in a black loam. This may correlate with F 1 excavated in TP 4 and BT 3 and could be colluvially redeposited downslope from F 1. Feature 5 yielded a 160 burned rocks, 107 flakes, and a mussel shell umbo, with peak recovery between 10 to 20 cmbs. From 40 to 150 cmbs, dense colluvial gravels composed the bulk of the matrix. In these gravel deposits, an average of four flakes and 13 burned rocks were recovered per 10 cm level. A second burned rock midden (F 2) was encountered between 150 cmbs and 210 cmbs. Recovery from the first 4 levels of F 2 midden, 150 to 190 cmbs, included just over 500 burned rocks and 58 flakes, while the lower 2 levels, 190 to 210 cmbs, contained 513 burned rocks, 242 flakes, 23 bone fragments, and a Nolan point. A radiocarbon age of 3940 ± 220 was obtained from charcoal in level 22 at the base of the midden. A second AMS radiocarbon age of 4380 ± 60 was obtained from a *Rabdotus* snail shell recovered from level 21. From 210 to 320 cmbs, dense colluvial gravels were present. The two levels just below F 2 contained 21 flakes and three burned rocks. No cultural material was from 230 to 250 cmbs. A burned rock concentration (Feature 3) at the trench interface, was between 252 to 268 cmbs. Feature 3 consisted of three large tabular burned rocks (10.5 kg) and sparse charcoal in an area that measured 31 x 15 cm along the east edge of the test pit. Functional interpretation was dubious as only a small part of F 3 was exposed, but it may be part of a hearth. Three flakes were the only artifacts in association. A radiocarbon age of 4430 ± 60 was obtained on charcoal from level 27. From 270 to 290 cmbs, six flakes and a mussel shell were found whereas the following level was sterile. Recovery increased notably between 300 to 320 cmbs, with 24 flakes, 10 burned rocks, and five bone fragments. From 320 to 350 cmbs, a burned rock midden (F 4) existed as evidenced by one to two layers of burned rocks tightly spaced with sparse charcoal flecks and chunks scattered throughout (Figure 5.144). A total of 85 burned rocks, 31 flakes, three mussel shells, two bone fragments, and a untypable dart point fragment were recovered from F 4. The peak recovery was between 320 to 330 cmbs. A radiocarbon age of 4860 ± 50 was obtained on charcoal recovered from level 34, in the lower part of this feature. An identical radiocarbon age, 4860 ± 60, was obtained from a *Rabdotus* snail from level 33. Below F 4 from 350 to 360 cmbs, seven flakes were recovered.

If F 5 midden at the top of TP 1 and the buried F 6 midden in TP 2 actually represent lateral extensions of the F 1 midden explored in BT 3 and TP 4, it would make the overall size of F 1 80 m east-west x 60 m north-south. Feature 1 has been highly impacted by vandalism; however, buried parts appear undisturbed as evidenced by TP 4 results. In addition, the lower levels of F 1, in the lighter brown loam, may actually be a separate occupation that could be associated with F 2.

5.34.3 Analysis and Interpretations

5.34.3.1 Definition of Analytical Units

The four test pits yielded at least four and possibly six burned rock features, 787 pieces of lithic debitage, seven points, 24 stone tools, 123 bone fragments, two mussel shell umbos, 1804 burned rocks (509 kg), sparse charcoal and many snail shells. These materials were assigned to three general time periods - the Early, Middle and Late Archaic periods, and two unknown groups - mixed and unclassifiable. The Early Archaic is represented by a broken untypable dart point, a charcoal date of 4860 BP, and a AMS snail date of 4860 BP from F 4 between 300 and 360 cmbs in TP 1. The Middle Archaic is represented by a Nolan point, an AMS snail date of 4380 BP from F 2, and two charcoal dates of 3940 and 4430 BP from Fs 2 and 3 respectively between 150 and 290 cmbs in TP 1. The Late Archaic materials came from 20 to 80 cmbs in TP 4 and were represented by a charcoal date of 1580 BP from F 1 midden.

The mixed deposits include materials from the top 10 cm in TPs 1, 2, 3, and 0 to 20 cmbs in TP 4. A untyped dart and untyped arrow point along with recent historic items were in these levels. Unclassifiable material includes items from three different locations in TP 1, 0 to 150, 230 to 240, and 290 to 300 cmbs; TP 2, 10 to 150 cmbs; and TP 3, 10 to 110 cmbs which included a Montell point from 30 to 40 cmbs in the latter unit. These represent multiple events and could not be assigned to a particular time period because they lacked charcoal dates and/or clear stratigraphic positions.

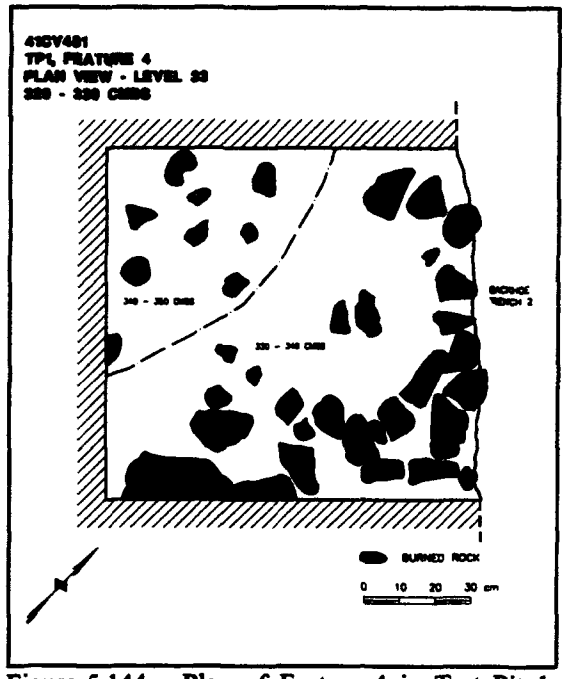


Figure 5.144 Plan of Feature 4 in Test Pit 1, 41CV481.

5.34.3.2 Early Archaic Materials

These materials include a buried burned rock midden (F 4), 61 specimens of lithic debitage, one projectile point, one stone tool, 13 bone fragments, 95 burned rocks, sparse charcoal, and some snail shells, all from excellent stratigraphic context towards the bottom of TP 1.

The 61 specimens of lithic debitage represent five identified and five unidentified chert types with 13% of the materials identifiable (Table H-289). Indeterminate light brown appears to be the dominant chert type with 11% of the unidentified materials and 43% of the total assemblage. The combined indeterminates occur in higher than expected frequency, Fort Hood Yellow occurs in expected quantity, and all others occur at less than expected quantities (Table H-290). The exclusion of the indeterminates results in all materials occurring in expected frequencies.

Although the 0.9 to 1.2 cm size category has the highest frequency of flakes, the number of flakes between 0.9 to 5.2 cm reflect more of a constant frequency or plateau. The number of tertiary flakes seems rather low at 59% (Table H-291) but when coupled with the size data indicates large tool production or the manufacture of tools that do not require fine workmanship.

The point is part of a medial and stem section of an untyped dart point made of indeterminate miscellaneous chert from in F 4 (Figure 5.145). It has a pointed tang on a obtuse shoulder, and a biconvex cross-section that does not appear to be reworked or patinated. The other stone tool is a utilized specimen of Heiner Lake Tan.

The 13 bone fragments represent medium to large animals, deer size, plus four fragments of turtle carapace (Table H-292). Two of the latter are burned whereas none of the former were burned and two of the mammal long bone fragments exhibit spiral fractures. A humerus, vertebrae, long bone fragments, and indeterminate pieces represent a deer size mammal. Only one fragment exhibits marked weathering and this is the only known Early Archaic occupation at Fort Hood to have bone preserved.

The 95 burned rocks weighed 41 kg with 86% from F 4. Feature 4 rocks included angular and tabular pieces from 4 x 3 x 2 cm up to 20 x 17 10 cm. A tiny 0.1 g of charcoal sample from this feature was unidentifiable as to wood type and yielded a $\delta^{13}C$ (-24.0 ‰) corrected assay of 4860 ± 50 BP (Beta-83353). A float sample from this feature provided about 3.4 g of light fraction from which tiny charcoal flecks were recovered but not identified. An apparent unburned *Rabdotus* section (CD-133) from TP 1, 320 to 330 cmbs with an A/I ratio of 0.062 calibrated against a standard of STD-0.30 provided an AMS assay of 4860 ± 60 BP (Beta-84206) which is statistically identical to the obtained charcoal age and therefore supports the early age of this occupation.

The age of Feature 4, a burned rock concentration, at 4860 BP indicates a Early Archaic period

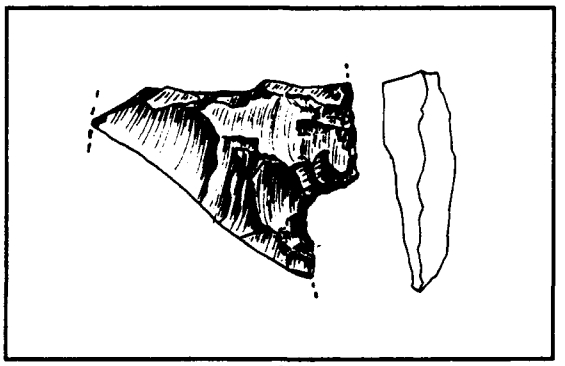


Figure 5.145 Unclassified Dart Point from Early Archaic Deposits, 41CV481.

(Prewitt 1981; 1985) but without diagnostic points, it is only a guess that this represents the Oakalla phase. The one partial point is not similar to Prewitt's key index markers - Baird or Taylor specimens for this phase, which are both triangular forms. He does mention the presence of burned rock middens at this time, and the fact that this "is probably the least well defined of the Central Texas phases" (Prewitt 1981:79). Couple this rare occurrence with the fact that this occupation also yielded rarely preserved bone and charcoal, makes this well stratified occupation lens one of significance and therefore should contribute immensely to our understanding of the peoples at this time.

5.34.3.3 Middle Archaic Materials

These material include at least two burned rock features, 318 specimens of lithic debitage, one projectile point, five stone tools, 32 bone fragments, a mussel shell umbo, 1,053 burned rocks (389.6 kg, charcoal, and snail shells stratigraphically above the Early Archaic materials in TP 1.

The 318 specimens of lithic debitage represent seven identified and nine unidentified chert types with approximately 8% of the materials identifiable (Table H-293). Both Heiner Lake Tan and Fort Hood Yellow outnumber the rest of the identified materials at 32% each. Indeterminate light brown

debitage dominates both the unidentified materials and the total assemblage at 50% and 46%, respectively. The combined indeterminates occur in higher than expected frequency, while all other types occur in less than expected frequency (Table H-294). The exclusion of the indeterminates, Heiner Lake Tan and Fort Hood Yellow occur in higher than expected frequencies, while all other types occur in expected frequencies.

The modal peak for size occurs at the 1.2 to 1.8 cm category (67.9%) with an almost equal drop off to both ends of the size spectrum. Like the Early Archaic materials, the percentage of tertiary flakes is quite low at 61% (Table H-295), but consistent with a composite experimental sample of both core and biface reduction (Tomka 1990:222).

The one point is a blade and stem section of a Nolan made of light brown chert. The five tools consist of two spokeshaves, a utilized flake, an edge modified flake, and a medial section of a finished biface (Table H-296). These material types reflect those represented in the lithic debitage and may indicate these tools were produced here.

The 32 bone fragments represent mostly large to very large mammals (Table H-297). Six specimens are burned, but none show spiral fractures. Most specimens are unidentifiable long bone fragments with some vertebrae, a scapula, rib, and astragulas present. A single umbo, identified as *Tritigonia verrucosa*, indicates limited reliance on this resource and implies large game served as the principle food resource. All but the umbo and one long bone fragment were associated with Feature 2 midden, whereas the former were associated with hearth Feature 3.

The 1,053 burned rocks weighed 389.6 kg with 99% of those from Feature 2 midden and the rest from burned rock concentration Feature 3. A 4.3 g charcoal sample from Feature 3 was of indeterminate wood and yielded a $\delta^{13}C$ (-26.7‰) corrected assay of 4430 ± 60 BP (Beta-83526). Stratigraphically above Feature 3, in the lower part of Feature 2, a 3.8 g charcoal sample was identified as Oak wood and yielded a $\delta^{13}C$ (-26.2‰) corrected assay of 3940 ± 220 BP (Beta-83425). A float sample provided 1.5 g of light fraction that yielded one carbonized seed of Goosefoot and five tiny unidentified wood fragments. A single, apparently unburned *Rabdotus* snail section (CD-119) from TP 1, 200 to 210 cmbs with an A/I ratio of 0.0633 calibrated against a standard STD-0.30 provided a AMS assay of 4380 + 60 BP (B84205). This result is similar but older than the age obtained on a charcoal sample but still supports the Middle Archaic age of this cultural event.

The age of Feature 3, at 4430 BP, places this event in the Clear Fork phase with diagnostic Nolan and Travis points (Prewitt 1981; 1985). This feature is stratigraphically 50 cm below the base of Feature 2 midden dated at 3940 which would place the latter in the Marshall Ford phase with Bulverde points. However, the lower part of the midden (200 to 210 cmbs) yielded a Nolan point and may indicate that the Clear Fork phase continued longer than previously thought by Prewitt (1981; 1985). Feature 2 is the best candidate encountered during the two testing seasons (1993-94 and 1994-95) at Fort Hood for a buried burned rock mound, only because a slight hump in the top part of the midden was observed in the profile.

5.34.3.4 Late Archaic Materials

These materials include burned rock midden Feature 1, 94 pieces of lithic debitage, one stone tool, 15 bone fragments, 149 burned rocks, charcoal, and many snail shells with Feature 1. This midden, partially exposed on the surface, has suffered extensive vandalism.

The 94 specimens of lithic debitage represent five identified and seven unidentified cherts with 19% of the materials identifiable (Table H-298). Gray/Brown/Green dominates the identified materials with 44.4%, while the light brown debitage dominates in the indeterminate cherts. The relative high numbers of Gray/Brown/Green and Fort Hood Yellow cause the dominating

presence of North Fort cherts over the Southeast Range materials. As would be anticipated, the combined indeterminates occur in statistically higher than expected frequency, while all others occur at less than expected amounts (Table H-299). The exclusion of the indeterminates results in Gray/Brown/Green occurring in higher than expected amounts and all others occurring in expected frequency.

The modal peak for size occurs at the 1.2 to 1.8 cm category with an almost even drop off rate to both ends of the size spectrum. Seventy-one percent of the materials are smaller than 1.8 cm in size. Over three-quarters of the debitage is tertiary with one rejuvenation flake present in this category (Table H-300).

The single stone tool is an edge modified flake made of indeterminate light brown chert. This material type dominates the debitage category.

The 15 bone fragments represent mostly large to very large mammals (n=9) although all may be from a bison size animal (Table H-301). A metatarsal and radius were identified with most being portions of long bones with the radius from an antelope (*Antilocapra americanus*). Five pieces were burned with three revealing spiral fractures, the latter including the radius.

The 149 burned rocks weigh 20 kg with all from the midden deposit in TP 4. A tiny 0.05 g charcoal sample from TP 4, 50 to 60 cmbs was of unidentifiable wood and provided a $\delta^{13}C$ (-26.7‰) corrected assay of 1580 ± 60 BP (Beta-83527). Two float samples from TP 4, 20 to 30 and 60 to 70 cmbs provided 4.3 g and 3.3 g of light fractions yielded only tiny flecks of carbonized wood from the upper sample and no carbonized material from the lower sample.

The obtained age of 1580 BP for F 1 midden places this into the Twin Sisters phase dominated by Ensor points (Prewitt 1981; 1985). Unfortunately no projectile points were recovered from our testing. Burned rock middens of this age are relatively common in Fort Hood, but Prewitt (1981; 1985) did not list them for this time period. Therefore, middens of this age are a relatively recent addition to this phase and provide an important feature which could shed light on this activity.

5.34.3.5 Mixed Components

These materials include 63 pieces of lithic debitage, two projectile points, nine stone tools, 11 bone fragments, 111 burned rocks and snail shells which are all from disturbed context in the top part of F 1 midden.

The 63 specimens of lithic debitage represent five identified and seven unidentified chert types with 13% of the materials identifiable (Table H-302). No identifiable materials dominant. Among the indeterminates, light brown, mottled, and white chert are in nearly equal amounts at 24%, 22%, 20%, respectively. The combined indeterminates occur in higher than expected frequency and all others occur in less than expected frequency (Table H-303). The exclusion of the indeterminates results in all types occurring in expected frequencies. The modal peak for size is the 1.2 to 1.8 cm category (36.5%) with almost equal drops to both ends of the size spectrum. Seventy-three percent of the materials are tertiary, while an additional 25% have partial cortex (Table H-304).

The two points include a distal dart fragment of indeterminate light brown chert from TP 4, 0 to 10 cmbs and a medial section of an arrow point of indeterminate light brown from TP 4, 0 to 10 cmbs. The nine tools consist of five utilized flakes, two edge modified flakes, a finished biface section and a complete Type A chopper (Table H-305). These were manufactured from Heiner Lake Tan (n=2), Gray/Brown/Green (n=2), indeterminate light brown (n=2), indeterminate miscellaneous (n=2), and Fort Hood Yellow (n=1).

The 11 bone fragments represent mostly large to very large mammals with a deer tooth positively identified (Table H-306). One medium size

mammal is represented by one unburned long bone fragment. These bones are similar to those found in better context in midden F 1. The 111 burned rocks weigh 13.2 kg and were once part of the midden deposit although presently out of context.

5.34.3.6 Temporally Unspecified Materials

These materials include 248 specimens of lithic debitage, three points, eight other stone tools, 52 bone fragments, and 396 burned rocks from five different proveniences in three TPs. The 248 specimens of lithic debitage represent eight identified and nine unidentified chert types with 10% of the materials identifiable (Table H-307). The high amount of Gray/Brown/Green (29.6%) results in the North Fort chert province having a dominating effect; light brown materials dominate the indeterminate. The combined indeterminate occur in higher than expected frequency, while all others occur in less than expected frequency (Table H-308). The exclusion of the indeterminates results in Gray/Brown/Green occurring in higher than expected frequency, while all others occur in expected amounts.

The modal peak for size if the 0.9 to 1.2 cm category with 28.6% of the materials; the drop-off rate is more gradual to the higher end of the size spectrum. Ninety-two percent of the materials are less than 2.6 cm in size. Over three-quarters of the materials are tertiary with another 22% having partial cortex (Table H-309).

The three points include a medial arrow fragment from TP 2, 60 to 70 cmbs, a complete Montell from TP 3, 30 to 40 cmbs, and a proximal Marshall from BT 2 backdirt (Table H-310). The eight other tools include three edge modified flakes, two late stage bifaces, two utilized flakes, one spokeshave (Table H-311).

The 52 bone fragment are unidentifiable fragments dominated by large to very large mammals (bison size) with one piece possibly from a small to medium size animal (Table H-312). Only four pieces were burned with none clearly indicating spiral fractures. These cultural items may various time periods but could not be confidently assigned to one particular period because they lacked diagnostics and associated absolute dates.

5.34.3.7 Investigation of Amino Acid Epimerization of *Rabdotus* Snail Shells

As part of the continuing investigation of the utility of amino acid epimerization to questions of chronology and site integrity, a stacked sequence of *Rabdotus* shells, consisting of 6 to 8 shells from each vertical provenience, were selected and analyzed from Levels 3 (F 5), 10 (colluvium), 21 (F 2), 25 (colluvium above F 3), and 33 (F 4) in TP 1. The individual assays results are illustrated in Figure 5.146 and presented in Appendix C.

A suite of eight shells from TP1, Level 3 (F 5) yielded A/I ratios ranging from 0.0465 to 0.36, with all but one of the shells ranging from 0.0465 to 0.0682. These seven values formed three "loose clusters" with mean ratios of 0.0471 (2 shells), 0.0533 (1 shell) and 0.0651 (4 shells). The two lowest ratios were taken as the best nominal estimate of the time of deposition, and equate to mean approximate radiocarbon-equivalent ages of 1321 BP and 1725 BP using the methods of Ellis et al. (1995) and Abbott et al. (1995), respectively. The poor clustering at the low end of the assemblage, combined with the paucity of obviously heated shells, suggests that the majority of shells may represent colluvially-reworked individuals spanning up to 800 years. This suggests that the feature, too, may represent colluvial reworking of a dense burned rock feature upslope. This interpretation is consistent with the poor definition of the feature, which was not recognizable in section in the backhoe trench and was only defined based on burned rock density in the adjacent test pit.

The interpretation that the upper feature (F 5) represents colluvial reworking from a midden upslope is considerably strengthened by the snail suite from Level 10. These eight shells yielded A/I ratios ranging from 0.0314 to 0.0683, with

seven of the snails forming a loose cluster between 0.0314 and 0.0403. All seven of these values are lower than the lowest value obtained from the suite in Level 3, and equate to a mean radiocarbon-equivalent age of approximately 880 BP using the method of Ellis et al. (1995) and 1150 BP using the method of Abbott et al. (1995). The spread in values in the cluster is equivalent to approximately 400 years, which is consistent with slow colluvial accumulation of the stratum.

Eight shells from level 21, in the lower part of F 2, yielded epimerization ratios between 0.0585 and 0.0817. Seven of these shells formed a loose cluster of A/I ratios between 0.0585 and 0.0735, which equates to a mean radiocarbon-equivalent age of roughly 2035 BP using the method of Ellis et al. (1995) and 2650 BP using the method of Abbott et al. 1995. Given that a radiocarbon age from the next level down (level 22) yielded an age of 3940 ± 220 BP, it is likely that both of these estimates are considerably too young.

A series of six shells submitted from level 25 also appear to yield an anomalously young ages. The A/I ratios from these six specimens ranged from 0.0611 to 0.205, with the three smallest ratios forming a loose cluster with a mean value of 0.0636. These values equate to a mean radiocarbon-equivalent age of roughly 1920 BP using the method of Ellis et al. (1995) and 2500 BP using the method of Abbott et al. (1995). In contrast, a radiocarbon age from two levels deeper (level 27) yielded an age of 4430 ± 60 BP. Given the stratigraphically-normal radiocarbon samples from levels 22 and 27, the epimerization ratios are clearly too young; significantly, they represent a slight reversal from the mean of the A/I sample in level 22, even though the lowest ratio is slightly larger than the lowest ratio from the level 22 sample. The remaining three shells exhibited considerably higher ratios (0.118 to 0.205), but not so high that heating was clearly indicated over colluvial reworking.

An even clearer reversal is indicated by the eight-shell suite from level 33 in F 4, which yielded A/I ratios ranging from 0.0549 to 0.6. The lowest five of these values form a loose cluster with a mean ratio of 0.0595, which equates to a mean radiocarbon-equivalent age of roughly 1770 BP. In contrast, charcoal from level 34 yielded an age of 4860 ± 50 BP, clearly indicating that the epimerization estimate is too young by more than a factor of two. Once again, an age reversal is indicated by comparison of the suite with the next suite up in the profile, although the reversal is even more pronounced because the two lowest ratios are significantly lower than the lowest value from the level 25 suite. The final three values in the suite are considerably higher, suggesting that they are probably attributable to heating.

Although the full implications of this stacked sequence are discussed more thoroughly in Section 7.4, the two most important implications bear mention here. First, the data from the upper profile are strongly suggestive of colluvial reworking as the origin of the upper burned rock midden (F 5). Second, the data provide clear evidence that deeply buried snails are affected by factors that make them unreliable chronometric indicators using the two extant formulae (i.e., Ellis et al. 1995 and Abbott et al. 1995). The divergence of the dates indicated by radiocarbon dates on charcoal and by epimerization suggests that some combination of deep burial, groundwater cooling, and selective leaching of amino acids by groundwater results in a slowing in the apparent rate of epimerization relative to the rate predicted by the two regression equations. Nevertheless, even when the age estimate is hopelessly skewed by these factors, the data still appear to provide valuable information about the potential integrity of archeological assemblages.

5.34.4 Conclusions

This site's alluvial deposits are very gravelly and appear to contain a substantial, albeit variable, colluvial component. These deposits represent a stacked sequence of two fills separated by a clear bounding surface at approximately 300 cmbs, and are interpreted as the Fort Hood and West Range

units of Nordt (1992). The most notable part of the site's depositional environment, however, is the thick colluvial wedge preserved upslope of the terrace. The geometry of deposition suggests that this thick (more than 4 m) sequence of deposits accumulated in tandem with the alluvial fill, although much of the basal part of the section could predate the alluvial episode. This colluvial sequence represents a rather exceptional depositional environment on Fort Hood, and has the potential to address many of the outstanding questions about episodes of upland and slope instability during the Holocene. More importantly, the depositional sequence contains at least three relatively intense occupation periods in discrete stratigraphic context, and thus has considerable research potential.

The considerable depth of TP 1 exhibits an Early, Middle and Late Archaic sequence which contains multiple intact features and sparse associated cultural material. The Early Archaic occupation here provides a rare sample of faunal remains not preserved at other localities of this age at Fort Hood. Feature 2, a Middle Archaic midden deposit, may in truth be a burned rock *mound* and not just another midden, but no matter what term is used to describe F 2, it is an apparent intact buried Middle Archaic feature.

On the basis of the above, Subareas A and B of site 41CV481 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because some of the known eligible components are relatively shallowly buried and are conducive to looting, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent manual excavations or surface disturbances by military personnel during training exercises, and minimize the impact of traffic on the alluvial surfaces.

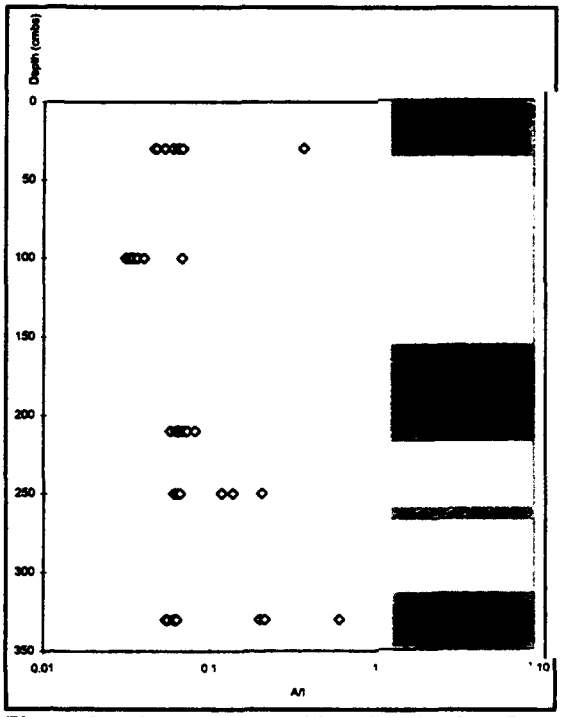


Figure 5.146 Amino Acid Epimerization Data from 41CV481.

5.35 SITE 41CV484

In December 1994 and early January 1995, we conducted formal test excavations at prehistoric archeological site 41CV484. Testing was designed to evaluate eligibility for inclusion to the NRHP. Five trenches were mechanically excavated and two test pits (2.5 m^3) were hand dug. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.35.1 Introduction

5.35.1.1 Site Location and Description

Site 41CV484 is in Fort Hood Training Area 44. The site is delimited by Clabber Creek to the south and a moderate to steep colluvial bedrock slope to the north (Figure 5.147). Shallow north to south

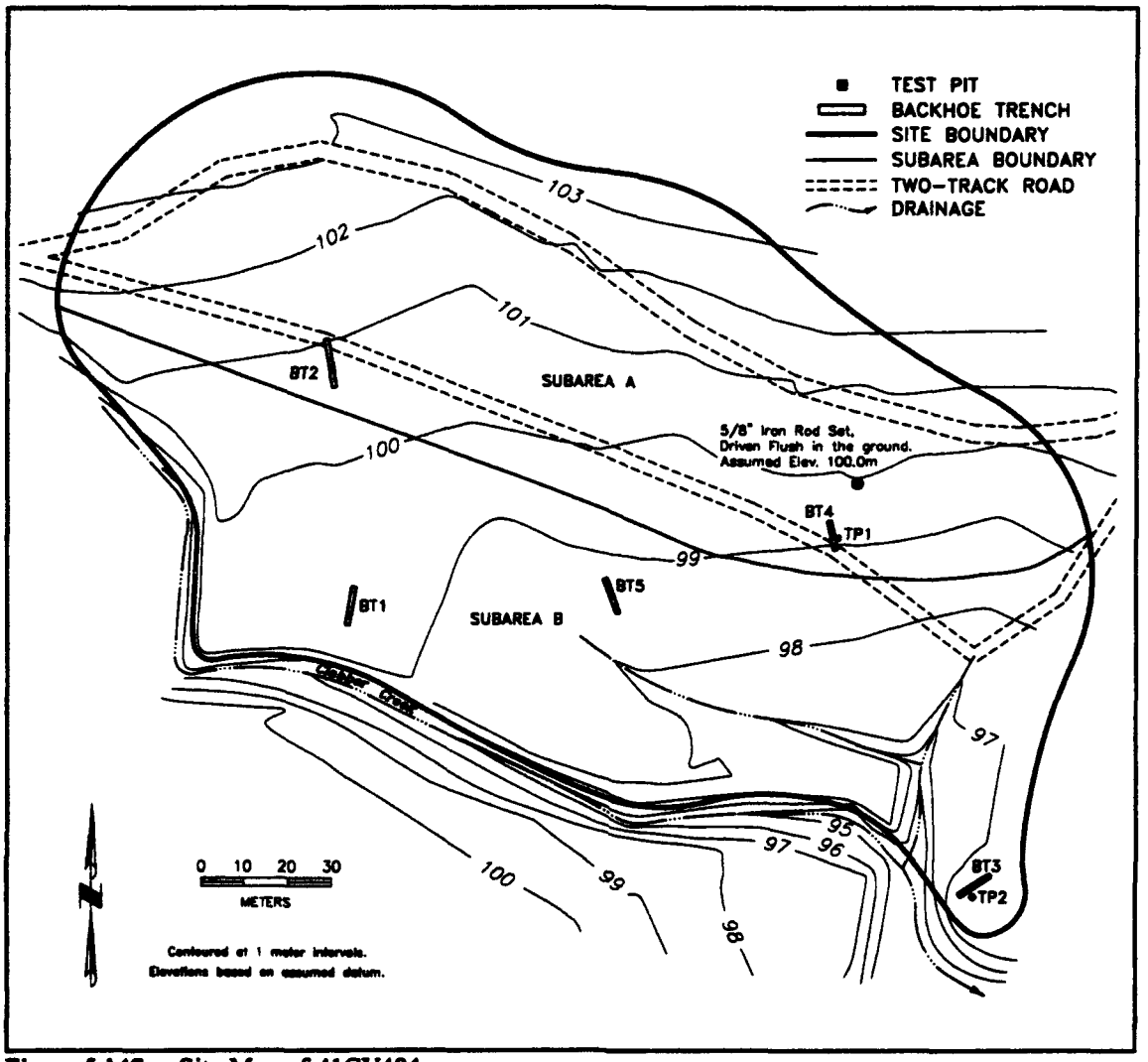


Figure 5.147 Site Map of 41CV484.

trending drainages bisect the site, with a tank trail paralleling the northern and western site boundaries. Maximum site dimensions, as defined in 1993, measure 150 x 70 m with a northwest-southeast axis, and cover an area of 1.0 hectare (2.5 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.35.1.2 Previous Work

Bement and Nightengale first recorded the site on 30 March 1981. A dense burned rock and flake scatter was noted along the western site margin, with a light lithic scatter observed across the remainder of the site. Two burned rock concentrations were identified and possible hearths were also noted (locales were not given). Three biface fragments, two unifacial end scrapers, and an Angostura projectile point were collected.

Depth of deposit was estimated at less than 10 cm thick, and the site was estimated to be 30% impacted by erosion, a road, and military activities. A large burned rock midden site was noted across Clabber Creek.

On 15 January 1986, Moore and Strychalski monitored the site. The site was considered a chert field with a few lithics noted and no evidence of burned rock observed. The site was considered to be impacted about 70% by erosion, a road, and military activities.

On 7 April 1992, Doering and Truesdale evaluated the site based on geomorphic context and delineated two subareas. Subarea A consists of a colluvial slope that had undergone extensive sheet erosion and possible cultivation. A weakly developed soil was formed across the slope, with debitage and burned rocks scattered across the surface. Subarea B includes the alluvial terrace (T_1) of Clabber Creek. Cutbank exposures revealed a deposit of two facies which included about 1.5 m of overbank fines which overlay 1.5 m of coarse channel gravels, and in the fine grained facies a moderately developed soil had formed and was tentatively correlated with the Fort Hood alluvium of Nordt (1992). A few lithics were noted on the surface, and shell and bone were observed in the cutbank exposure (depths and locations not noted). Because of the potential for buried deposits, a crew excavated 12 shovel tests, six in each subarea. Three tests in Subarea A contained very infrequent cultural material, and three tests in Subarea B also contained a light density of artifacts. The site contained potential for deeply buried archeological deposits, below the limits of shovel testing and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to consist of three trenches in order to prospect for deeply buried cultural material (Trierweiler 1994:A926-A928).

5.35.1.3 New Work

Because the site was potentially in an endangered species habitat (Figure 5.148), it was field checked on 17 November 1994 by Gil Eckrich (Fort Hood, Fish and Wildlife). Upon inspecting the areas in which excavations were to be undertaken permission was granted for work to proceed.

Formal testing was completed in early January 1995. A total of five backhoe trenches were excavated to examine internal stratigraphy and prospect for buried cultural material, and two test pits (TPs 1 and 2) were manually excavated to recover artifacts and samples. Two trenches (BTs 2 and 4) and one unit (TP 1) were dug in Subarea A, with three trenches (BTs 1, 3, and 5) and one unit (TP 2) dug in Subarea B. The excavated units and depths are presented in Table 5.67.

5.35.2 Results

5.35.2.1 Excavations in the T_1 Terrace

The site spans a gently sloping surface that extends from the base of the steep Manning surface slope to the channel of Clabber Creek. Trenches 1 and 3 were excavated on the lowest part of the surface, adjacent to the Clabber Creek, on areas that were practically level. No cultural material was observed in either trench. Both trenches encountered gravelly late Holocene alluvium that is probably equivalent to the Ford or Upper West Range fills of Nordt (1992). The profiles exposed in these two trenches were very similar, although BT 1, which is farther upstream nearer the point where widening of the canyon results in flow expansion in the channel and more high-energy overbank flooding than occurs farther downstream, exhibits a more gravelly profile. Both exposures exhibited an Ap-AB-Bkss profile. The Ap horizon consisted of black (10YR 2/1), granular gravelly loam and extended to about 25 cm. The underlying AB horizon was roughly 1 m thick and consisted of very dark grayish brown (10YR 3/2) blocky gravelly clay. Neither the Ap or AB horizons exhibited any evidence of secondary



Figure 5.148 View West with Test Pit 1 in Foreground, 41CV484.

carbonate accumulation, but both were very moist at the time of recording and it is possible that some fine filaments might have been observable if the material was dry. The Bkss horizon ranged from a very gravelly clay loam with abundant gravels floating in a clay loam matrix to a clast-supported clayey gravel with a dense interstitial matrix of clay loam. The clay loam was dark gray (10YR 4/1) and exhibited a very strong angular blocky structure, with common well-developed slickensides.

Offset from the east wall of BT 3, TP 2 was manually excavated to 140 cmbs. One small burned rock was noted in level 5, with all other levels culturally sterile (Table 5.68).

Trench 5 was 25 to 30 m north of the creek and roughly equidistant between BTs 1 and 3. Trench 5 consisted of an upper fine-grained deposit interpreted as late Holocene material resting unconformably on an older gravel that is tentatively correlated with the older fill exposed in BTs 2 and 4. The upper deposits consisted of about 1 m of very dark brown (10YR 2/1) to very dark grayish brown (10YR 3/2), weak blocky gravelly sandy clay loam exhibiting an Ap-Bw profile. The underlying gravels (2Ck horizon) were predominantly clast-supported and contained in a massive, sandy to loamy interstitial matrix. The fine-grained matrix was reddish yellow (7.5YR 7/5) with abundant distinct reddish and whitish mottles, and contained common secondary carbonate as masses and clouds in the matrix and pendantic coats on the coarse clasts. No cultural

Table 5.67 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	7	0.8	1.3	T1 terrace
BT 2	10	1.5	3.5	slope
BT 3	8	0.8	1.5	T1 terrace
BT 4	5	0.8	1.0	slope
BT 5	7	0.8	1.0	T1 terrace
TP 1	1.00	1.00	1.10	slope
TP 2	1.00	1.00	1.40	T1 terrace

Table 5.68 Artifact Recovery by Test Pit, 41CV484.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	4	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	5-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	2		
2	1-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	1	0.1	0	0	0	0	0	0	0	-	unspec.
	6-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.1	0	0	0	0	0	0	0		

material was observed in either the overlying fine-grained material or the older gravels.

5.35.2.2 Excavations in the Colluvial Slope

In the trenches excavated farther up the surface, an older depositional unit was observed. This was tentatively interpreted as an admixture of alluvium equivalent to the Fort Hood fill of Nordt (1992) and contemporary fine-grained colluvium. Although the general morphology of the sloping surface suggested that the margin of the valley was probably overlain by a relatively thin veneer of sediments, in BT 2 these older deposits proved surprisingly thick, extending to at least 350 cm. This trench appeared to be the most purely alluvial deposit, with fine-grained colluvium largely limited to more recent material overlying the alluvium in the upper 70 cm of the section. However, no clear truncation surface or buried paleosol was identified separating the dominantly alluvial body of the fill from the dominantly colluvial veneer, suggesting that the profile was truncated and the subsequent material welded to the upper alluvial profile by soil development. Overall, the trench exhibited an Ap-Bk-Bkg profile. The Ap and Bk horizons comprised the more recent material, and were limited to the upper 70 cm of the trench. They graded from very dark brown (10YR 2/2) to light yellowish brown (2.5Y 6/3) with depth, and consisted of massive to weak blocky silty clay loam containing very little gravel. The underlying alluvial deposits consisted of slightly gravelly silty clay loam that graded into very gravelly silty clay loam about 300 cmbs. This material exhibited a weak blocky structure and was predominantly light yellowish brown (10YR 6/4), although abundant, distinct grayish and orange redox mottles were common throughout. Fine carbonate filaments were common from about 35 through 300 cmbs. No cultural material was observed in the trench.

Trench 4 was excavated about 80 m east of BT 2. This trench exhibited a thinner profile developed in deposits that appeared to be roughly equivalent to the deposits in BT 2, although possibly containing more incorporated colluvium. Overall, the trench exhibited an Ap-Bwk-Ck profile about 120 cm thick. The Ap horizon was 35 cm thick and consisted of brown (10YR 4/3), granular gravelly sandy clay loam. It contained a few dispersed flakes and burned rocks, although none appeared to

be in primary context. The Bwk horizon consisted of brown (10YR 4/3), weak blocky gravelly sandy loam and contained carbonate filaments, fine nodules, and fine soft masses. The Ck horizon consisted of very pale brown (10YR 7/3) massive loamy gravel, and exhibited common carbonate filaments and thin pendantic coats on the coarse clasts. No cultural material was observed in the trench profile below the plow zone. Test pit 1 was offset from the east wall of BT 4 and was excavated to 100 cmbs. One flake and two stone tools were in levels 3 and 4, and no cultural material was recovered elsewhere (Table 5.66). Stone tools included one finished biface and one utilized flake. A few rounds of expended ammunition were also noted in levels 2 and 3. From their orientation, these appeared to be fired point-blank into the ground.

5.35.3 Analysis and Interpretations

Because of the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. Test pit 1 provided minimal cultural material that included only one specimen of debitage and two tools, a utilized flake and a finished biface, plus eight snail shell samples were collected. The lithic debitage piece was identified as an indeterminate white chert, 0.9 to 1.2 cm in size, and exhibited no cortex. The finished biface was manufactured from an unidentified white chert, whereas the utilized flake was of an unidentified mottled chert. Test pit 2 yielded only one tiny burned rock (0.1 g) and no other cultural material.

5.35.4 Conclusions

Two alluvial units, tentatively correlated with the late Holocene Ford or upper West Range and the early-middle Holocene Fort Hood alluvium of Nordt (1992), respectively, were observed in trenches excavated. The thickness of the older unit was unexpected given the sloping, colluvial appearance of the extant surface, and indicates that Clabber Creek has shifted considerably to the south since the early-middle Holocene. The character of the older fill suggests that it is composed primarily of alluvium, but also probably contains a contemporaneous colluvial component. No cultural material was observed below the plow zone in any of the trenches. The manual excavations failed to detect any significant cultural deposits.

On the basis of the above, we conclude that site 41CV484 contains no significant archeological materials. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

5.36 SITE 41CV493

In November and December 1994, we conducted formal archeological test excavations at prehistoric cultural resource site 41CV493. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. One trench was dug by a backhoe and two test pits (1.0 m^3) were hand excavated. Test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further cultural resource management is recommended.

5.36.1 Introduction

5.36.1.1 Site Location and Description

Site 41CV493 is in northwestern Fort Hood, in Training Area 44. This burned rock and lithic scatter site is on the south side of an unnamed tributary of Brown's Creek (Figure 5.149). Minimum site dimensions, as defined in 1993, measure roughly 400 x 200 m with a northwest-southeast axis, and cover about 8 hectares (19.8 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

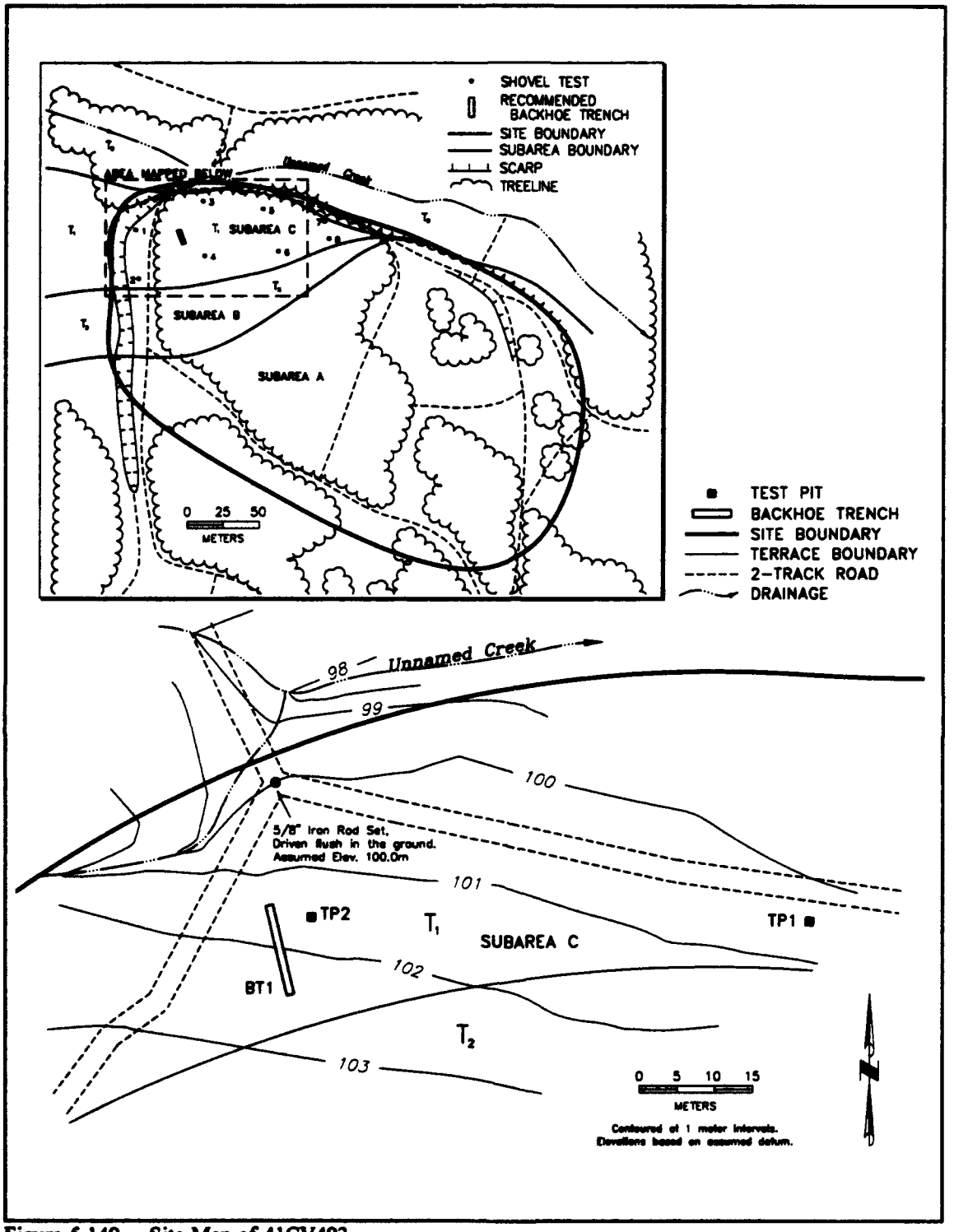


Figure 5.149 Site Map of 41CV493.

5.36.1.2 Previous Work

Chris Nightengale first recorded the site on 16 April 1981. Material scattered across the site surface included debitage, unifaces, bifaces, scrapers, a dart point, and a quartzite hammerstone (collected). Site size was recorded as 190 x 80 m and depth of deposit was estimated at less than 10 cm with a matrix of gravelly clay. An estimated 5 to 10% of the site was impacted by a road. On 8 January 1986, Moore and Strychalski monitored the site. The original site dimensions were enlarged to 225 x 125 m and the site was considered to be impacted 15% by roads and erosion (Kock and Mueller-Wille 1989b). Moore and Strychalski considered the site "very productive site in terms of artifacts found," with natural chert also noted on the surface. The site was on a steep slope and most material was exposed in deflated areas. Eight dart points were collected. The site was rerecorded by Dureka, Kooren, Davis, and Rodriguez on 12 May 1986. At this time, an adjacent quad south of 41CV493 was surveyed. Burned rocks and flakes were noted in the vicinity south of the site, therefore the previously recorded southern site boundary was expanded to encompass this material. The area was estimated to be impacted 60% by vehicular traffic and erosion.

On 24 February 1993, Kleinbach and Abbott revisited and rerecorded the site based on archeological potential and geomorphic context. The site was divided into three subareas. Subarea A, an upland area which comprises the majority of the site, consisted of a moderately sloping limestone footslope that was partially overlain by a thin mantle of colluvium and slopewash. This surface has experienced widespread stripping in some areas and sheet erosion elsewhere. A low density of scattered flakes, burned rocks, and a few bifaces observed, with an untyped dart point fragment collected. Since Subarea A was an erosional surface that lacked deposits with the potential to contain intact cultural components, no further work was recommended in that area.

Subarea B subsumes a strongly beveled Pleistocene terrace in the western half of the site. As a result of the beveling, successively deeper horizons from the original soil crop out at the surface as one moves downslope. Again, a light scatter of burned rocks, flakes, and a few bifaces were observed on this terrace. Like the bedrock surface, Subarea B was mantled with a thin, discontinuous sheet of slopewash that was unlikely to preserve cultural material in any spatial or stratigraphic context. No further work was warranted in Subarea B.

Subarea C consists of a strongly sloping Holocene terrace that graded, almost imperceptibly, into the beveled Pleistocene terrace upslope and leveled out to become the modern floodplain downslope (Figure 5.150). However, unlike the Pleistocene fill (Subarea B), there was good potential for cultural material to be well-preserved in the Holocene fill. Exposures were relatively poor and it was unclear whether more than one Holocene fill was present. Debitage was observed along the fringes of the subarea and on a road located near the western site margin. Based on the potential for the terrace to contain buried cultural deposits, shovel testing was conducted on 24 February 1993. Three (38%) of eight shovel tests were positive, yielding two flakes and one burned rock from surface to 30 cmbs. Although the results of shovel testing indicated that Subarea C had limited archeological potential in the upper 40 cm of deposit, the context of cultural remains from deeper Holocene deposits was unknown. Therefore formal testing of Subarea C was recommended to determine eligibility. Recommended testing effort was one trench and two square meters of manually excavated test pits (Trierweiler 1994:A929-931).

5.36.1.3 New Work

On 17 November 1994 Gil Eckrich (Fort Hood, Fish and Wildlife) field checked the site's location since it was possibly within the endangered species habitat. Upon inspecting the areas in which excavations were to be undertaken, Gil Eckrich granted permission for work to proceed. Formal



Figure 5.150 View East Across Subarea C, 41CV493.

testing of Subarea C was completed 29 December 1994. One trench (BT 1) was excavated to examine site stratigraphy and prospect for buried cultural material and two isolated test pits were excavated to obtain a representative sample of cultural material. Unit size and depth are presented in Table 5.69.

5.36.2 Results

Trench 1 was excavated near the northwest site margin, approximately 20 m west of a road cut and perpendicular to the unnamed creek in T_1 deposits. The trench revealed an A-Bw-2Bk-2B2k profile developed in slopewash and beveled Pleistocene alluvium. The A horizon was 15 cm thick and consisted of very dark grayish brown (10YR 3/2) granular loam containing abundant organic matter and a few dispersed burned rocks. The Bw horizon was 25 cm thick and consisted of brown (10YR 4/3) massive sandy loam. It too contained a few dispersed burned rocks that probably represent colluvial reworking of a cultural occupation upslope. The underlying horizons consisted of Pleistocene alluvium. The 2Bk horizon was 65 cm thick and consisted of massive, very pale brown (10YR 7/4) fine sandy silt. It contained common carbonate filaments and medium hard nodules, some of which may actually represent limestone lithoclasts. The 2B2k horizon consisted of very pale brown (10YR 8/3) massive silty gravel containing carbonate films, filaments and some small rhizoliths.

Test Pit 1 was placed near the eastern margin of the subarea, 5 m south of a road in which a few burned rocks were exposed. One flake was recovered from the surface of the unit; no other cultural material found in levels 1-3 (Table 5.70).

Table 5.69 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	12	0.8	1.2	T1 terrace
TP 1	1.00	1.00	0.30	T1 terrace
TP 2	1.00	1.00	0.70	T1 terrace

Table 5.70 Artifact Recovery by Test Pit, 41CV493.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	2-3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	0		
2	1-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	0	0	0		

Gravels were noted in each level, with an increase in size and frequency of both occurring with depth. The unit was terminated at 30 cmbs at what appeared to be Walnut Clay regolith.

Test Pit 2 was located about 5 m east of the northern edge of BT 1 and was dug to 70 cmbs. No cultural material was recovered. The profile in this unit was similar to BT 1.

5.36.3 Analysis and Interpretations

Because of overall gross similarity in context at BT 1 and TPs 1 and 2, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. The two test pits yielded only a single piece of lithic debitage with no burned rock or other cultural items. The one piece of debitage is of indeterminate white chert with partial cortex and 2.6 to 5.2 cm in size. It is not diagnostic of any time period.

5.36.4 Conclusions

The backhoe trench into the T_1 terrace documented a beveled Late Pleistocene fill mantled with a thin veneer of Holocene slopewash shed off the T_2 terrace. Although a few dispersed burned rocks were observed in the Holocene veneer, no intact cultural strata were documented in TPs 1 and 2.

We conclude that site 41CV493 contains no significant archeological materials in good context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

5.37 SITE 41CV495

In September 1994, we conducted formal test excavations at prehistoric archeological site 41CV495. Testing was designed to evaluate eligibility for inclusion to the NRHP. Seven backhoe trenches were mechanically excavated and five test pits totaling 5.8 m^3 were hand dug. Test excavations demonstrate the presence of intact, buried cultural components of the Middle and Late Archaic periods which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.37.1 Introduction

5.37.1.1 Site Location and Description

Site 41CV495 lies in the northwestern sector of Fort Hood in Training Area 48. It is a prehistoric open camp on a deflated upland and Holocene terrace north of Browns Creek (Figure 5.151). The site dimensions, as defined in 1993, measured 500 x 225 m with an east-west long axis, and cover an area of 11.3 hectares (27.9 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.37.1.2 Previous Work

This site was initially visited by Bement on 17 April 1981 and was recorded as a lithic scatter with burned rock concentrations. One Gary point was collected and a Travis, a Pedernales, bifaces, burned rock, and lithics were observed. The site was estimated to be 12% disturbed by erosion, roads, and vehicular traffic. No site dimensions were recorded but Bement noted it extended into neighboring quads to the north and west.

Masson recorded the site on 12 April 1985 as an open camp and lithic working site. Dart and arrow points, including a Scallorn, a Darl and three untyped dart points, scrapers, and a ceramic sherd were collected, and debitage and burned rock were observed. This area was estimated to be 58% disturbed by the same impacts noted by Bement.

On 13 January 1986, Moore and Strychalski monitored the site and collected three dart points and an end scraper. Scattered flakes were observed near Browns Creek and the site boundary was expanded to incorporate that area. The final site dimensions were recorded as 380 x 270 m, which resulted in this site being classified as a Lithic Resource Procurement area for management purposes on the basis of size, despite the absence of a significant chert resource.

Kleinbach and Abbott revisited the site on 10 May 1993 and divided it into two subareas based on the potential for intact cultural deposits and geomorphic context. Subarea A was defined as a sloping, pediment-like part of the intermediate (Killeen) upland roughly 5 to 15 m above the stream and may represent a strath surface cut during the late Pleistocene. It is mantled with a relatively thick (typically 20 to 50 cm) black clay soil that appears largely derived from in situ development and colluvial/slopewash reworking of soil from further upslope. This area has been intensively impacted by tracked and wheeled vehicle traffic, gullying and sheet erosion (Figure 5.152). No further work was recommended for Subarea A.

Subarea B was defined as two distinct, spacially separate Holocene terraces. The higher of these two surfaces (T_{1A}) is at the southeastern margin, is 4 to 5 m above the stream and was labeled as Management Unit 3. The lower terrace (T_{1B} or T_r) lies 2 to 3 m above the stream at the western end and was subsequently designated Management Unit 2. These alluvial terraces reveal good potential to contain archeological materials in good context and where slated for shovel testing.
A crew returned on 13 May 1993 and excavated 36 shovel tests to no deeper than 40 cmbs. While no cultural material was recovered in any of these shallow shovel tests, the archeological potential of deeper deposits remained unknown. Recommendations for deep deposit exploration and NRHP eligibility determination for Subarea B included 2 to 4 m_2 of manually excavated test pits based on the results of three trenches (Trierweiler 1994:A932-A934).

5.37.1.3 New Work

Formal testing was conducted in early September 1994. Four trenches (BTs 1, 2, 3, and 5) and one test pit (TP 3) were excavated in the upper terrace and three trenches (BTs 4, 6, and 7) and four test pits (TPs 1, 2, 4, and 5) were excavated in the lower terrace. Unit sizes and depths are presented in Table 5.71.

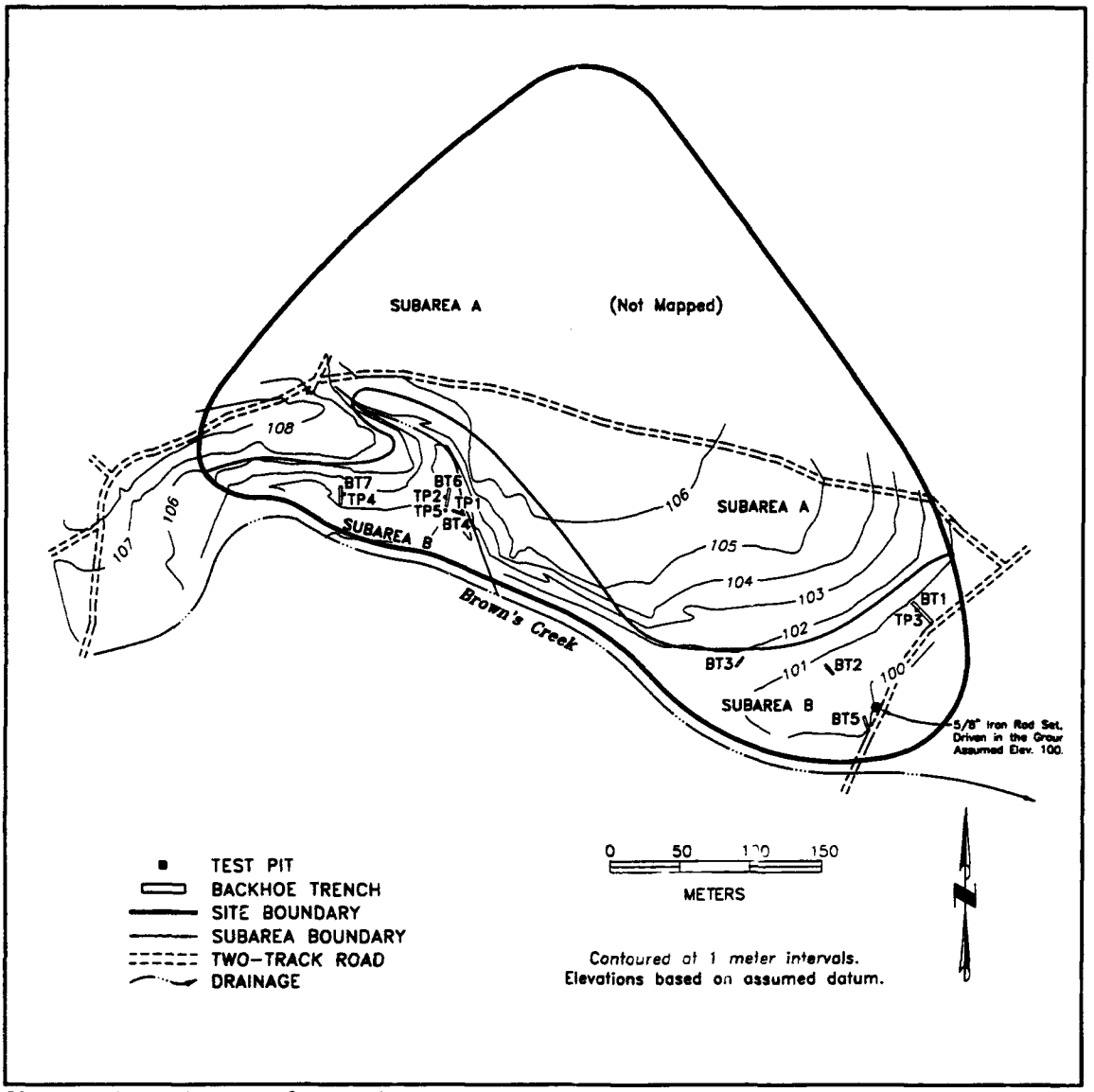


Figure 5.151 Site Map of 41CV495.

5.37.2 Results

At least two and possibly three alluvial fills were detected in the seven trenches excavated in Subarea B at 41CV495. Cultural material recovered from the five test pits included 101 pieces of lithic debitage, 67 pieces of burned rock weighing 19.5 kg, four stone tools, and one complete Marcos projectile point. No features were identified during the excavations; however, BT 4 exposed a burned rock concentration which was subsequently investigated through the excavation of TP 1.



Figure 5.152 View Northwest Across 41CV495.

5.37.2.1 Excavations in the Southeast Terrace

Three trenches (BTs 1, 2 and 3) were excavated on the principal (T_{1A}) alluvial terrace on the eastern side near the contact of the gentle upland slope. Each exhibited a similar profile, differing principally in the thickness of the solum. Trench 1 was farthest east and had the thickest expression of the three trenches. It exhibited an A-Bw-Bwk-Bk profile 95 cm thick and graded from granular loamy clay to subangular blocky silty clay loam with depth. The Bwk and Bk horizons contained a considerable number of soft carbonate masses, possibly reflecting groundwater discharge. Test pit 3 was offset from the west wall of BT 1 and excavated to 100 cmbs. Cultural material recovered from TP 3 included two burned rocks from 0 to 10 cmbs, two flakes from 40 to 50 cmbs, and one flake from 70 to 80 cmbs (Table 5.72).

Backhoe trench 2 was at the west-central part of the T1A terrace, and BT 3 was at the western edge of the terrace. The profiles in these trenches were similar in character to BT 1, but the solum revealed in each was less than 50 cm thick. Although the age of the fill exposed in these three trenches is unknown, it appears to be of late Pleistocene or early-middle Holocene age based on the degree of development and stratigraphic

Table 5.71 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	20	0.8	1.3	T1a terrace
BT 2	7	0.8	1.0	T1a terrace
BT 3	7	0.8	0.8	T1a terrace
BT 4	12	0.8	2.1	T1b terrace
BT 5	10	0.8	2.4	T1a terrace
BT 6	9	0.8	1.4	T1b terrace
BT 7	13	0.8	2.2	T1b terrace
TP 1	1.00	1.00	1.70	T1b terrace
TP 2	1.00	1.00	0.80	T1b terrace
TP 3	1.00	1.00	1.00	T1a terrace
TP 4	1.00	1.00	1.50	T1b terrace
TP 5	1.00	1.00	0.80	T1b terrace

Table 5.72 Artifact Recovery by Test Pit, 41CV495.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	1	0.9	0	0	0	0	0	0	1	-	unspec.
	4-6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	LA
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11	-	26	7.5	0	0	0	0	0	0	0	-	MA
	12	-	0	0.0	0	0	0	0	0	0	0	3600±60	MA
	13-17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		27	8.4	0	0	0	0	2	0	1		
2	1-3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	LA
	5	-	3	1.0	0	0	0	0	8	0	0	-	LA
	6	-	8	2.0	0	0	0	0	19	0	1	-	LA
	7	-	3	1.0	0	0	0	0	17	0	0	-	LA
	8	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	Total		14	4.0	0	0	0	0	47	0	1		
3	1	-	2	0.9	0	0	0	0	0	0	0	-	unspec.
	2-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	1	-	unspec.
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		2	0.9	0	0	0	0	3	0	1		
4	1-15	-	0	0.0	0	0	0	0	0	0	0	-	LA
	Total		0	0.0	0	0	0	0	0	0	0		
5	1	-	2	0.9	0	0	0	0	0	0	0	-	unspec.
	2	-	3	0.9	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	3	0.9	0	0	0	0	5	0	0	-	LA
	5	-	2	0.9	0	0	0	0	5	0	0	-	LA
	6	-	13	2.3	0	0	0	0	32	1	1	Marcos	LA
	7	-	1	0.3	0	0	0	0	7	0	0	-	LA
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		24	6.2	0	0	0	0	49	1	1		

position, and is tentatively interpreted as equivalent to the Fort Hood Alluvium of Nordt (1992).

An additional trench (BT 5) was excavated at the southern edge of the same gently-sloping terrace, just above the modern channel of Browns Creek. This trench revealed a thick (220 cm) accumulation of gravelly clay exhibiting an Ap-A-Bw-Bk profile. The Ap horizon was 30 cm thick and exhibited a strong platy structure with and abrupt lower boundary, suggesting that it represents a plow zone rather than merely a zone of compression produced by heavy vehicles. The underlying material consisted of dark grayish brown to grayish brown gravelly clay containing multiple sub-horizontal zones of very dense gravels. This material is tentatively interpreted as equivalent to the West Range alluvium of Nordt (1992). No cultural material was detected in any of the trenches excavated in the terrace on the eastern side of the site.

5.37.2.2 Excavations in the Southwest Terrace

A second series of trenches (BTs 4, 6, and 7) were excavated on the T_{1B} terrace in the south-central part of the site. Each exhibited a broadly similar profile composed of two stacked alluvial units. The upper unit consisted of a 50 cm veneer of dark grayish brown gravelly clay loam exhibiting an A-C profile. It is interpreted as a drape of Ford Alluvium, and overlies a thick (about 150 to 175 cm) accumulation of very dark grayish brown gravelly clay interpreted as West Range alluvium.

Backhoe trench 4 was placed just above the west side of a confluence of Browns Creek and a small drainage. In BT 4, the lower unit exhibited a Bw-C profile about 150 cm thick (Figure 5.153). The Bw horizon was composed of very dark grayish brown (10YR 3/2) massive gravelly clay loam, and graded into a C1 horizon that consisted of very dark grayish brown (10YR 3/2) massive gravelly clay. A possible cultural feature composed of burned limestone and charcoal was exposed in the side wall of BT 4 at about 130 cmbs. The basal zone extended from 210 cm to the base of the

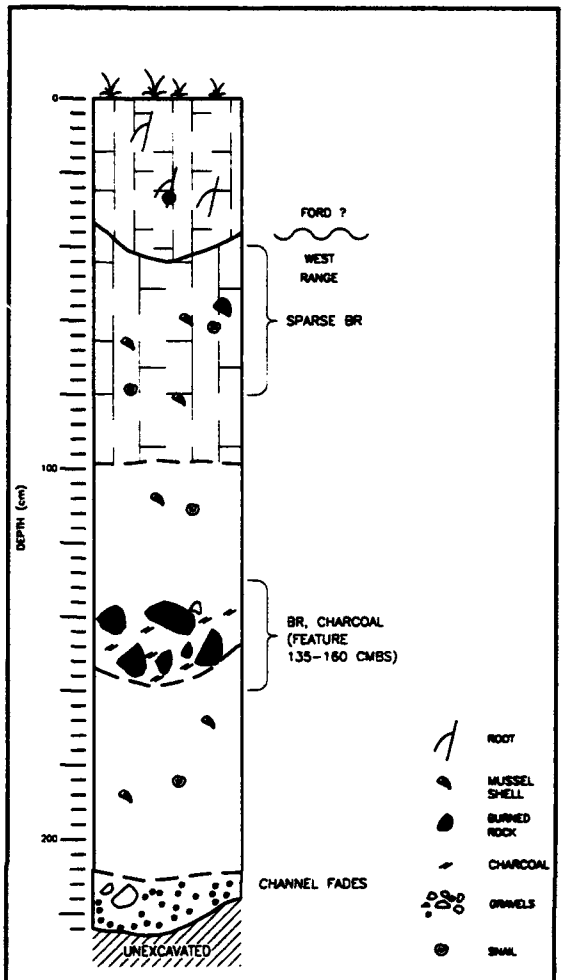


Figure 5.153 Backhoe Trench 4 Profile, 41CV495.

trench at 225 cmbs and consisted of brown (10YR 5/3), massive gravelly clay channel sediments. The profile exposed in BT 6 was similar, but no cultural material was detected. Both of these trenches are tentatively interpreted as a core of West Range alluvium overlain by a relatively thin veneer of Ford alluvium. Test pit 1 was offset from the north wall of BT 4, over the burned rock observed in the wall, and excavated to dense gravels at 170 cmbs. Except for levels 11 and 12 which contained the burned rocks, recovery from TP 1 was sparse and consisted of single flakes recovered in several noncontiguous levels (Table 5.70). In level 11, nine burned rocks were along the south edge of the unit (trench wall). While some of the rocks overlapped, all were horizontally laid. A total of seventeen, small burned rocks were scattered across the remainder of the unit in levels 11 and 12. Flotation and rock samples and were collected from level 11 and a charcoal fragment was collected from the base of the rocks in level 12. This exceptionally small piece (0.05 g) yielded a $\delta^{13}C$ (unmeasured -25‰) corrected age of 3600 ± 60 BP (Beta-83528).

Backhoe trench 6 was 10 m north of BT 4. A few burned rocks were observed in the upper 1 m of the trench. Test pit 2 was offset from the west wall of BT 6, over the burned rocks observed in the wall, and excavated to dense gravels at 80 cmbs. The upper 30 cm was sterile and only one flake was found from 30 to 40 cmbs. Artifact recovery increased from 40 to 70 cmbs. In addition, two large unburned limestone slabs extended into the unit at 50 to 60 cmbs and another large slab extended into the unit at 60 to 70 cmbs. All of these slabs were lying horizontally and the largest was estimated to be 80 to 100 cm long x 45 to 55 cm wide x 5 cm thick. Because no other rock of this nature was found in any of the other excavations and due to their association with the peak in lithic debitage, these slabs were interpreted as manuports. No modifications were observed to these rocks. Below the peak in cultural material, level 8 the last excavated level, contained two pieces of debitage.

Test pit 5 was between TPs 1 and 2 to further investigate the buried cultural material and was excavated to dense gravels at 80 cmbs. A few burned rocks were in the upper 20 cm. Level 3 was sterile. From 30 to 50 cmbs, a few flakes and burned rocks were recovered. A peak in artifact density occurred from 50 to 60 cmbs, where 34 flakes, 13 burned rocks, and a complete Marcos point were recovered. Eight flakes and one burned rock were in the following level and the bottom level was sterile. The amount and distribution of cultural material in this test is similar to that in TP 2. Furthermore, the cultural material in TPs 1, 2, and 5 was all recovered just above a deposit of dense gravels that slopes sharply upward from TPs 1, 2 and 5. This suggests that these materials are all associated with the same buried occupation dating to the Late Archaic period.

Backhoe trench 7 was on the western edge of the terrace, farther upstream on the same meander bend. This trench exhibited a more gravelly profile that also appears to represent a stacked Ford/West Range sequence. The upper unit exhibited a 45 cm thick A-C profile consisting of blocky, very dark brown (10YR 2/2) gravelly clay loam that graded down into dark grayish brown (10YR 3/2) massive sandy gravel. The lower unit consisted of a blocky, very dark brown (10YR 2/2) gravelly clay Bw horizon 15 cm thick underlain successively by a gray (10YR 5/1) blocky silty loam 75 cm thick and a gray (10YR 5/1), blocky gravelly loam more than 70 cm thick. No cultural material was detected in the trench, which appears to also represent West Range alluvium overlain by a gravelly veneer of Ford alluvium. Test pit 4 was offset from the east wall of BT 7 and excavated to 150 cmbs. No cultural material was found within this test pit.

5.37.3 Analysis and Interpretations

5.37.3.1 Definition of Analytical Units

All five test pits contained minimal cultural material with the one diagnostic projectile, a Marcos point in TP 5, level 6, and one $\delta^{13}C$

corrected AMS radiocarbon date of 3600 P from TP 1, level 12. This data and the geomorphological deposits indicate that levels 4 through 7 in TPs 1, 2, and 5 were identified as yielding Late Archaic materials. While levels 11 and 12 in TP 1 were identified as containing Middle Archaic materials. All other levels from the five units were unclassifiable as they lack diagnostic artifacts and/or radiometric control. The sparse cultural material below the identified time periods may represent displaced material from the identified time periods, but there is no direct evidence to support this. These three analytical units are discussed below.

5.37.3.2 Late Archaic Materials

Test pits 1, 2, and 5, between 30 to 70 cmbs yielded 95 pieces of lithic debitage, a Marcos point, a biface, a utilized flake, 33 burned rocks, and snail shells. Unfortunately no charcoal or bone were recovered to obtain an absolute age.

The 95 specimens of lithic debitage represent two locally available identified (n=2) and seven unidentified chert types in this moderately-sized assemblage with a mere 2% identifiable (Table H-313). The aggregate indeterminate chert types are over represented and the two unidentified types present are less than expected (Table H-314). When the indeterminates are excluded, both Fort Hood Yellow and Fort Hood Gray from North Fort chert province are in expected amounts.

The debitage size peaks at 0.9 to 1.2 cm with 88% less than 1.8 cm in size. Coupling the size categories with the tertiary flake rate of 85% (Table H-315) implies that a great deal of late stage tool manufacture took place on-site.

The single complete Marcos point was manufactured of Heiner Lake Translucent Brown from the Southeast Range chert province. The lack of tertiary debitage of this same material indicates it was brought in as a finished specimen. Two of the tools, a complete late stage biface and a utilized flake, were manufactured of indeterminate light brown material while one edge modified flake was identified as Heiner Lake Tan from the same area as the point above.

The 33 burned rocks weighed 8.4 kg and were scattered across vertically and horizontally the four levels. The 50 to 60 cmbs in TPs 2 and 5 yielded the majority of pieces.

5.37.3.3 Middle Archaic Materials

This time period is represented by only burned rock and an associated charcoal assay. A tiny piece (0.05 g) of charcoal of unidentifiable wood yielded a $\delta^{13}C$ (unmeasured -25‰) corrected age of 3600 ± 60 BP (Beta-83528). A total of 26 pieces of burned rock, that weighed 7.5 kg was directly associated with the charcoal indicating sometype of dispersed feature.

No lithic debitage, stone tools, or other cultural materials were associated with this Middle Archaic component in TP 1. Even though the frequency and diversity is low this occupation is well separated (at least 30 cm) from the Late Archaic occupation above in TP 1.

5.37.3.4 Temporally Unclassifiable Materials

The cultural material above, between and below the identified time periods could not be confidently assigned to a time period. These sparse materials were from TPs 1, 2, 3, and 5 and consisted of six pieces of debitage, and eight burned rocks.

The six specimens of debitage represent one identified and three unidentified chert types (Table H-316). Statistical analyses would be meaningless because of the small sample size. Two-thirds of the assemblage is tertiary debitage and less than 1.2 cm in size (Table H-317).

5.37.4 Conclusions

At 41CV495, seven trenches were excavated in Subarea B revealing mostly alluvial sediments that appear to span the middle to late Holocene.

However, the oldest (Fort Hood) alluvial sediments are preserved as a relatively thin (1 m or less) veneer resting on bedrock, while the recent (Ford) sediments were observed as a thin veneer capping the late Holocene (West Range) fill. Therefore, the only thick sediments with significant archeological potential in the investigated areas appear to be of West Range age.

Five manual excavation test pits documented a buried Late Archaic occupation roughly 50 cm below surface in the West Range deposit in TP 2 and TP 5, and a Middle Archaic occupation at approximately 105 cmbs in TP 1. The Late Archaic occupation is represented by a low density of lithic debris, burned rocks and large slabs, sparse stone tools, and one Marcos point. The presence of the slabs and burned rocks implies that cultural features may be present. These cultural materials are assigned to the Uvalde phase (Prewitt 1981; 1985) which date elsewhere between roughly 2250 to 1750 BP.

The deeper and stratigraphically well defined Middle Archaic occupation is poorly represented through burned rock in one unit (TP 1), potentially representing a feature. A charcoal date of 3600 BP indicates a possible Round Rock (Pedernales points) or Marshall Ford (Bulverde points) phase association (Prewitt 1981; 1985). On the basis of the identification of at least two intact cultural components in good context in Subarea B, 41CV495 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism, prevent mechanical or manual excavations by military personnel, and minimize the impact of traffic on the alluvial surfaces.

5.38 SITE 41CV582

In December 1994 and February 1995, we conducted formal test excavations at prehistoric archeological site 41CV582. Testing was designed to evaluate eligibility for inclusion to the NRHP. Three trenches were excavated by backhoe and two test pits totaling 6.5 m^3 were hand excavated. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.38.1 Introduction

5.38.1.1 Site Location and Description

Site 41CV582 is in Fort Hood Training Area 43. It is situated on the north side of Cowhouse Creek. An east-west oriented dirt road bisects the northern site boundary, with a few "road crossing cuts" perpendicular to Cowhouse Creek (Figure 5.154). Maximum site dimensions, as defined in 1992, measured 125 x 50 m with an east-west long axis, and cover an area of 0.6 hectare (1.5 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.38.1.2 Previous Work

On 9 August 1983, Thomas first recorded the site as an organic deposit with a few flakes, shell, and burned rocks observed on a tank trail crossing Cowhouse Creek. The site was considered a probable burned rock midden with deposits estimated to be 50 to 100 cm thick. The area was estimated to be 50% impacted by the tank crossing. Dureka visited the site on 10 February 1987 and observed two burned rocks, two flakes, and one piece of mussel shell in the creek bank with some grayish soil. Although it was thought that part of the site was buried, the minimum site criteria in use at that time were not met, and it was recommended that the site number be "retired." Dureka and Pry monitored the site on 8 February 1988 and observed only two flakes, thus the area was judged to be 80% disturbed by bulldozing,



Figure 5.154 View of Southern Edge of 41CV582.

erosion, and tracked vehicles. Even though very little cultural material was exposed, extensive subsurface investigations were recommended in the alluvial deposits overlooking Cowhouse Creek.

Abbott and Kleinbach visited the site on 14 October 1992 and evaluated it in terms of geomorphic context and archeological potential. The matrix in this terrace consisted of a very light grayish brown, late Holocene (T_1), alluvial loams (probably the West Range alluvium of Nordt 1992). This late Holocene deposit consisted of a narrow wedge inset into an older, much broader terrace composed of early-middle Holocene brown sandy to loamy alluvium (probably Fort Hood alluvium). This late Holocene wedge was 5 to 6 m thick and a scant 20 m wide, but a thin drape of the fill overrode the older terrace for several tens of meters behind the wedge. One mussel shell and two burned rocks were observed on a old tank crossing cut. A few burned rocks and one large animal long bone fragment were found about 350 cmbs in one cutbank exposure near the eastern site margin, and a few burned rocks were exposed about 300 cmbs in the Cowhouse Creek cutbank at the western site boundary. None of the cultural material was detected in the older Holocene fill. Because the site had potential for intact cultural deposit, a crew excavated five shovel tests here on 10 November 1992. Although sparse cultural material was encountered in these shallow tests, it was thought that the deeper alluvial deposits might contain intact archeological material and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include three backhoe trenches and 2 to 3 m^2 of manually excavated test pits (Trierweiler 1994:A953-954).

5.38.1.3 New Work

Formal testing was completed on 27 February 1995. Three backhoe trenches were excavated to prospect for buried cultural material and examine site stratigraphy. Trench 1 was near the site's center, with BTs 2 and 3 excavated about 35 m west and 45 m east of BT 1 respectively (Figure 5.155). Two test pits were excavated to recover a

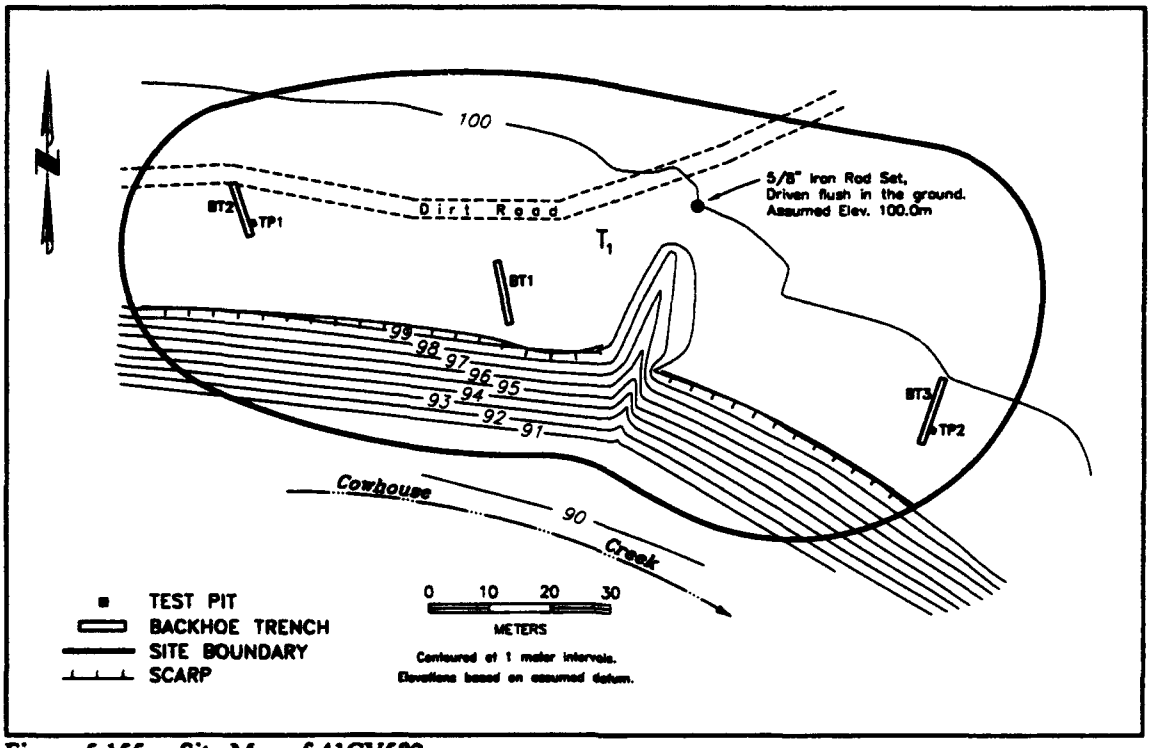


Figure 5.155 Site Map of 41CV582.

representative sample of cultural material. Unit sizes and depths are presented in Table 5.73.

5.38.2 Results

Two distinct alluvial fills, tentatively correlated with the West Range and Fort Hood fills of Nordt (1992), were exposed in the trenches excavated on 41CV582. In addition, a thick veneer of very recent (Ford) alluvium was present in the upper 80 cm of BTs 1 and 2, and may have also been present in the upper part of BT 3.

The more recent West Range fill was exposed in BT 1 and BT 2, which exhibited nearly identical profiles. The upper 80 cm of both trenches was probably composed of more recent cumulic Ford alluvium. Overall, the trenches exhibited an A-Bwk-Bk profile more than 300 cm thick. The A horizon represents more recent cumulic material and was roughly 80 cm thick. It consisted of massive, very dark grayish brown (10YR 3/2) sandy loam and contained abundant tree roots. The Bwk horizon was approximately 140 cm thick and consisted of weak blocky, dark grayish brown (10YR 4/2) sandy loam containing a few roots and common carbonate filaments. A few small crumbs of burned rock were noted in this horizon in BT 1, but no clear cultural strata were observed in either trench. The Bk horizon extended from 220 cmbs to the base of each trench and consisted of grayish

Table 5.73 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	1.5	3.2	T1 terrace
BT 2	10	1.5	3.2	T1 terrace
BT 3	12	1.5	3.2	T1 terrace
TP 1	1.00	1.00	3.50	T1 terrace
TP 2	1.00	1.00	3.00	T1 terrace

brown (10YR 5/2), weak blocky sandy loam. It too contained common carbonate films and filaments on the ped faces, but no cultural material was observed in either trench.

Test pit 1 was offset from the east wall of BT 2 and was dug to 350 cmbs. Because the upper 75 cm represented a relatively recent drape, this fill was removed en masse and was not screened. Of the remaining 28 excavated levels (75 to 350 cmbs), both ubiquity and density of cultural material was very low. Only nine levels (32%) contained lithic debitage with a total of 12 pieces (Table 5.74). No level had more than three pieces, and the overall debitage density was less than five items per cubic meter. A late stage biface and a single bivalve were recovered from 100 to 110 cmbs. No burned rock or features were encountered.

Trench 3 exposed a less melanized fill tentatively interpreted as the Fort Hood alluvium of Nordt (1992) overlain by a thick veneer of more recent alluvium (probably the Ford alluvium). Overall, the trench exhibited an A-Bw-Bk profile more than 300 cm thick. The A horizon was 35 cm thick and consisted of massive, very dark grayish brown (10YR 3/2) sandy loam containing abundant tree roots. The Bw horizon, which also probably represents the more recent Ford drape, consisted of 65 cm of massive dark brown (10YR 4/3) sandy loam. The Bk horizon extended to the base of the trench at 320 cm. It consisted of weak blocky yellowish brown (10YR 5/4) silty loam cut with a few stringers of fine sparse gravel that graded gradually down into a similar silty clay loam. No cultural material was detected in the trench.

Test Pit 2 was offset from the east wall of BT 3 and was dug to 300 cmbs. Based on the presence of a mottled matrix containing yellowish brown sand, the upper 40 cm of deposit appeared disturbed. This test pit yielded sparse debitage, burned rocks and bivalves, but no stone tools or features. Twelve lithic pieces, four mussel shell umbos, and nine small (1.2 kg) burned rocks were found in seven (23%) of 30 excavated levels. The seven productive levels were within the top 100 cmbs. No level had more than four items, and the overall density was again less than five items per cubic meter.

5.38.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. The two test pits yielded five mussel shell umbos, 24 pieces of lithic debitage, one biface, and some snail shells. The 30 cultural items reflect a density of five items per m^3. There is no indication of specific age or cultural association for these sparse cultural remains.

The 24 specimens of lithic debitage represent four identified and six unidentified chert types (Table H-318). The materials represent three of the four chert provinces; only Cowhouse is excluded. All material occur in expected frequency (Table H-319). Only the ends of the size range spectrum are not represented in the assemblage that peaks at the 1.2 to 1.8 cm size category. Slightly more than half of the debitage is tertiary (Table H-320).

None of the five mussel shells were burned or otherwise modified (Table H-321). These shells include two *Amblema* sp., two Unionacea sp., and one indeterminate.

5.38.4 Conclusions

Two thick alluvial fills, tentatively interpreted as the West Range and Fort Hood units, were identified. Both of these thick fills were capped by a relatively thick veneer of probable Ford alluvium which has welded to the underlying soil. Other than a few "crumbs" of dispersed burned rock in BT 1, no cultural material was observed in any of the trenches.

Recovery of cultural material from the manually excavated test pits was extremely sparse, with no

Table 5.74 Artifact Recovery by Test Pit, 41CV582.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	11	-	0	0.0	1	0	0	0	2	0	1	-	unspec.
	12	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	17-21	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	22	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	23-26	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	27	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	28-29	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	30	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	31-35	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	1	0	0	0	12	0	1		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	3	-	4	0.3	2	0	0	0	2	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	5	-	1	0.3	2	0	0	0	1	0	0	-	unspec.
	6	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	7-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	2	0.2	0	0	0	0	2	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11	-	1	0.2	0	0	0	0	1	0	0	-	unspec.
	12-30	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		9	1.2	4	0	0	0	12	0	0		

clear indications of intact cultural components. Overall lithic debitage frequency was extremely low (n=27), with a net density of only 4.7 pieces per cubic meter. Ubiquity was also very low, with only 16 of 58 screened levels (28%) having any cultural material. Moreover, no features were observed in any trenches or test pits. We conclude that site 41CV582 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.39 SITE 41CV849

In January 1995 we conducted formal test excavations at prehistoric archeological site 41CV849. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two trenches were mechanically excavated and two test pits (2.5 m^3) were hand dug. The test excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.39.1 Introduction

5.39.1.1 Site Location and Description

Site 41CV849 is along the northern edge of Fort Hood, in Training Area 72. The site is delimited by Henson Creek to the north and an unnamed tributary to the east (Figure 5.156). Many roads and gullies bisect a major part of the site. Maximum site dimensions, as defined in 1993, measured 350 x 250 m, with an east-west long axis, and cover an area of 8.8 hectares (21.7 acres). For purposes of analysis, the site is considered a member of the East Henson site group.

5.39.1.2 Previous Work

Strychalski originally recorded the site on 29 January 1985. The area was defined as a campsite consisting of lithics, shell, burned rocks, and groundstone scattered across the surface. One Pedernales point was collected. The site was impacted 95% by clearing of vegetation, burning, and erosion.

On 24 December 1986, Dureka, Masson, and Mesrobian again recorded the site (Mueller-Wille and Carlson 1990b). Lithics, shell, multiple burned rock scatters, some knapping stations, and at least one burned rock mound were noted. A discrete burned rock concentration was observed in the south cutbank of a roadcut that crossed Henson Creek and was considered to be a possible hearth. One biface, a metate, and one dart point were collected. It was concluded that considerable potential for intact subsurface deposits existed near the Henson Creek, but 80% of the site had been disturbed by erosion, tree clearing, burning, and tracked vehicles. In addition, revegetation was strongly recommended, particularly along gullied areas.

On 29 October 1992, Kleinbach and Abbott revisited and evaluated the site based on archeological potential and geomorphic context. The site was recorded as situated on a large, partially denuded and moderately dissected upland/saddle/bedrock slope complex situated south of Henson Creek (Subarea A), and two small wedges of Holocene terrace and associated colluvial toeslope on the northwest and northeast site margins (Subarea B). In Subarea A, the upland surface is moderately dissected by ephemeral gullies entrenched up to 1 m into the substrate, and is mantled with a lag of limestone cobbles and fossil oysters. Much of the surface appeared to be scraped or bladed. Localized areas of slopewash deposition were noted, particularly in the saddle on the southwest part of the site, but most of this slopewash appears to be very recent, probably as a result of increased sheet erosion. Subarea A was judged to have no potential to contain intact cultural deposits and no further work was warranted. Subarea B included two small and non-contiguous wedges of alluvium and associated colluvial toeslope deposits (Figure 5.157). These deposits form the T_1 terrace lying roughly 3 to 4 m above the stream and were interpreted as equivalent to the Ford and the upper and lower West Range alluvium of Nordt (1992). The subsurface burned rock concentration noted in 1986 was not relocated. Because this subarea had the potential for archeological deposits, on 6 November 1992, a crew excavated three shovel tests. Based on these tests, the upper 40 cm of deposit was judged to contain very limited, if any, archeological potential. However, due to the presence of at least two meters of Holocene deposition, Subarea B was recognized to contain the potential for buried cultural material below the

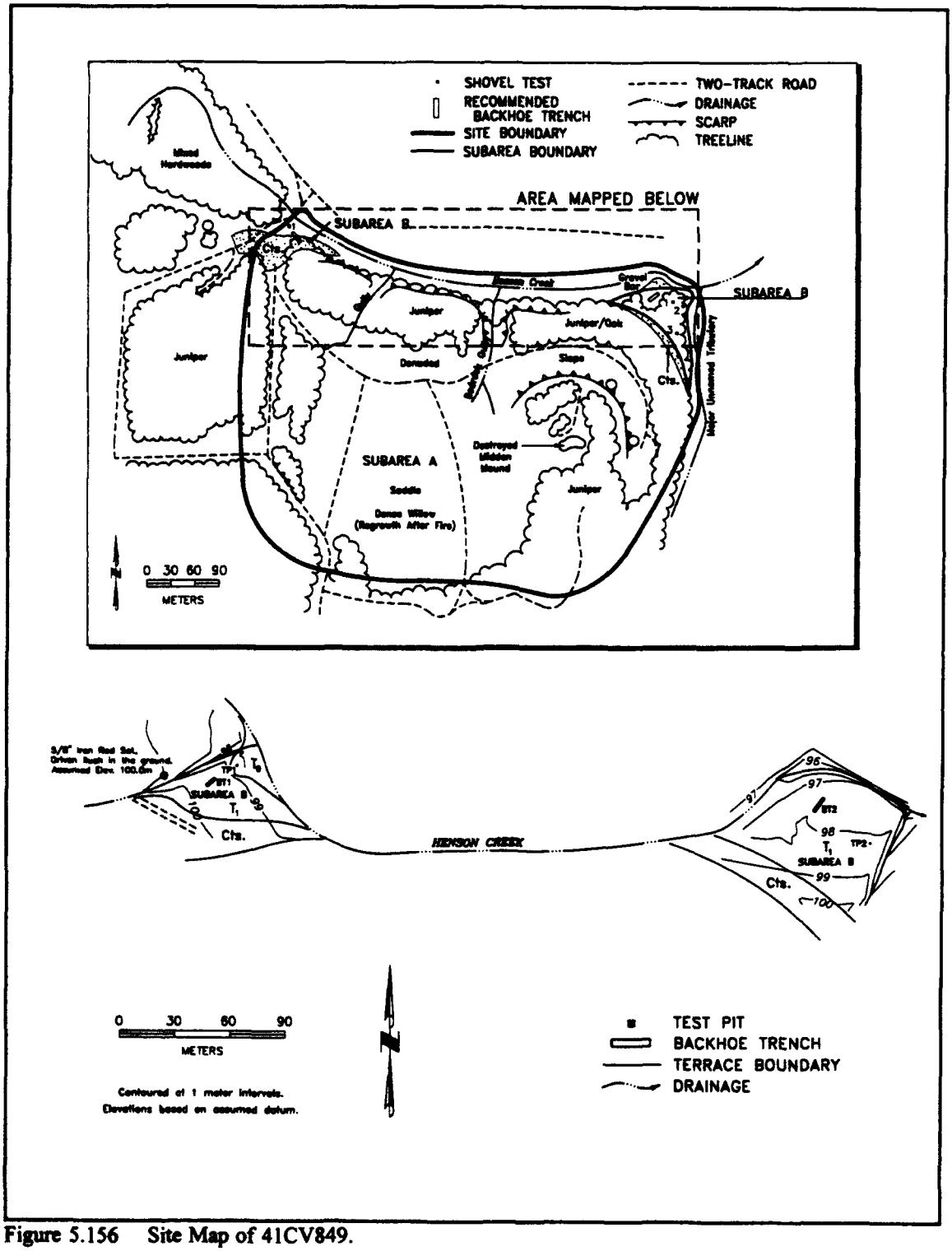


Figure 5.156 Site Map of 41CV849.

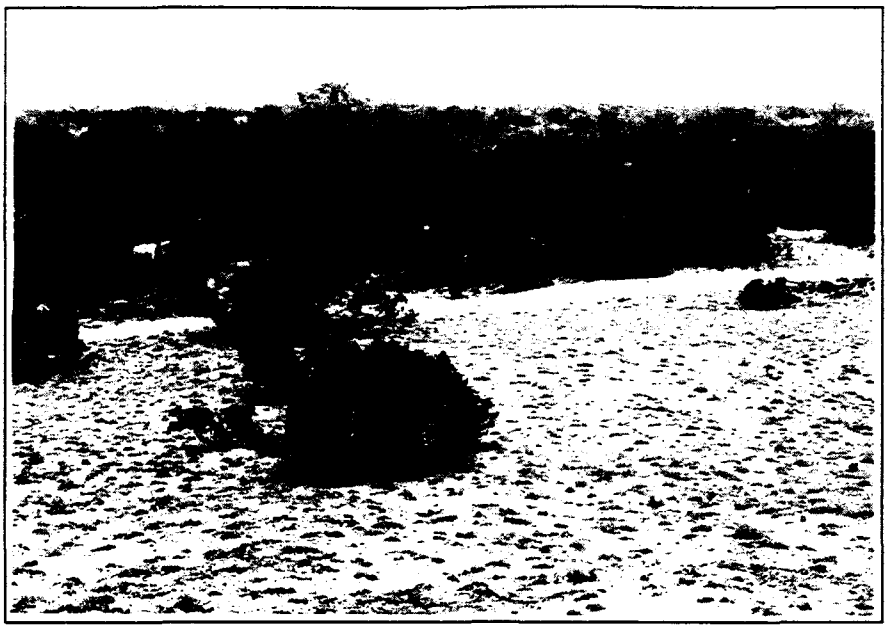


Figure 5.157 View North From Center of 41CV849.

limits of shovel testing and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include two trenches and up to four square meters of manually excavated test pits (Trierweiler 1994:A1049-1051).

5.39.1.3 New Work

Formal testing of Subarea B was completed on 26 January 1995. Two trenches and two test pits were excavated, one each in the two wedges of alluvium. The unit size and depth are presented in Table 5.75.

5.39.2 Results

Trench 1 was excavated in the western wedge of T_1 alluvium. The trench revealed a fining upward sequence that graded from gravelly sandy loam at the base to gravelly clay loam at the top, and exhibited an A21-A22-AB-Bk profile. The sediment graded from black (10YR 2/1) through very dark grayish brown (10YR 3/2) to brown (10YR 4/3) with depth, and contained at least two unconformities or reactivation surfaces at approximately 25 and 120 cmbs. Although no cultural material was observed in the trench walls, a few isolated burned rocks were noted in the backdirt. Based on the adhering fine matrix, these clasts appear to have come from the upper 75 cm of the deposit. This deposit is interpreted as West Range alluvium with a possible thin cap of the subsequent Ford alluvium.

Test pit 1 was placed just downslope of BT 1 on the T_0 surface. No cultural material was recovered from surface to 130 cmbs, with recent material

Table 5.75 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	1.7	T1 terrace
BT 2	7	0.8	1.5	T1 terrace
TP 1	1.00	1.00	1.30	T0 terrace
TP 2	1.00	1.00	1.20	T1 terrace

noted in the upper 40 cm of deposit (Table 5.76). Sands and gravels were encountered at 130 cmbs and excavation was terminated.

Trench 2 was on the eastern wedge of T_1 alluvium. The trench was excavated from the edge of the Henson Creek cutbank and extended south across the terrace. It exhibited a shallow, AC-C profile developed in approximately 1 m of massive, very dark grayish brown (10YR 3/2) gravelly sandy loam alluvium over dense alluvial gravels. This sequence is interpreted as the Ford alluvium. No cultural material was detected in the trench.

Test pit 2 was about 30 m southeast of BT 2 near the confluence of Henson Creek and its tributary. Four pieces of lithic debitage and four burned rocks were recovered from levels 5 through 9, with levels 10 through 12 culturally sterile. Levels 7 through 12 also contained a moderate to heavy density of gravels and natural chert nodules. Excavation was halted at 120 cmbs.

5.39.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. Only one of the two test pits (TP 2) produced cultural material and this unit yielded sparse material as only four pieces of lithic debitage and four burned rocks (1.5 g) were encountered. Each lithic debitage specimen represents a different material type: Fort Hood Yellow, Heiner Lake Translucent Brown, Fort Hood Gray, and indeterminate mottled chert. None of the four flakes is smaller than 1.2 cm in size and only the Heiner Lake specimen has no cortex.

5.39.4 Conclusions

The deposits in Subarea B appear to represent relatively recent Ford sediments in the more easterly terrace wedge and Late Holocene West Range sediments in the western terrace wedge.

Table 5.76 Artifact Recovery by Test Pit, 41CV849.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	0	0	0		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	2	0.3	0	0	0	0	1	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	10-12	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		4	1.5	0	0	0	0	4	0	0		

Although a few dispersed burned rocks were recovered from the upper West Range fill, and few lithic debris was noted in these low terrace segment the overall density is quite low.

On the basis of the above, we conclude that site 41CV849 contains insufficient archeological materials to warrant further investigations. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP inclusion and recommend no further management.

5.40 SITE 41CV900

From December 1994 through January 1995, we conducted formal test excavations at prehistoric archeological site 41CV900. Testing was designed to evaluate eligibility for inclusion to the NRHP. Nine trenches were mechanically excavated and four test pits totaling 5.5 m^3 were hand dug. Excavations demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.40.1 Introduction

5.40.1.1 Site Location and Description

Site 41CV900 is a large lithic resource procurement site in the northeastern sector of Fort Hood, in Training Area 2. Many tank trails and an unnamed tributary of Owl Creek oisect the site (Figure 5.158). Maximum site dimensions, as defined in 1993, measure 800 x 600 m, with a northeast-southwest long axis. Site area is 48 hectares (119 acres). For purposes of analysis, the site is considered a member of the Owl Creek site group.

5.40.1.2 Previous Work

On 20 March 1985, Mesrobian and Dureka recorded the site as probable seasonal encampments (Carlson et al. 1987). Twenty-four projectile points representing the Late PaleoIndian through Transitional Archaic time periods and a mano were collected. A low density of burned rock and a moderate density of debitage, hammerstones, scrapers, and bifaces were observed. The site was estimated to be 80% disturbed by road construction, vehicular traffic, and erosion. It was concluded that the site had a fairly good potential for buried deposits and that the southeast and northeast edges were extremely vulnerable to erosion.

On 8 April 1993, Kleinbach and Abbott visited the site and evaluated it based on archeological potential and geomorphic context. Three subareas were identified; because of the site's complex stratigraphic architecture, several diverse geomorphic settings were subsumed into both Subarea A and C.

Subarea A consisted of the slopes of the Manning surface, proximal parts of the colluvial toeslopes on the eastern side of the valley, and a broad, gently sloping bedrock surface that appeared to represent a Pleistocene (T_{2A}) strath terrace on the western side of the valley. The slopes were vegetated in most areas with a mixed juniper/oak forest and consisted of gently to moderately sloping outcrops of marly limestone and clays. A thin (less than 10 cm), discontinuous loamy A horizon composed primarily of sheetwash overlay the bedrock in some areas, but most of the subarea was erosional and characterized by exposed saprolitic bedrock. A 15 to 20 m diameter burned rock concentration (Feature 1) with associated mussel shell fragments, flakes, and bifaces was along a road cut on the east side of the tributary. This feature was probably once a burned rock mound, but had since been dispersed and deflated by road construction, vehicular traffic, and erosion. An area measuring approximately 100 x 80 m adjacent to Feature 1 area was designated Locus 1.

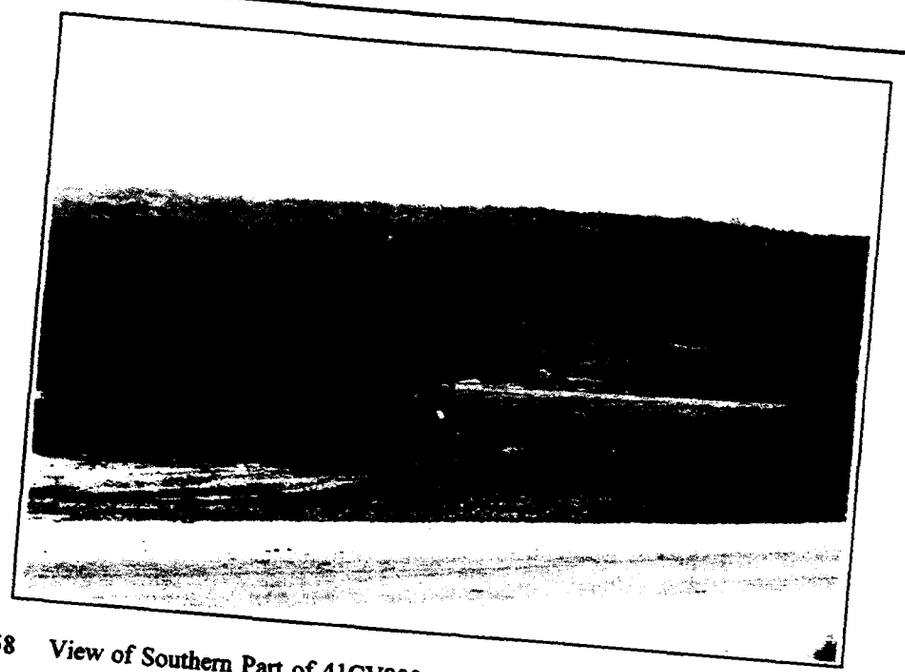


Figure 5.158 View of Southern Part of 41CV900.

One drill fragment and 16 dart points spanning the Middle through Transitional Archaic were collected from Locus 1. Numerous flakes, bifaces, quartzite hammerstones, end scrapers, and cores were also observed in this locus. A low density of lithic debitage was observed on the strath terrace and in the remainder of the subarea. The strath was mantled with a thin complex of alluvial gravels and sandy/loamy slopewash sediments. The depth of this thin veneer was roughly 10 cm in its thickest areas, and it had been thoroughly turbated by vehicular traffic, scraping, road construction, and possible agriculture. The wooded slopes were strongly affected by sheet erosion, gullying, restricted scraping and road construction. Subarea A was moderately to strongly erosional and had been very heavily impacted. Although the subarea was the locus of an extremely dense burned rock and lithic scatter, the potential for cultural material in reasonable context was extremely limited and shovel testing was not considered to be warranted.

Because the site was classified as a lithic resource procurement area, the potential utility of the non-depositional area (Subarea A) to address questions of lithic resource procurement and reduction was addressed. However, no significant chert source was detected either on the site or in the immediate area, and the site was excluded from resurvey procedures.

Subarea B consisted of a relatively narrow, discontinuous terrace (T_{2B}) on the western side of the valley. The terrace was vegetated with grasses and mantled with a truncated soil consisting of a very rubified, sandy clay Bt horizon overlain discontinuously with a thin mantle of loamy sheetwash. Although no exposures were present to allow characterization of the fill, the development of the Bt horizon at the surface was consistent with a late Pleistocene age. The fill was separated from the higher strath terrace by a low (about 50 cm relief), beveled scarp. No clear scarp marked the contact with the Holocene fill (possibly as a result of earlier agricultural activity), but the distinct change from deep red to gray-brown sediment marking the contact was clearly visible. The terrace had been impacted by sheet erosion,

possible agricultural activities, and vehicular traffic. A 70 m diameter area containing a moderate density of flakes, scattered burned rock, and several final biface fragments was designated Locus 2. This locus extended downslope onto Subarea C. Twelve of the 24 projectile points collected in 1985 appear to have been collected from this Locus, most of which represent Early Archaic styles. Three Angostura point bases were collected from this locus during the reconnaissance, with another Angostura subsequently collected from this locus by the shovel testing crew. A few flakes were observed on exposures in the remainder of the subarea. Subarea B appeared to represent a late Pleistocene terrace capped by a relatively thin veneer of slopewash. Although the potential for preservation in this Locus was not extremely high, there was the possibility that some integrity remained. Also, due to the inordinate number of late Paleoindian points collected, there was a strong possibility that a Paleoindian component was partially preserved.

Accordingly, on 13 and 20 April 1993, a crew excavated 23 shovel tests, of which 12 (51%) were positive. Nine positive tests had material confined to the upper 20 cm of deposit, with three of these manifesting disturbance by the mixing of historic with prehistoric material. Three tests (STs 13, 14, and 16) contained cultural material between surface to 30 cmbs and roughly encompassed an area measuring 60 m NE to SW x 15 m NW to SE.

Subarea C consisted of the Holocene alluvial fill of the valley system and the distal portions of the colluvial toeslopes on the eastern side of the valley. The fill was poorly exposed except in the incised channel cutbanks, and it was impossible to determine if more than one Holocene alluvial fill was present. However, given the preservation of Pleistocene fills, it was considered likely that at least two Holocene-age alluvial units were preserved. The alluvial channels flowing through the site were incising rapidly, and lie roughly 2 m below the T_1 surface in the upstream end and 4 m below the terrace surface downstream. The fill exposed in the cutbanks consisted of stony clay loam cut with sub-horizontal stringers of gravel that graded down into loamy gravel. The soil exhibited a thick (up to 1 m), dark grayish brown A horizon over a pale brown, very weakly structured Bw approximately 1 m thick. The lower parts of the exposed fill consisted of thick channel gravels resting on limestone bedrock. The total fill appeared to be up to 4 m thick. The floodplain was vegetated with dense juniper and mixed hardwoods and covered with a dense mat of juniper needles and broadleaf litter. Locus 2 extended onto this subarea and was discussed under Subarea B. One Edgewood point was collected from the east side of the tributary. Subarea C possibly contained up to 4 m of Holocene alluvium and had good potential to contain intact, stratified cultural material.

On 13 and 20 April 1993, a crew excavated 72 shovel tests; 18 (24%) contained lithics and/or burned rock. Artifacts were recovered from ground surface to 40 cmbs across an expansive subarea, however, anomalous sections indicating a greater potential for intact cultural deposits appeared to be present. One shovel test (ST 24) contained some burned rocks and a flake from ground surface to 30 cmbs. Another test (ST 29), on the southeast edge of Locus 2, contained higher lithic counts as compared to other positive tests.

Based on shovel testing results, specific parts of Subareas B and C were thought to have potential for intact, buried cultural deposits. Whereas somewhat shallow (30 to 40 cmbs), these could represent a single, discrete occupation within Subareas B and C. In addition, due to depth of the Holocene deposit in Subarea C, buried cultural deposits were thought to be possible below the level of shovel testing. As a result, both Subareas B and C were assessed as containing potentially intact cultural deposits of unknown significance and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include 2 to 4 m^2 of manually excavated test pits in Subarea B and 6 to 8 m^2 of manually excavated test pits and eight trenches in Subarea C (Trierweiler 1994: A1053-1059).

5.40.1.3 New Work

Formal testing of Subareas B and C was completed on 30 January 1995. In Subarea B, one trench (BT 7) and two test pits (TPs 1 and 2) were excavated, with eight backhoe trenches (BTs 1 through 6, 8 and 9) and two test pits (TPs 3 and 4) excavated in Subarea C. The unit sizes and depths are presented in Table 5.77.

Table 5.77 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	1.5	2.4	T1 terrace
BT 2	13	1.5	3.0	T1 terrace
BT 3	5	1.5	1.7	T1 terrace
BT 4	5	0.8	2.3	T1 terrace
BT 5	20	0.8	1.7	T1 terrace
BT 6	5	0.8	1.4	T1 terrace
BT 7	16	0.8	1.0	T2 terrace
BT 8	8	0.8	2.0	T1 terrace
BT 9	7	1.5	3.0	T1 terrace
TP 1	1.00	1.00	0.70	T2 terrace
TP 2	1.00	1.00	0.80	T2 terrace
TP 3	1.00	1.00	2.00	T1 terrace
TP 4	1.00	1.00	2.00	T1 terrace

5.40.2 Results

5.40.2.1 Excavations in the T_1 Terrace

Just downstream from the confluence of two unnamed drainages and on the east side, BT 1 and BT 2 were excavated into a thin alluvial terrace wedge (Figure 5.159). Trench 1 was about 100 m southwest of Locus 1 (Subarea A) and 15 m east of the main tributary. Trench 1 revealed a highly stratified, gravelly profile containing two probable alluvial units tentatively interpreted as the Ford and upper West Range units of Nordt (1992). Overall, the trench exhibited an A-Bw-Ck-2Bk-2Ck profile developed in gravelly loam and gravelly clay. The A horizon was 40 cm thick and consisted of weakly blocky, black (10YR 2/1) gravelly clay loam. It graded abruptly into a massive, dark brown (10YR 3/3) loamy gravel Bw horizon 45 cm thick, and then into a very pale brown (10YR 7/3), massive loamy gravel Ck horizon containing carbonate filaments, fine soft carbonate masses, and "clouds" of matrix carbonate. From a distance, the carbonate imparted a distinct grayish cast to the horizon. The 2Bk horizon was composed of massive to weak blocky, very dark brown (10YR 2/2) gravelly clay, and contained abundant carbonate filaments and masses (many of which may represent saprolitic lithoclasts). Gravel content increased gradually to about 40-50% by volume with depth through the 110 cm thick horizon, where it graded into the 2Ck horizon. This horizon was composed of massive clayey gravel and also contained common carbonate filaments, masses, and lithoclasts. No cultural material was observed in this trench.

Trench 2 was 35 m north of BT 1 along the east side of the drainage. It revealed a complex profile composed of interfingering alluvium and colluvium overlain by a downslope-thickening colluvial wedge. Overall, the trench exhibited an A-Bw-Bk-2Bkg-2Cg profile. The colluvial wedge exhibited an A-Bw-Bk sequence 130 cm thick at the downslope end of the trench. It graded from very dark grayish brown (10YR 3/2) massive loam, through dark grayish brown (10YR 4/2) silty loam, to massive, brown (10YR 5/3), carbonate-enriched gravelly sandy clay loam with depth. The underlying 2Bkg horizon consisted of primarily alluvial gravelly clay downslope and colluvial gravelly clay loam upslope. The alluvium was weakly blocky and dark grayish brown (10YR 4/2), whereas the colluvium was massive and grayish brown (10YR 5/2). The horizon contained common carbonate masses and filaments, most of which probably represent dissolving lithoclasts, and faint orange to brown oxidation mottles. The basal horizon was a grayish brown gravelly clay. With the exception of a few reworked "crumbs" of burned rock throughout, no cultural material was detected in the trench.

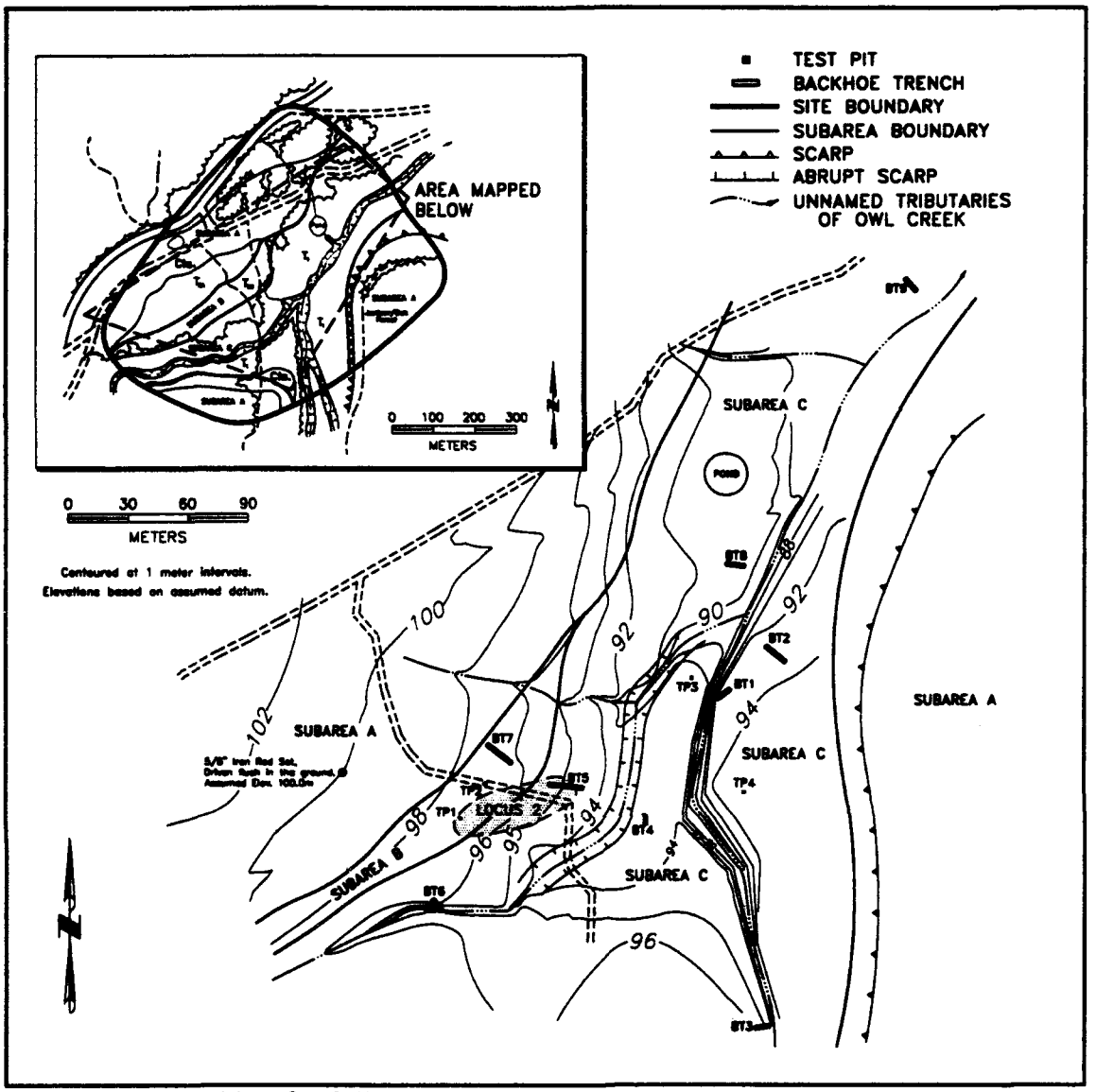


Figure 5.159 Site Map of 41CV900.

Trenches 3 and 4 were both upstream from the confluence of the unnamed tributaries on the terrace wedge between the two incised tributaries. Trench 3 was excavated near the south-central part of the Subarea C, just west of a secondary tributary on the margin of the more easterly stream. It exhibited a weak A-C-2R profile 170 cm thick. The A horizon was 70 cm thick and consisted of massive, very dark grayish brown (10YR 3/2) gravelly clay loam. It graded abruptly into 100 cm of massive to weakly imbricated loamy gravel which rested on weathered limestone.

Trench 4 was about 65 m north of BT 3 and on a narrow terrace wedge formed between the two channels. In contrast to the simple profile exposed

in BT 3, BT 4 exhibited a complex, stratified profile (A-C1-C2ss-C3-C4-C5ss-C6-C7-C8g) almost 3 m thick formed by flooding episodes from both tributaries. The stacked C horizons represent primary depositional beds composed of clay loams and gravelly clay loams, and were very dark grayish brown (10YR 3/2) to dark gray (10YR 3/1). No cultural material was observed in the trench.

Trenches 5 through 9 were all on the western side of the more westerly tributary in Subareas B and C. Trench 5 was excavated through a parts of Locus 2 in Subarea C, about 75 m north of a secondary tributary and just east of a road. Trench 6 was about 50 m southwest of BT 5, again in Subarea C. Trenches 5 and 6 exhibited similar A-Bg-Cg profiles composed of mixed alluvium and slopewash. The A horizon was thin (15 cm) as a probable result of erosive truncation resulting from agricultural activity. It consisted of blocky, black (10YR 2/1) gravelly clay loam, and graded down into a 1 m thick Bg horizon composed of massive, dark brown (10YR 3/3) gravelly clay loam suffused with faint brownish and grayish redox mottles. The horizon contained common masses of carbonate (probably dissolving lithoclasts) and, interestingly, siliceous pebbles (possibly derived from ancient fluvial lag gravels upstream). In BT 5, this horizon graded into a Cg horizon composed of light gray (10YR 2/2), massive gravelly clay containing abundant orange and brown redox mottles. In BT 6, the basal horizon consisted of yellowish sandy gravels. No cultural material was detected in either trench.

Trenches 8 and 9 were both on the western side of the tributary downstream from the confluence in Subarea C. The profile of BT 8 was almost identical to that of BT 4, whereas BT 9 exhibited a somewhat better developed A-Bw-C horizon developed in gravelly clay loams. No cultural material was detected in either trench.

Manually excavated TPs 3 and 4 were free standing units in Subarea C. Test Pit 3, excavated to 200 cmbs, was west of the tributary, and near the confluence of two tributaries. Test pit 3 contained five flakes in four levels between 140 and 180 cmbs (Table 5.78). Moderate to dense amounts of gravel were noted from 140 to 200 cmbs. Test pit 4 was on the eastern side of the eastern stream, about 60 m south of BT 1. It was also excavated to 200 cmbs. With the exception of two flakes in level 3, no other cultural material was recovered.

5.40.2.2 Excavations in the T_2 Terrace

Trench 7 was the only trench excavated in Subarea B and was on the margin of the low T_2 terrace about 20 m north (upslope) of BT 5. It revealed a thin, truncated AB-BC profile interpreted as early to middle Holocene slopewash derived from erosion of the Pleistocene terrace upslope. The AB horizon consisted of dark brown (7.5YR 3/2), blocky clay loam, and was roughly 30 cm thick, thinning somewhat upslope. The BC was 70 cm thick at the downslope end of the trench, but thinned considerably upslope. It consisted of brown (7.5YR 4/2), blocky clay loam containing carbonate masses and common, faint brownish and grayish mottles on weathered bedrock. Although the surrounding surface was littered with debitage, none was detected in the trench walls, suggesting that the flakes were washing in from the degraded Pleistocene terrace surface upslope.

Test pits 1 and 2 were free standing units excavated southwest of BT 7 in the T_2 surface of Subarea B. Test Pit 1 was in the northwest margin of Locus 2 and approximately 10 m south of the 60 x 15 m area which had the greatest potential for intact deposits based on shovel testing results. In TP 1, a total of five lithic debitage was recovered from levels 1, 2, and 5 in the 70 cm deep unit. The contact between a dark brown loamy clay and reddish brown loamy clay was noted at 20 cmbs. Dense gravels were encountered at 70 cmbs where the excavation was terminated. Test Pit 2 was 15 m southwest of BT 7, about 20 m northeast of TP 1, and just east of a road. In this 80 cm deep unit, a total of 37 lithic debitage pieces, two utilized flakes, and one burned rock were from the surface

Table 5.78 Artifact Recovery by Test Pit, 41CV900.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	6-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	5	0	0		
2	1	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	2	-	1	0.3	0	0	0	0	2	0	1	-	unspec.
	3	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	12	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	6	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	5	0	1	-	unspec.
	7-8		0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.3	0	0	0	0	37	0	2		
3	1-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	1	0.3	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	16	-	1	0.1	0	0	0	0	2	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	18	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	19-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		2	0.4	0	0	0	0	5	0	0		
4	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	4-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	2	0	0		

to 60 cmbs, with the highest frequency of flakes (n=12) in level 4. The two utilized flakes came from levels 2 and 6. The upper 30 cm of deposit consisted of mottled matrices suggesting disturbance (probably resulting from a nearby road cut and tracked vehicles). From 20 to 80 cmbs, the matrix consisted of a dark gray brown clay loam. Bedrock and gravels were noted at 70 cmbs along the west half of the unit. At 80 cmbs, bedrock and gravels were encountered across the entire test pit and excavation was halted.

5.40.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. The nine backhoe trenches did not reveal any cultural features or

other buried cultural materials from either Subarea B or C. The four test pits yielded 44 and 7 pieces of debitage and 1 and 2 pieces of burned rock, from Subareas B and C respectively, for a total of 49 flakes, three burned rocks, and two utilized flakes of Heiner Lake Tan.

The 49 specimens of lithic debitage represent four identified and four unidentified chert types (Table H-322). Heiner Lake Tan and Fort Hood Yellow occur in nearly equal amounts splitting the identified materials between Southeast Range and North Fort provinces. Indeterminate light brown chert and indeterminate mottled are twice as abundant as the identified cherts at 37% and 22% of the total, respectively. The chert types are more or less evenly split between Southeastern Range and North Fort chert province. Only the indeterminates occur in greater than expected frequencies, with Heiner Lake Tan and Fort Hood Yellow in expected frequencies, and Cowhouse White and Gray/Brown/Green occurring in less than expected amounts (Table H-323). Gray/Brown/Green and indeterminate light gray chert occur in lower than expected frequencies. When the indeterminates are excluded all the chert types occur in expected frequencies. The sizes represented are the full range except for the largest and smallest categories with a peak in numbers in the 1.2 to 2.6 cm range. The majority of the flakes are noncortex bearing (Table H-324). Both utilized flakes were of Heiner Lake Tan which is consistent with the frequency of Heiner Lake Tan in the debitage.

5.40.4 Conclusions

This site contains a complex of relatively young (e.g., Ford, upper West Range) alluvial and colluvial fills in Subareas B and C. No cultural material was detected in any of the trenches excavated. Low frequencies of lithic debris were recovered from each of the four test pits. In the T_1 terrace, overall density of cultural material is calculated as less than two flakes per cubic meter. In the T_2 terrace, the artifact density is higher (35 items per m^3), but the shallow deposits appear to be secondarily deposited from the Pleistocene surface upslope. No features were present in either area and no evidence was found to suggest intact buried occupations.

On this basis, we conclude that site 41CV900 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and no further management is recommended.

5.41 SITE 41CV901

In February 1995, we conducted formal test excavations at prehistoric archeological site 41CV901. Testing was designed to evaluate eligibility for inclusion to the NRHP. One test pit was manually excavated. The test demonstrates the presence of intact buried cultural materials including human remains which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.41.1 Introduction

5.41.1.1 Site Location and Description

Site 41CV901 lies in the northwestern corner of Fort Hood in Training Area 53. This is a southeast facing rockshelter at the head of an unnamed tributary of Henson Creek. The shelter measures 18 m long, 2 m wide, and 1.75 m high with a northeast-southwest long axis (Figure 5.160). For purposes of analysis, this site is considered a member of the Shoal/Turnover site group.



Figure 5.160 View of Test Pit 1 Behind Roof Fill in Rockshelter, 41CV901.

5.41.1.2 Previous Work

This rockshelter was initially recorded on 21 March 1985 by Masson and Strychalski. Flakes, bifaces, a possible mano, a core, some burned rock, and mussel shell were noted across the western half of the shelter floor, and two burned slabs were considered to be a possible hearth (Carlson et al. 1988). Throughout most of the western quarter of the shelter, the deposit was noted to have an "ashy quality" to it. Erosion and animals had impacted 25% of the shelter.

Mehalchick and Frederick visited the site 30 December 1992. Archaeological and geomorphological forms were completed and a new site map was drawn. Flakes, bifaces, mussel shell, a core, burned and unburned bone were observed, mainly in the western half. The previously recorded burned slabs and ashy deposit were relocated. Animal activity and erosion was judged to have disturbed 30 to 40% of the floor, but no obvious vandalism was detected. Because the shelter had the potential for intact deposits, two shovel tests (STs 1 and 2) were dug. Shovel test 1 was excavated to bedrock (or a large boulder) at 30 cmbs, and ST 2 encountered bedrock (or a large boulder) at 10 cmbs. The recovered artifact assemblage was composed of 57 flakes, a biface, and nine bone fragments representing small to medium sized animals. The cultural material was nearly evenly distributed through the excavated levels. Based on these shovel testing results, this shelter was thought to contain potentially intact cultural deposits and formal testing was recommended to determine NRHP eligibility. A minimum testing effort of two manually excavated test pits was recommended (Trierweiler 1994:A1060-1062).

5.41.1.3 New Work

Formal testing was completed on 23 February 1995. One test pit was excavated in the western side where cultural material was evident and placed over one of the burned slabs previously identified (Figure 5.161).

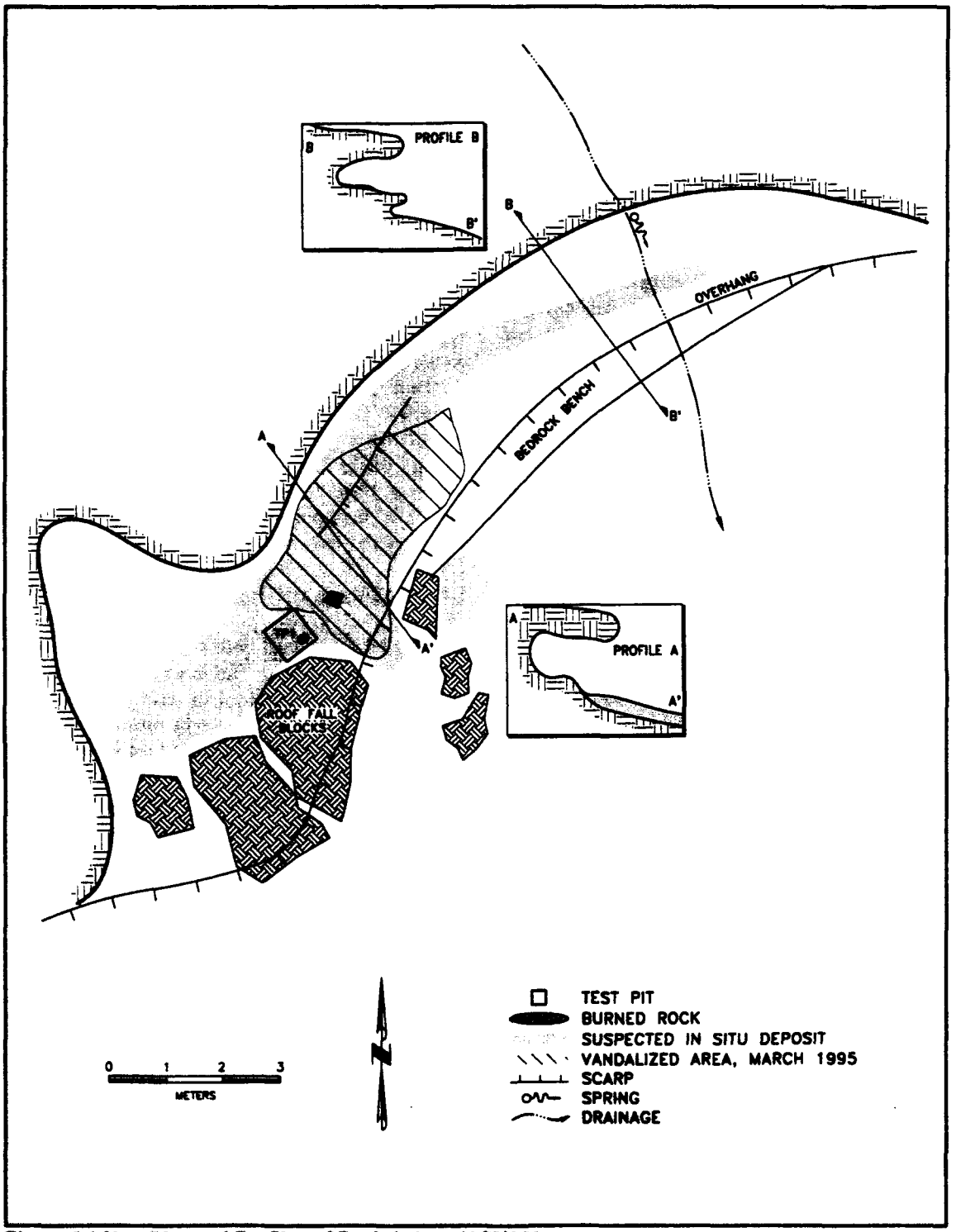


Figure 5.161 Plan and Profiles of Rockshelter, 41CV901.

5.41.2 Results

Within TP 1, the upper 10 cm yielded over 50 pieces of lithic debitage, three mussels shell fragments, a Perdiz arrow point, two large (20 to 30 cm) burned slabs in the southeastern quadrant, and three burned rocks (Table 5.79). Ashy and charcoal stained matrix were encountered just below loose silt on the surface (Figure 5.162). In level 2, human elements were encountered at 12 cmbs and were partially exposed prior to stopping work and backfilling. This human interment was labeled F 1 and appeared within a 40 x 15 cm area. Adult bone elements encountered included the articulated pelvis, femur, tibia, and fibula. These were positioned to indicate the body was lying on its left side with the legs tightly flexed to the upper body. These elements were in good condition, unburned, and resting in a defined pit which contained a light gray ash matrix. Large burned slabs (40 x 35 x 4 cm) and a large unburned spall were positioned at the lower edge of the recognized pit.

Following the identification of the bones as human remains, all collected material was returned to its original location and, pursuant to Fort Hood standard policy regarding human remains, the test pit was backfilled. A nearly complete Bonham arrow point, which had been collected from the surface a few meters to the northeast prior to excavation, was returned to its original place on the surface. After backfilling, the Fort Hood staff archeologist was immediately notified.

On 14 March 1995, Trierweiler visited the shelter and discovered that it had been extensively vandalized in the three weeks since the excavations. About 5-6 square meters of pristine deposits had been vandalized. The damage was unsystematic and did not appear to be the work of a knowledgeable collector or amateur. No evidence of screening/sieving existed and the digging appeared to be possibly done with a metal spike, resembling a tent stake, which was not previously present in the shelter. Further, the Bonham point was missing from the surface.[1] Remarkably, the damage appeared to be on either side of the backfilled test pit, with the immediate vicinity of the test pit not further disturbed. No bones or bone fragments were observed on the surface of the spoil piles. This suggests that the human burial may still be in place.

5.41.3 Analysis and Interpretations

This shelter functioned both as an occupation area and a burial chamber. The large slabs associated with the body are believed to have help bury or hold the body in place. The ashy matrix and other cultural material recovered in the pit matrix may have been part of the occupational fill and not associated grave goods. It is possible the body is younger than the projectile point discovered and it

Table 5.79 Artifact Recovery by Test Pit, 41CV901.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	14	3.0	0	0	0	0	0	0	0	-	unspec.
	2	F1	14	3.0	0	0	0	0	0	0	0	-	unspec.
	Total		28	6.0	0	0	0	0	0	0	0		

was interred in or through this occupation. Nonetheless, the Perdiz arrow point just above the burial indicates that a Late Prehistoric II period (Toyah phase [Prewitt 1981; 1985]) was present in this shelter. If this point indicates the approximate age of the burial, then it places this individual between 300 to 600 BP. Toyah burials are rare and not well known for this region, and Toyah occupations in rockshelters are even scarcer.

5.41.4 Conclusions

Rockshelter site 41CV901 contains an intact flexed human burial which probably dates to the Late Prehistoric II period. Burials are not uncommon in the Fort Hood rockshelters, but Toyah phase occupations are relatively unusual. At present, it appears the people using the Perdiz arrow points may not have been camping in these places but may have been using them to bury their dead. At the time of excavation, deposits appeared pristine, but within three weeks, the deposits had been seriously vandalized. However, that damage did not appear to have disturbed the intact burial and it is likely that some intact cultural deposits still remain within the shelter and have significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

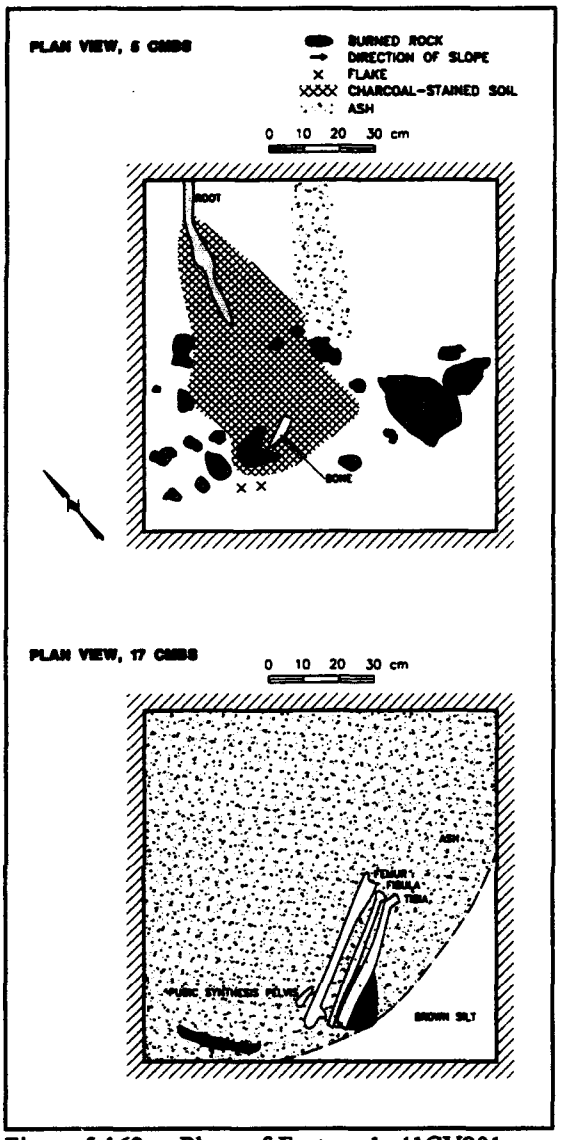


Figure 5.162 Plans of Feature 1, 41CV901.

5.42 SITE 41CV905

In March 1995, we conducted formal test excavations at prehistoric archeological site 41CV905. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Five test pits totaling 6.4 m^3 were manually excavated in three rockshelters. Formal tests demonstrate the presence of intact, buried, and stratified cultural components in Shelters A and B with at least one component in Shelter B dating to the Middle Archaic. These deposits have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the two shelters are evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.42.1 Introduction

5.42.1.1 Site Location and Description

Site 41CV905 is in the northwestern corner of Fort Hood, in Training Area 53. This small upland site contains three rockshelters and encompasses the upland surface and vertical scarp above an unnamed tributary of Turnover Creek (Figure 5.163). Maximum site dimensions, as defined in 1993, measure 220 x 80 m, with a north-south axis. Site area is 1.7 hectares (4.2 acres). For purposes of analysis, this site is considered a member of the Shoal/Turnover site group.

5.42.1.2 Previous Work

Masson, Michaels, and Mesrobian first recorded this site on 26 March 1985 as two rockshelters (A and B) and a lithic procurement scatter on the upland (Carlson et al. 1988). Flakes, cores, and bifaces were noted on the upland surface, and an untyped dart point was collected. About 30% of the upland was impacted by erosion and military vehicles. In rockshelter A, no cultural material was observed and no disturbances were noted but at least 20 to 30 cm of leaf litter covered the shelter floor. The shelter appeared to contain moderately deep deposits. Rockshelter B was about 30 meters south of Rockshelter A and had been vandalized as a roughly 8 m long by 50 cm deep pothole covered the western half of the shelter. At least another 20 cm of fill was below the bottom of the pot hole. Flakes, bifaces, and a core were observed on the shelter floor and talus slope. In the back section of the shelter, the floor was slightly higher in elevation and contained a thick deposit of buff-colored, decomposed marl.

On 25 February 1993, Mehalchick and Frederick visited the site and evaluated it based on archeological potential and geomorphic context. The site was divided into two subareas. Subarea B subsumed the upland, a flat to gently sloping part of the Manning Surface, which abruptly terminated at the east end in a steep vertical scarp overlooking a tributary canyon. This upland surface, above and west of the rockshelters, constituted a lithic procurement area that contains flakes, cores, bifaces, unifaces, and natural chert cobbles/nodules. A mosaic of bedrock and thin, patchy, residual soil is present, with the soil encompassing less than 50% of this upland surface. The soil reveals of a truncated Bt-R or Bk-R profile. In general, this soil becomes more denuded towards the edge of the escarpment, where nearly all soil had been stripped. Subarea B has been substantially altered by sheet erosion, leaving no intact cultural deposits, thus shovel testing was not warranted.

Subarea A included Rockshelters A and B formed along and immediately below the edge of the Manning Surface. Of the two shelters, Rockshelter A was the northernmost and was north and west of a first order stream which traverses the edge of the upland. This shelter terminated where this stream actually crossed over the upland edge and then extended about 9 m roughly parallel to the stream. The majority of the shelter fill appeared to be externally derived, fine grained, dark colored loamy sediment mixed with lesser amounts of coarser limestone debris or eboulis; fill depth in excess of a meter thick in parts of this shelter was anticipated. Maximum dimensions of Shelter A were 10 m long x 2.5 m deep x 0.8 m high. No cultural material was observed; however, the shelter floor was covered with leaf litter and limestone spalls hindering surface visibility. Animal disturbance had minimally impacted the shelter.

Rockshelter B, with maximum dimensions of 29 x 5 x 3 m high, actually consisted of two stacked shelters; a lower shelter which was previously recorded as vandalized, and an upper shelter which joined the lower by means of a gently sloping ramp. The deposits on the upper surface were shallow, largely internally derived, yellow silty to moderately coarse (cobble to gravel sized) limestone eboulis. The lower surface, conversely, was dominated by externally derived fine grained, dark brown loamy sediment and a mixture of larger internally derived limestone fragments and

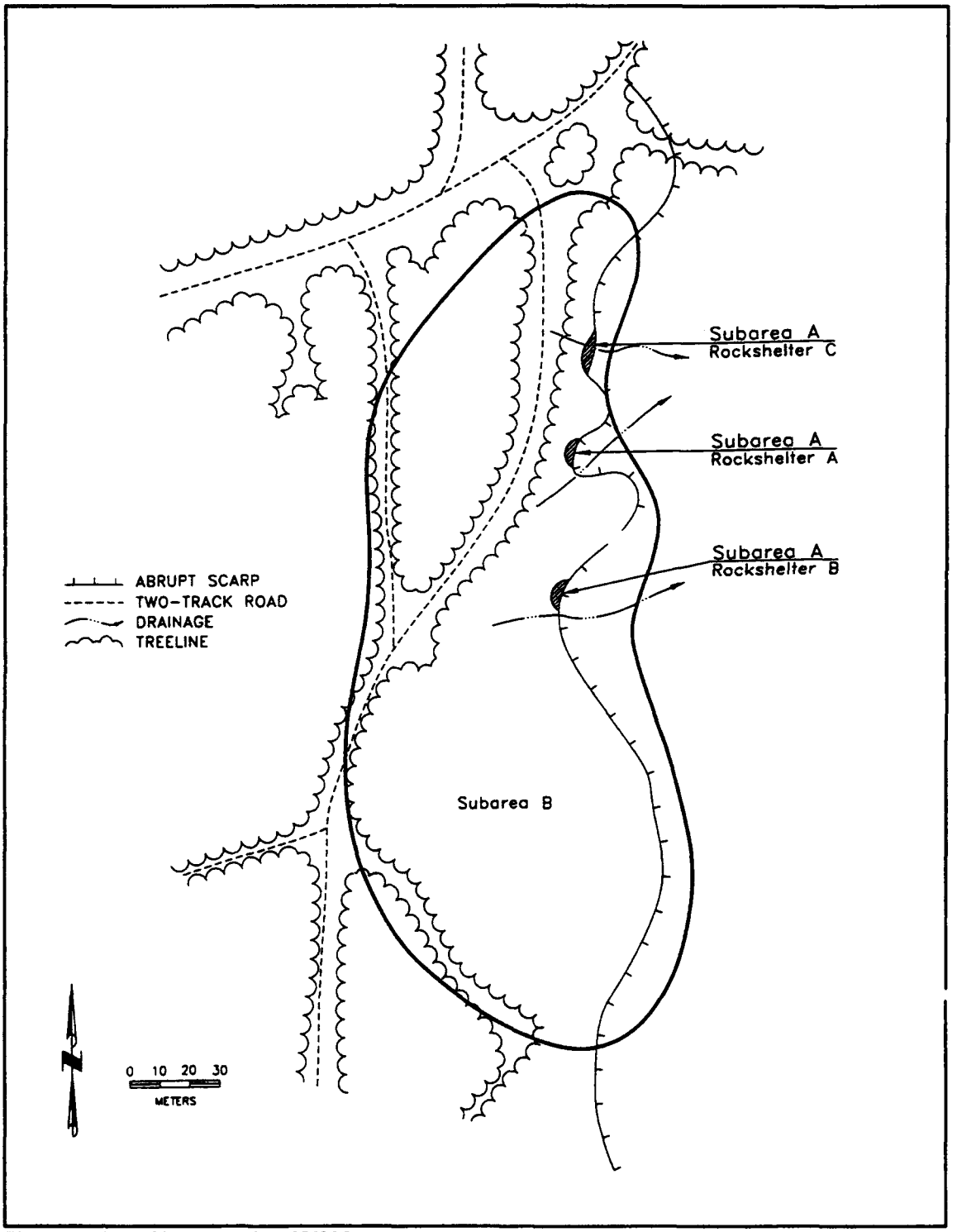


Figure 5.163 Site Map of 41CV905.

estimated to be up to 70 cm thick in places. Lithic debitage and a few burned rocks were observed across the floor of the lower surface. The vandalized area consisted of a large depression, about 8 m in diameter. Vandalism, erosion, and animal burrows have impacted at least 60% of the shelter.

Because the both shelters had the potential for intact deposits, a crew returned on 31 March 1993 and excavated one 50 x 50 cm test quad (TP 1) in Shelter A and three 35 cm diameter shovel tests in Shelter B. Test pit 1, near the center of Shelter A, was excavated to bedrock at 58 cmbs. Only one chert chunk and three small charcoal chunks were recovered from 40 to 50 cmbs. Two of the three shovel tests in Shelter B contained cultural material. Artifacts were distributed throughout levels 1 through 7, with the highest frequency occurring 11 to 30 cmbs. Shovel testing results indicated that both shelters in Subarea A may contain potentially intact cultural deposits. These deposits were of unknown significance and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include at least two square meters of manually excavated test pits in each shelter, for a total of four square meters (Trierweiler 1994:A1068-1074).

5.42.1.3 New Work

Upon initiating testing, a third previously unrecorded rockshelter (designated C) was discovered 30 m north of Rockshelter A. Maximum dimensions of this shelter were 20 x 5 x 1 to 1.5 m high. Shelter C was similar to Shelter B in that it actually consisted of two discrete, stacked shelters (Figure 5.164). The upper surface, at the north end of the shelter, contains a very thin, internally derived silt veneer overlying bedrock. The lower surface primarily consists of externally derived, dark loamy fill. Large, immovable slabs of roof fall had cleaved from the upper surface overhang and presently cover the north half of what appeared to be the lower surface floor. No disturbances were apparent, however, a rocket launcher and other miscellaneous military hardware was strewn near the edge of the steep colluvial slope. Although no cultural material was observed on the surface, the lower surface, based on the presence of deposition, had the potential to contain buried cultural components. In addition to Shelters A and B, Shelter C was formally tested.

The 50 x 50 cm test quad excavated in 1993 had been designated TP 1, therefore new test pits began with TP 2. Formal testing of Subarea A, the three rockshelters, was completed 17 March 1995. A total of five test pits (TPs 2 through 6) were excavated; two each in Shelters A and B, and one in Shelter C. Units were in areas of greatest potential and least disturbance based on the previous work, present observations, and pin flag probes. Unit sizes and depths are listed in Table 5.80.

5.42.2 Results

5.42.2.1 Excavations in Shelter A

Test Pit 2 was in the southern half of Shelter A, along the backwall (Figure 5.165). About 20 cm of the eastern edge of the unit extended outside the dripline. The subsequent profile exhibited a clear lateral contact between chemically weathered cave spall outside the dripline and physically weathered spall inside the shelter (Figure 5.166). The interior shelter sediments (Zone 1) consisted of stony, grayish brown (10YR 5/2) silt (Type 1 sediments of Abbott 1994). Outside the shelter, the fill consists of organic rich, dark brown (10YR 3/3) stony silt loam (similar to Type 3 of Abbott 1994). The character of the contact between these two zones clearly indicates they represent differential post-depositional weathering of a single depositional unit rather than two distinct units. No cultural material was in levels 1 through 4, with seven pieces of lithic debitage between 40 to 75 cmbs. Bedrock, sloping west to east, was encountered across the unit from 50 to 75 cmbs.



Figure 5.164 View South of Inside of Rockshelter C, 41CV905.

Test pit 3, also excavated in Rockshelter A, was near the northern edge of the shelter and extended from the dripline east toward the edge of the platform. The profile revealed three zones. The upper zone extended completely across the unit, and consists of very dark grayish brown loam to clay loam with few incorporated spalls (Type 3 sediments of Abbott 1994), and is interpreted as primarily externally-derived material. Zones 2 and 3 consists of laterally opposed dark brown silt loam and grayish brown stony silt similar to TP 2, and are also interpreted as differentially weathered parts of the same depositional unit. The top five excavation levels (0 to 50 cmbs) were devoid of cultural material, with 13 pieces of lithic debitage from 50 to 100 cmbs. Bedrock, again sloping west to east, was encountered from 80 to 104 cmbs.

5.42.2.2 Excavations is Shelter B

Test pit 5 was excavated in Rockshelter B, at the southern edge of the shelter (lower surface), and at the edge of the large pothole and inside the dripline (Figure 5.167). A shovel test excavated in 1993 intruded about 15 cm into TP 5 and was visible in the west wall profile (Figure 5.168). Other than this disturbed area, the fill consisted of a thin (20 cm) upper zone of very dark grayish brown (10YR 3/2) stony loam over a thick (more than 1 m) brown stony to slightly stony loam. Overall, the fill is interpreted as a mixture of internal and external sediments. Cultural material consists of 193 pieces of lithic debitage, an arrow, a Darl and a unclassifiable dart point, 10 bone fragments, 11 burned rocks, two mussel shell umbos, a piece of groundstone, and 14 stone tools

Table 5.80 List of Treatment Units.

Treatment Unit*	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 2	1.00	1.00	0.75	rockshelter
TP 3	1.00	1.00	1.03	rockshelter
TP 4	1.00	1.00	0.90	rockshelter
TP 5	1.00	1.00	1.58	rockshelter
TP 6	1.00	1.00	2.28	rockshelter

*Note: test pit 1 was previously excavated.

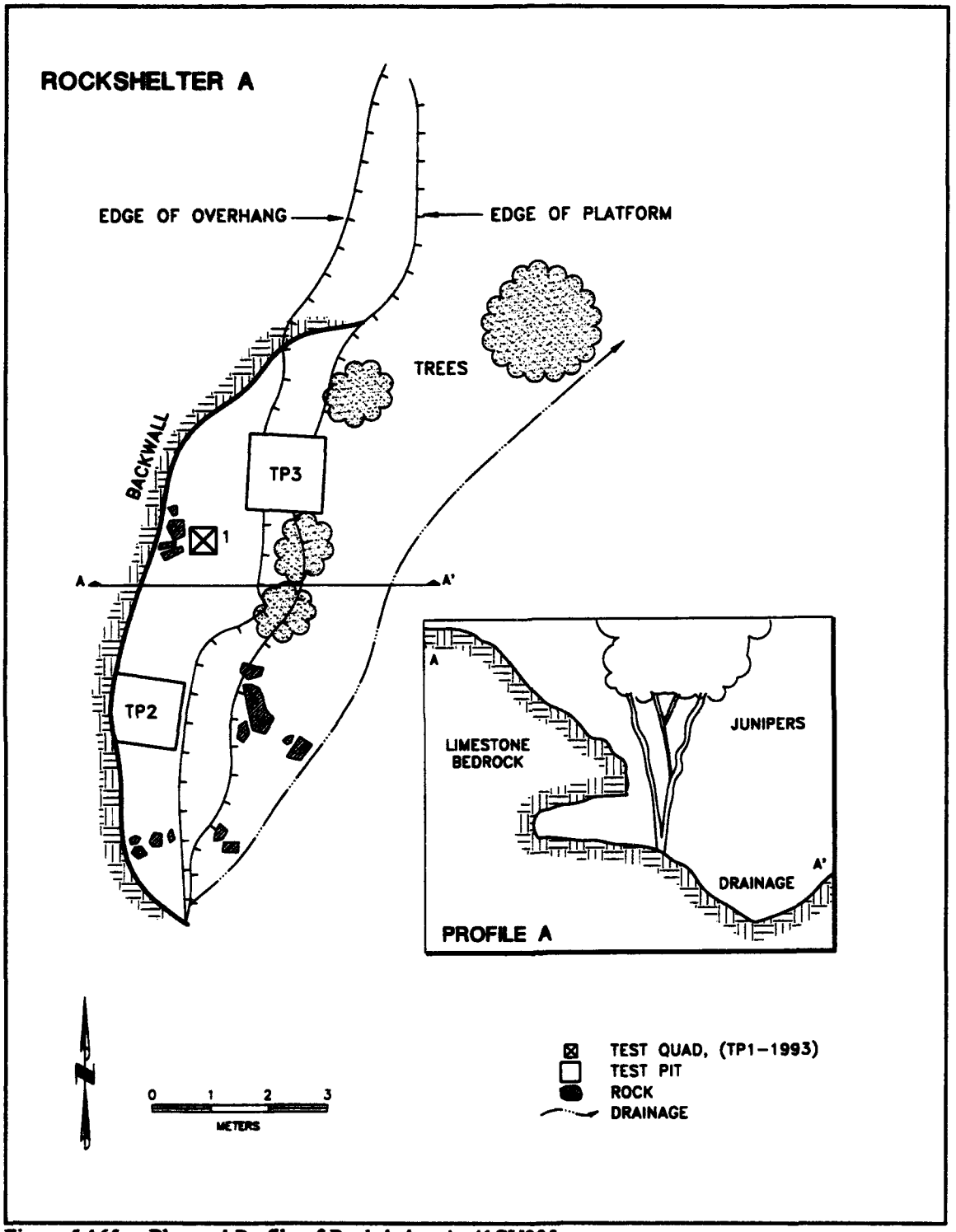


Figure 5.165 Plan and Profile of Rockshelter A, 41CV905.

from surface to 140 cmbs (Table 5.81). Artifact frequencies peaked in two zones, from 10 to 40 cmbs and from 90 to 120 cmbs. A float sample from 100 to 110 cmbs yielded only 0.1 g of charcoal but gave a $\delta^{13}C$ (-26.5‰) corrected assay of 4070 ± 40 BP (Beta-83355). Bedrock sloped across the unit from 98 cmbs in the northwest to 158 cmbs in the southeast.

Test pit 6 was also in Rockshelter B, about 11 m east of TP 5, and on the gently slope that connected the upper and lower surfaces. This unit exhibited a thick complex profile consisting of about 1 m of mixed, black to grayish brown internal and external stony loams and sands over about 1.2 m of silty fine sand to sandy silt, which clearly represents internally-derived, physically-weathered sediments (Figure 5.169). Levels 1 through 3 yielded 82 lithics, 18 burned rocks, and one bone fragment. Occasional lithics and/or burned rocks were recovered from 30 cmbs to a maximum depth of 228 cmbs. From 100 to 228

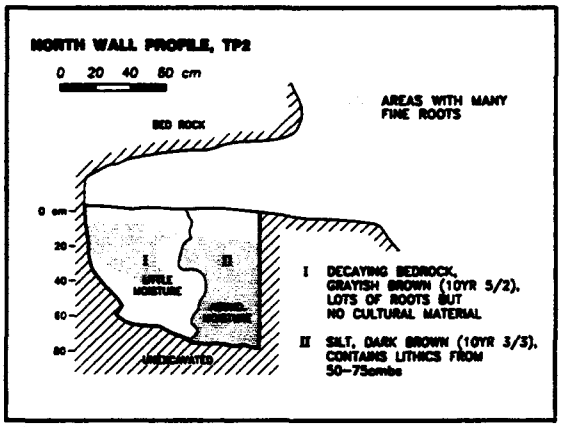


Figure 5.166 Test Pit 2 Profile, Rockshelter A, 41CV905.

cmbs, many levels yielded medium to large sized (some immovable) roof fall slabs.

Two distinct burned matrix anomalies encountered from 130 to 143 cmbs and 170 to 185 cmbs respectively. Neither anomaly was designated a

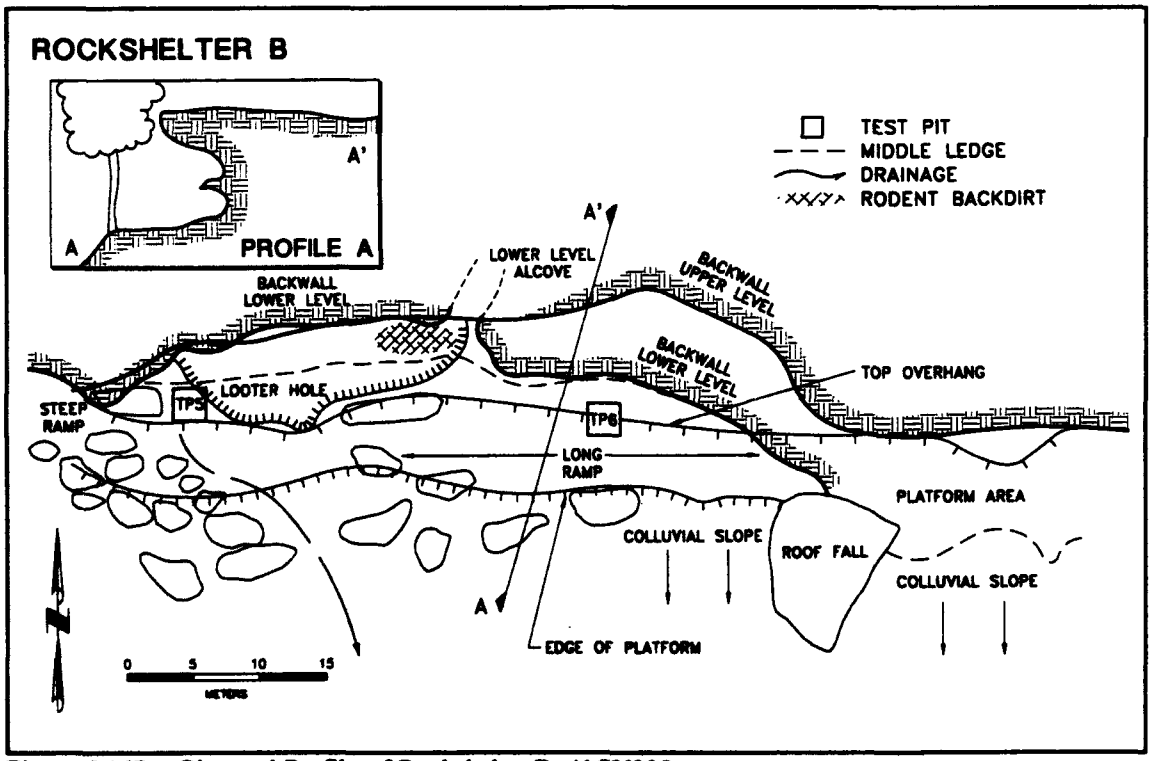


Figure 5.167 Plan and Profile of Rockshelter B, 41CV905.

cultural feature. In planview at 130 cmbs, showed the first oxidized area as a thin narrow rind, that measured 48 cm east-west by 5 cm north-south, in the northeast quadrant of TP 6. To the north, this oxidized strip was bounded by a dark gray brown matrix, that covered an area 60 cm east-west by 45 cm north-south. The remainder of the unit consisted of a yellowish brown sandy silt. With depth, the discolored fill and oxidized soil became rather amorphous and diffuse, and mottled "fingers" of both matrices were noted in various directions. This pattern could possibly result from either bioturbation of a hearth feature or from in-situ burning of roots. At 140 to 143 cmbs, a small mottled area (about 25 x 20 cm) from the burn was present in the northwest quadrant of TP 6. The second burned anomaly was encountered at 170 cmbs and extended to 185 cmbs. At 170 cmbs, the test pit planview consisted of a large, immovable roof-fall slab and four separate matrices, including the oxidized area. An east-west cross-section revealed two 5 cm thick oxidized strips separated by a dark gray brown matrix. Since the roof-fall constricted the excavation area, it could not be clearly determined whether this anomaly was cultural or natural. However, sparse lithic debitage from 160 to 190 cmbs may be directly associated with this burned anomaly as a deeply buried cultural component. Bedrock was encountered from 226 to 228 cmbs, along the north wall of the unit.

5.42.2.3 Excavations is Shelter C

Test pit 4 was in the newly discovered Rockshelter C on a moderately sloping (south to north) area at the south end of the shelter (Figure 5.170). The dripline bisected this unit from southeast to northwest, into two triangles. Nevertheless, the entire unit consisted of dark brown, chemically weathered stony clay loam interpreted as a mix of internal and external sediments. The nine excavated levels yielded four flakes, one in level 2 and three in level 3. Dramatically sloping bedrock was encountered at 28 cmbs in the southwest and 86 cmbs in the northeast.

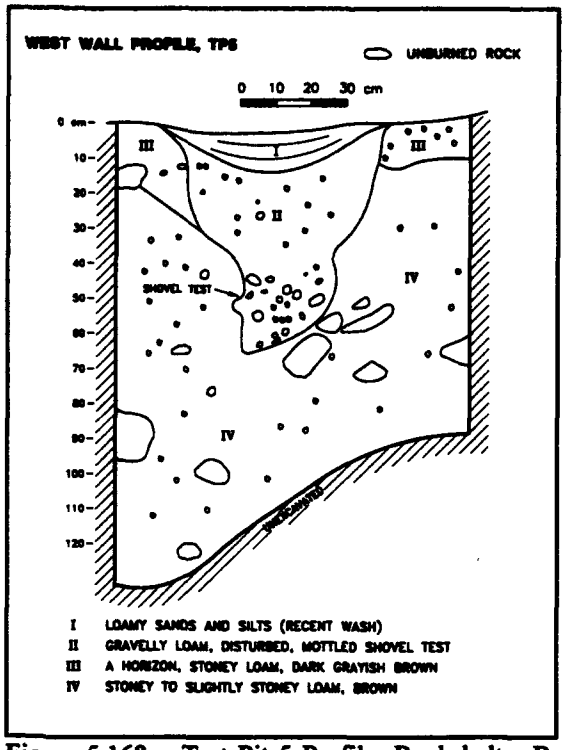


Figure 5.168 Test Pit 5 Profile, Rockshelter B, 41CV905.

5.42.3 Analysis and Interpretations

5.42.3.1 Definition of Analytical Units

The five test pits in the three rockshelters yielded 322 pieces of lithic debitage, three projectile points, 16 stone tools, 11 bone fragments, two mussel shell umbos, 79 burned rocks, tiny pieces of charcoal and some snail shells, but no recognizable features. These materials were assigned to one identified time period - the Middle Archaic - with the rest of the material being temporally unclassifiable. The Middle Archaic assignment is based on a charcoal date of 4070 BP from TP 5 in Shelter B. The temporally unassigned materials come from all other proveniences.

Table 5.81 Artifact Recovery by Test Pit, 41CV913.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	7	0	0		
3	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	9	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	15	0	0		
4	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	3	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	4-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	4	0	0		
5	1	-	0	0.0	0	0	0	1	6	0	1	-	unspec.
	2	-	0	0.0	0	1	0	0	80	1	0	Other Arrow	unspec.
	3	-	5	0.5	1	8	1	0	122	1	4	Darl	unspec.
	4	-	4	0.3	0	0	0	0	59	0	0	790±50	unspec.
	5	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	6	-	2	0.3	0	0	0	1	12	0	2	-	unspec.
	7	-	0	0.0	0	0	0	0	11	0	3	-	unspec.
	8	-	0	0.0	0	0	0	0	12	0	0	-	unspec.
	9	-	2	0.3	0	0	0	0	18	0	0	-	MA
	10	-	0	0.0	0	1	0	0	19	1	0	?dart	MA
	11	-	0	0.0	0	0	0	0	44	0	0	4070±40	MA
	12	-	0	0.0	0	0	0	0	33	0	1	-	MA
	13	-	0	0.0	1	0	0	0	17	0	2	-	MA
	14	-	0	0.0	0	0	0	0	0	0	1	-	MA
	15-16	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		13	1.4	2	10	1	2	447	3	14		
6	1	-	0	0.0	0	1	0	0	47	0	0	-	unspec.
	2	-	11	2.7	0	0	0	0	122	0	0	-	unspec.
	3	-	13	2.7	0	0	0	0	76	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	7	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	7	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	8	-	1	0.3	0	0	0	0	10	0	0	-	unspec.
	9	-	2	0.3	0	0	0	0	0	0	0	-	unspec.
	10	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	12	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	13	-	1	0.1	0	0	0	0	0	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	15	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	0	0	1	-	unspec.
	18	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	19	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	20-23	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		31	6.9	0	1	0	0	289	0	1		

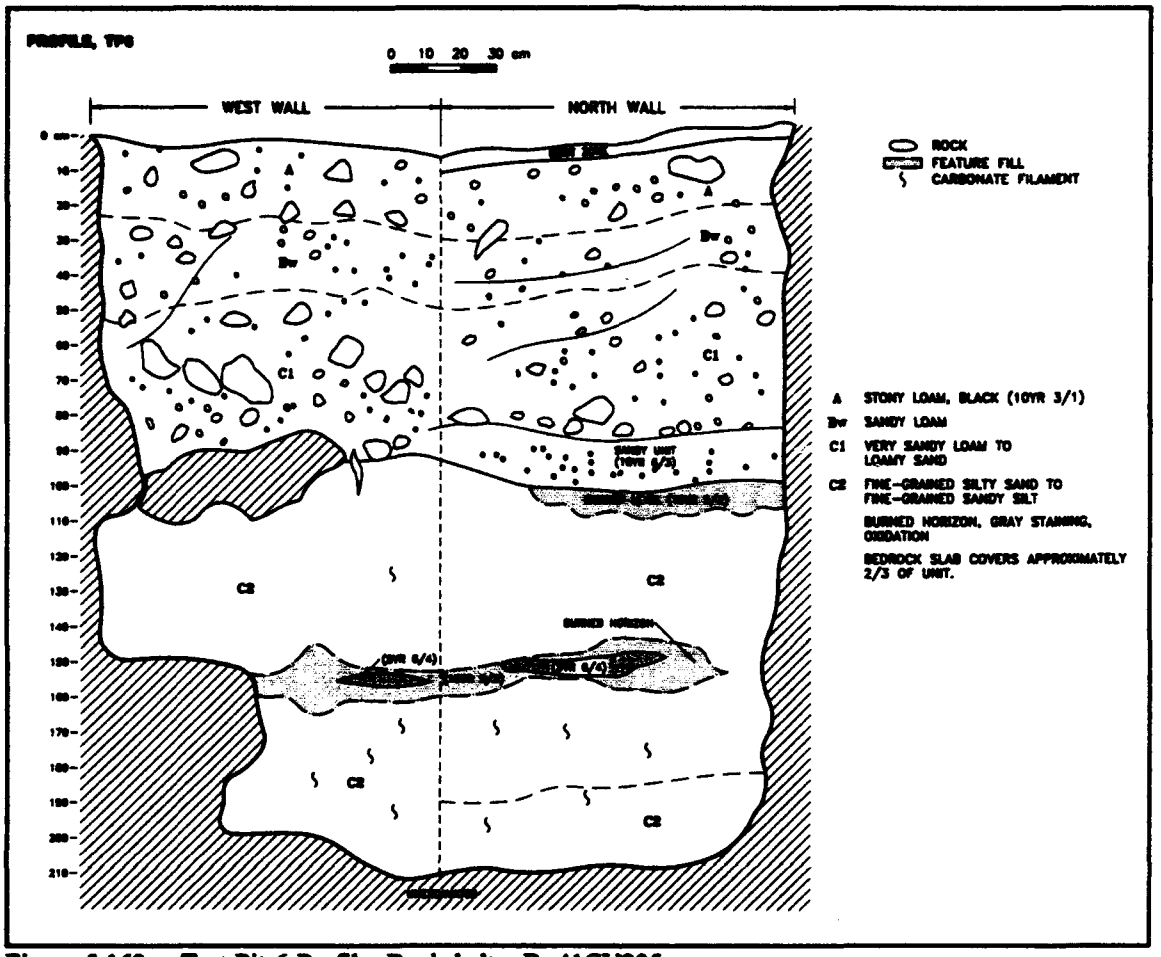


Figure 5.169 Test Pit 6 Profile, Rockshelter B, 41CV905.

5.42.3.2 Middle Archaic Materials

These materials are vertically distributed over a 60 cm thick zone and include 67 pieces of debitage, an untypeable dart point, four stone tools, one bone fragment, one umbo, and two burned rocks. These may represent one or more cultural events which appear to have been slightly dispersed vertically in TP 5.

The 142 specimens of debitage represent four identified and four unidentified chert types with 83.% of the materials identifiable (Table H-325). Fort Hood Yellow dominates the identified portion of the sample with 74% of the materials while light brown cherts are the highest at 10% of the indeterminate types. Owing to the one type of Southeast Range material (Heiner Lake Tan) North Fort cherts dominate with 83% of the materials. This assemblage is rare in that the combined indeterminates are not overrepresented, but occur at expected levels along with Heiner Lake Tan, while Fort Hood Yellow occurs in higher than expected amounts, and all others occur at less than expected amounts (Table H-326). The exclusion of the indeterminates does not result in any change.

The modal peak for size occurs at the 1.8 to 2.6 cm category with 94% of the materials larger than

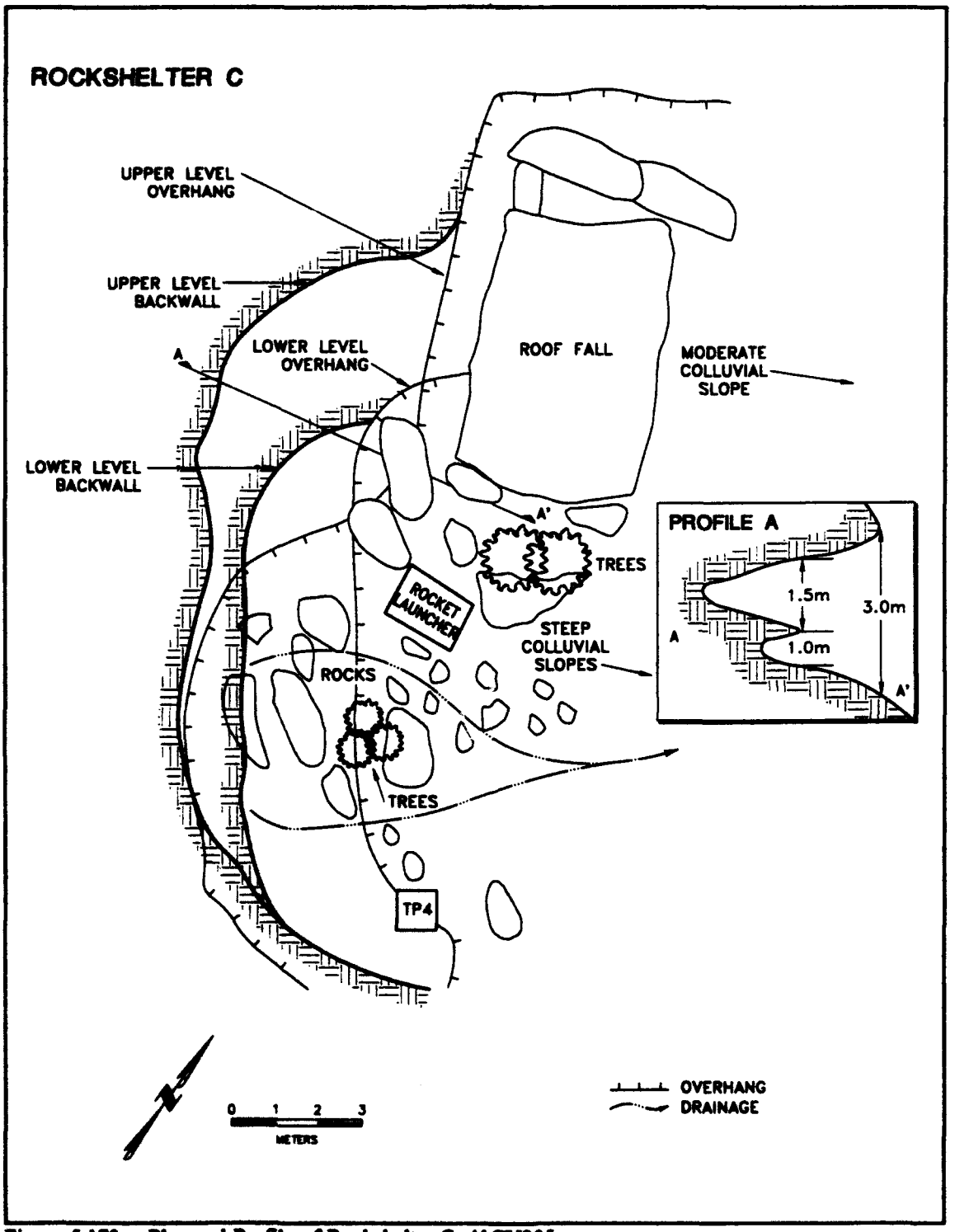


Figure 5.170 Plan and Profile of Rockshelter C, 41CV905.

0.9 cm in size (Table H-325). The rare occurrence seen in the binomial statistic is also reflected in the cortex percentages as debitage with and without cortex are fairly even (Table H-327). This would imply that large tools that do not require fine workmanship or reduction and little decortification were made onsite. However, these predictions do not pan out one looking at the tool assemblage suggesting the manufacture was for use elsewhere.

The single complete dart point is made of indeterminate light gray chert and could not be identified as to type. It came from level 10 in TP 5. The other tools include two utilized flakes, a complete early stage biface and a distal fragment of a late stage biface (Table H-328). The two utilized flakes are of the same dominate lithic types represented in the debitage (<10% of the identified debitage), whereas the two bifaces were of chert that is not well represented in the debitage, and thus probably came in as complete objects.

The one bone represents a long bone fragment of a large to very large mammal (bison size). The one unburned umbos was identified as left *Tritigonia verrucos*. These two items indicate the potential food resources at that time.

The two burned rocks weigh 0.2 kg and were at the top of this zone in level 9. A float sample from 100 to 110 cmbs yielded 0.1 g of charcoal of indeterminate wood but provided a $\delta^{13}C$ (-26.5‰) corrected assay of 4070 ± 40 BP (Beta-83355). This age places this material into Prewitt's Marshall Ford phase (1981; 1985) of the Middle Archaic which has the Bulverde point as a key index marker. This period is well represented in central Texas, but this is the only rockshelter that has yielded deposits this old at Fort Hood. This one early deposit does support the present interpretation that most rockshelters in Fort Hood were flushed out sometime about 2,000 to 3,000 years ago. These old deposits are probably not extensive in Shelter B, but these are extremely important since they represent a settlement pattern that is no longer represented in other Fort shelters.

5.42.3.3 Temporally Unclassified Materials

These materials include 255 pieces of lithic debitage, two points, 12 stone tools, 10 bone fragments, one mussel shell umbo, 34 burned rocks, and some snail shells were principally from TP 6 in Shelter B, with a few items in TPs 2 and 3 in Shelter A.

The 620 specimens of debitage represent eight each identified and unidentified chert types with 42% of the materials identifiable (Table H-329). Fort Hood Yellow predominates the identified portion with 75% of the materials resulting in the dominating presence of North Fort cherts. Light brown and miscellaneous cherts are relatively high among the indeterminates with 36% and 47%, respectively. Fort Hood Yellow and the combined indeterminates occur in higher than expected amounts, while all others occur in less than expected amounts (Table H-330). The exclusion of the indeterminates results in Heiner Lake Tan and Gray/Brown/Green occurring in expected mounts, all others remaining unchanged.

The modal peak for size is 1.2 to 1.8 cm, category (28%) with 91% of the materials smaller than 2.6 cm in size. The drop-off in frequency appears to be stair-stepped toward both ends of the size spectrum. The cortex data presents the tertiary flakes to be less than two-thirds of the assemblage which is an expected amount based on the size distribution (Table H-331). These data reflect larger and less than decortified tools. However, as is common this prediction of tool manufacture is not borne out by the recovered tools indicating an off-site usage.

The two points include a nearly complete other arrow point made of indeterminate light brown chert from TP 5, 10 to 20 cmbs and a proximal end of a Darl point of Heiner Lake Tan from TP 5, 20 to 30 cmbs. The other tools include; a quartzite mano fragment, four utilized flakes, a complete finished biface, a proximal end of a finished biface, two edge modified flakes, a complete late stage biface, and a wedge section of

a side scraper (Table H-332). One multiple platform core and one tested cobble were also recovered. All these tools were from TP 5 between 0 and 80 cmbs with the exception of the one complete finished biface from 160 to 170 cmbs.

The 10 bone fragments represent unidentifiable long bone fragments from mostly large to very large mammals (bison size) with a rabbit (*Sylvilagus* sp.) tooth, from 10 to 20 cmbs in TP 5 and three small to medium size mammals fragments, one which is burned (Table H-333). Again all these fragments were from TP 5 between 10 and 30 cmbs. A single unburned *Lampsilis* sp. umbo was also mixed in with these bone fragments.

The 34 burned rocks weigh 6.6 kg and were scattered vertically and horizontally in TPs 5 and 6. These did not appear to be part of intact features, although they may have originally been part of one or more in Shelter B.

The lack of charcoal in these temporally unclassifiable levels has hindered an age assignment. The two points, the other arrow and the Darl indicate that Late Archaic and Late Prehistoric occupations may potentially be present, but lacking clear stratigraphic occupations or absolute dates, we can not positively identify these occupations. These latter time periods are represented in other rockshelters in Fort Hood and therefore would be reasonable here. Based on the points collected, it is unclear if the higher density of materials in the top 40 cmbs of TPs 5 and 6 represent one or two time periods.

5.42.4 Conclusions

The three small rockshelters at 41CV905 contain relatively deep fills that represent complex interaction between internal and external sediments and wet and dry weathering environments. The lateral opposition of physiochemically-weathered (wet) and physically weathered (dry) limestone flour in TPs 2 and 3 clearly indicates that, given proper conditions, internal sediments can be weathered to resemble externally-derived slopewash. The presence of middle Holocene deposits in Shelter B are extremely important as they support the interpretation that other shelters in Fort Hood were flushed sometime in the Late Archaic period. This remnant of the early deposits is rare and could aid considerable in interpreting rockshelters and environmental conditions at Fort Hood.

Shelter B is the only one to yield much in the way of cultural remains. Because of its depth, it also reveals some stratification, with the Middle Archaic below the top 40 cm. While a large area in the center of Shelter B appears to have been vandalized, intact deposits are still present (to significant depths) in the shelter's western and eastern margins.

On the basis of the above, shelters A and B are evaluated as containing intact archeological deposits which have significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). These parts of the site are judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training.

5.43 SITE 41CV913

From December 1994 through January 1995, we conducted formal test excavations at prehistoric archeological site 41CV913. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two trenches were dug by backhoe and two test pits (2.5 m^3) were manually excavated. These tests demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as not eligible for inclusion to the NRHP and no further work is recommended.

5.43.1 Introduction

5.43.1.1 Site Location and Description

Site 41CV913 lies in the northwestern sector of Fort Hood in Training Area 53. Henson Creek and its tributary delimit the southern and western site boundaries respectively (Figure 5.171). Maximum site dimensions, as defined in 1993, measure 240 x 165 m, with an east-west long axis. Site area is 3.7 hectares (9.1 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.43.1.2 Previous Work

The site was first recorded by Michaels, Masson, and Strychalski on 29 March 1985 as a temporary camp consisting of a very light lithic and burned rock scatter (Carlson et al. 1988). A Darl dart

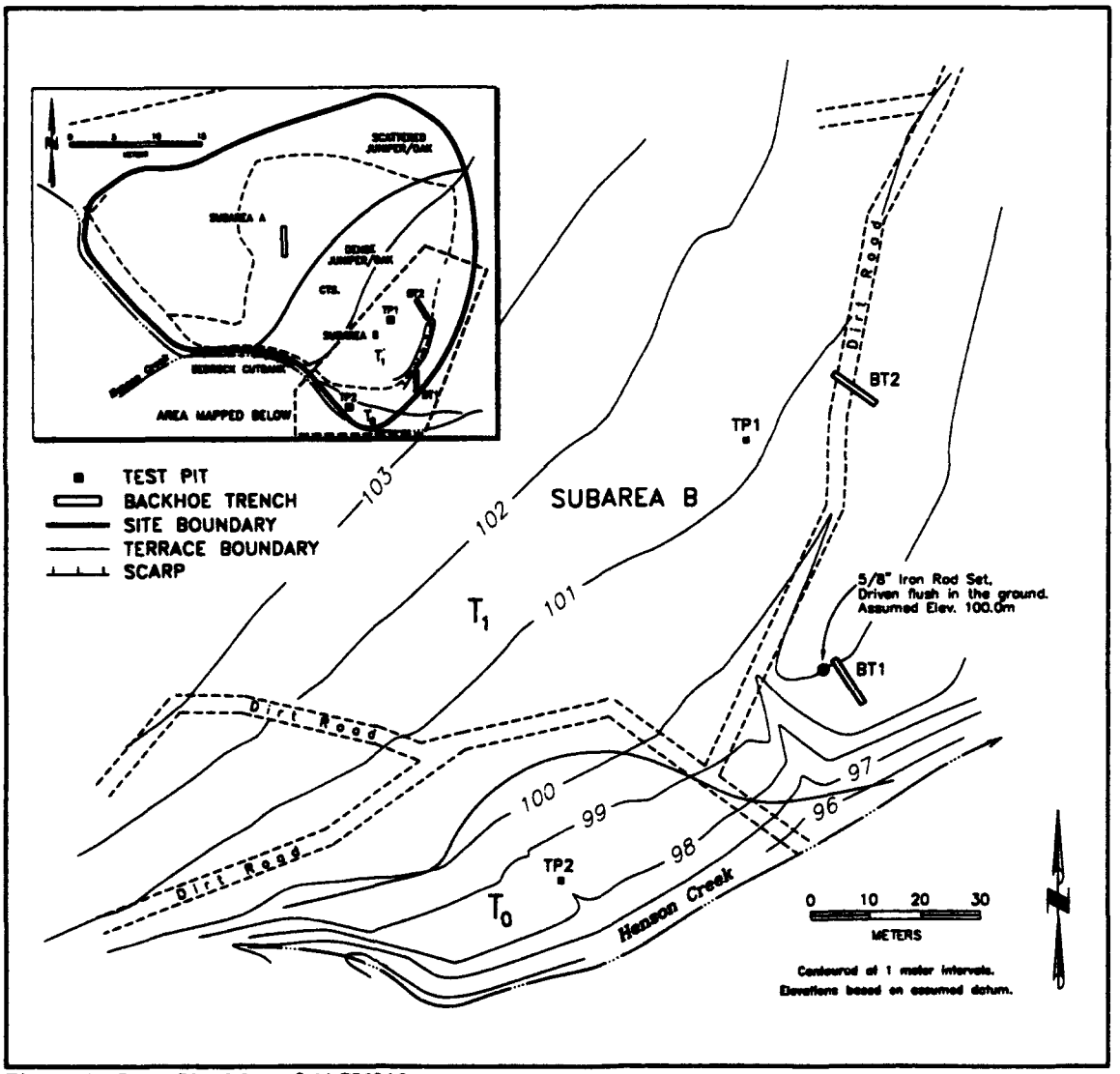


Figure 5.171 Site Map of 41CV913.

point, two untyped dart points, and an untyped arrow point were collected. This team collected additional data six weeks later on 11 June 1985. The site was noted to be situated on the upland and high terrace (T_2) above Henson Creek. It was estimated to be 25% impacted by vehicular traffic, erosion, and military activities.

On 26 October 1992, Abbott and Kleinbach visited the site and evaluated it based on geomorphic context and archeological potential. The site was divided into two subareas. Subarea A consisted of a scatter of lithics and burned rock situated on a denuded intermediate upland slope north of Henson Creek. The erosional upland surface was underlain by clays, limestones, and fossil oyster beds of the Cretaceous Walnut clay. The sloping surface was mantled with a lag of limestone cobbles and fossil oysters. Although small localized areas of slopewash deposition were present, bare bedrock predominated, and the potential for buried cultural material in good context was considered remote. No further work was considered warranted in Subarea A.

Subarea B subsumed a terrace lying 2 to 4 m above the modern channel (T_1) and the modern floodplain (T_0) of Henson Creek (Figure 5.172). The terrace was underlain by a fining up sequence approximately 1.5 m thick. The fill consisted of basal channel gravels that graded up into dark grayish brown gravelly loam. A thin strip of shallow fine-grained colluvium and slopewash overlay the terrace/ slope contact. Deposits on the upper terrace showed only moderate pedogenic alteration and were tentatively correlated with the West Range alluvium of Nordt (1992), although it was considered possible that they represented older, truncated deposits (e.g., the Fort Hood alluvium). The floodplain fill was much more gravelly throughout and represented recent deposition (probably equivalent to the Ford alluvium of Nordt 1992). Even though dense vegetation covered most of Subarea B, lithics and burned rocks were noted on small exposed surfaces. Although no buried cultural material was observed, the terrace and floodplain are both of culturally-relevant age and had the potential to contain stratified cultural material. Since this



Figure 5.172 View East Across Eastern Part of 41CV913.

subarea had the potential for intact deposits, a crew excavated 17 shovel tests on 12 November 1992. Only two tests (12%) were positive, with a total of two flakes recovered. Based on shovel testing results, the upper 40 cm of deposit suggested very limited archeological potential. However, cultural deposits were possible deeper than the limits of shovel testing and formal testing was recommended to determine NRHP eligibility. A minimum testing effort of at least one backhoe trench was recommended. If buried cultural material was encountered, then manually excavated test pits were recommended to test for integrity and clarity of occupation (Trierweiler 1994:A1075-1077).

5.43.1.3 New Work

Formal testing of Subarea B was completed 12 January 1995. Two backhoe trenches (BTs 1 and 2) and one test pit (TP 1) were excavated on the T_1 surface, and one test pit (TP 2) was placed on the lower terrace (T_0). The excavated units and their depths are presented in Table 5.82.

Table 5.82 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	9	0.8	2.3	T1 terrace
BT 2	8	0.8	2.0	T1 terrace
TP 1	1.00	1.00	1.50	T1 terrace
TP 2	1.00	1.00	1.00	T0 terrace

5.43.2 Results

5.43.2.1 Excavations in the T_1 Terrace

Trench 1 was placed near the southeast margin of the T_1, below a gully. It revealed a stacked sequence of two alluvial units, tentatively identified as upper and lower West Range. Overall, the trench exhibited an A-C-2Bwk-2Bk-2BC profile developed in black (10YR 2/1) to grayish brown (10YR 5/2) gravelly clay loams. The contact between the two units was roughly 55 cmbs, and was overlain by clayey gravel exhibiting mixed clast and matrix support. Although some natural chert was present in the profile, no cultural material was detected.

Trench 2 was excavated 50 m north of BT 1 and just west of a road. This trench exhibited an AC-2Ab-2Btb-2C profile developed in recent slopewash over probable early Holocene slopewash and swale fill deposits. The recent slopewash cap was 30 cm thick and consisted of weakly blocky, very dark grayish brown (10YR 3/2) gravelly clay loam. The 2Ab horizon was 35 cm thick and consisted of black (10YR 2/1), blocky gravelly clay loam. It graded into 110 cm of strong blocky structured, dark grayish brown gravelly clay loam that contained abundant wedge-shaped soil cracks infilled with the overlying material. No secondary carbonate was apparent, and the matrix reacted relatively weakly to dilute HCl, suggesting that it is partially decalcified. The basal horizon consisted of a massive, grayish brown sandy gravel channel lag. No cultural material was detected in this trench.

Test Pit 1 was at the center of Subarea B and about 25 to 30 m west of BT 2 and excavated to 150 cmbs. Only one flake was recovered, from level 6 (Table 5.83). Gravels were exposed near the base of level 15 and excavation was terminated at 150 cmbs.

5.43.2.2 Excavations in the T_0 Terrace

Test Pit 2 was just above Henson Creek on the T_0 surface and excavated to 100 cmbs. No cultural material was recovered. At 95 cmbs, the matrix contained a moderate density of gravels and fossilized oysters and excavation was halted at 100 cmbs.

5.43.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences

Table 5.83 Artifact Recovery by Test Pit, 41CV913.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7-15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	0		
2	1-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	0	0	0		

are grouped together as a single temporally unclassified analytic unit. Only one of the two test pits (TP 1) yielded cultural material, and it was only a single artifact. This specimen is a flake of Heiner Lake Tan chert with partial indeterminate cortex, and 1.8 to 2.6 cm in size. No features, burned rock, mussel shells etc, were recovered.

5.43.4 Conclusions

This site is in slopewash and alluvial deposits of various ages resting on and inset into the lower Killeen surface adjacent to Henson Creek. No cultural material was detected in either of the two trenches and only one flake was discovered in the 2.5 m^3 manually excavated. This extreme paucity of cultural material strongly implies that significant cultural deposits are not present. On this basis, we conclude 41CV913 has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.44 SITE 41CV918

In March 1995, we conducted formal test excavations at prehistoric archeological site 41CV918. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two trenches were dug by backhoe and two test pits totaling 4.5 m^3 were manually excavated. These formal tests demonstrate the presence of one intact, buried cultural component that dates to the Late Prehistoric II period and has potential to inform on key research questions including prehistoric technological and economic systems and paleolandscape formation. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.44.1 Introduction

5.44.1.1 Site Location and Description

Site 41CV918 is in northwestern Fort Hood, Training Area 53. The site is bounded on the northeast by Henson Creek and straddles an unnamed tributary of Henson Creek (Figure 5.173). This prehistoric open camp, as defined in 1993, measured 500 x 400 m, with a northeast-southwest long axis, and cover an area of about 17 hectares (42 acres). For purposes of analysis, the site is

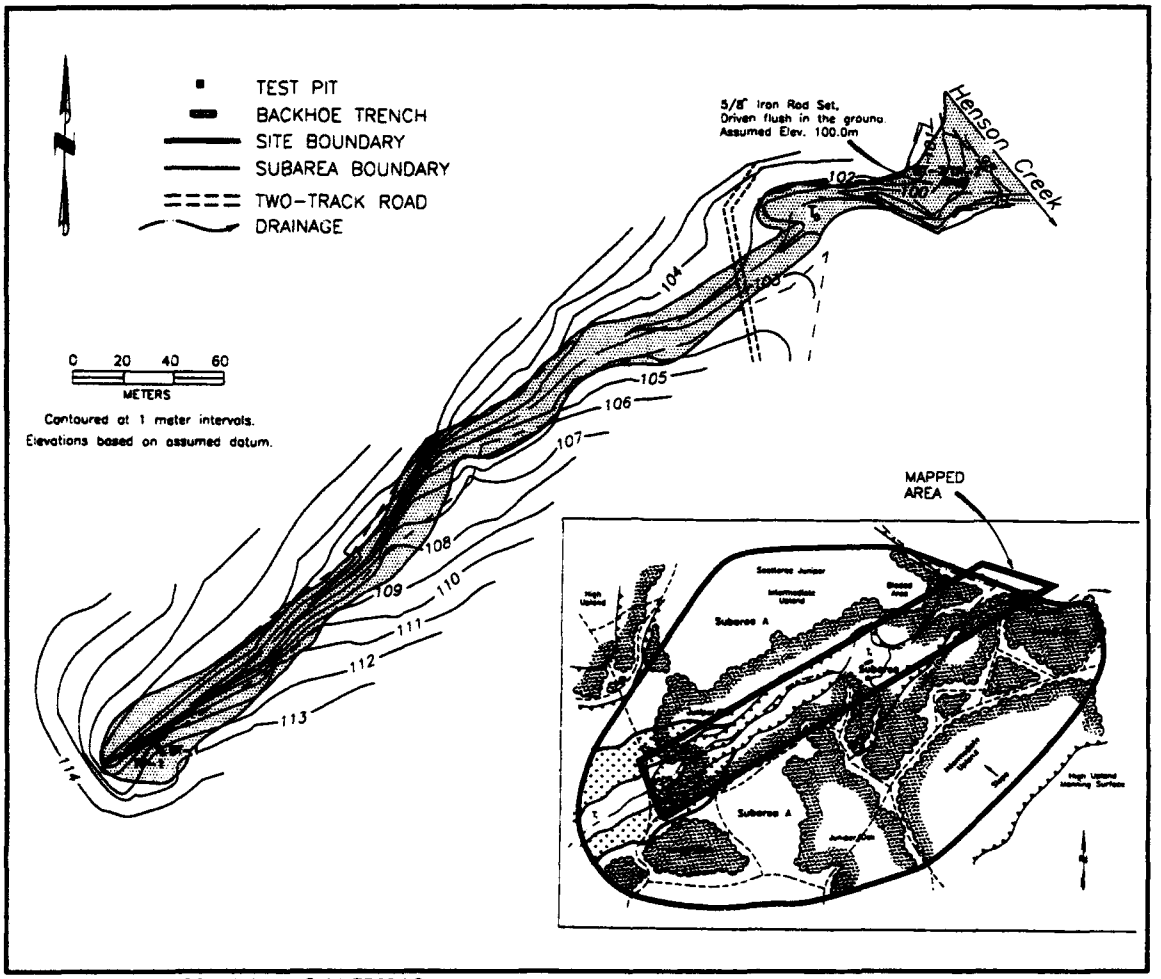


Figure 5.173 Site Map of 41CV918.

considered a member of the Shell Mountain site group.

5.44.1.2 Previous Work

The site was first recorded by Dureka on 3 April 1985 as a lithic and tool scatter with moderate burned rock (Carlson et al. 1988). One Plainview dart point, one Martindale dart point, one Wells dart point, four Pedernales dart points, and eight untyped dart points were collected. Burned rock, lithic debitage, and bifaces were observed on the surface. A layer of ash with one mussel shell and two large bones was observed about 2 m below surface in the cutbank of a tributary of Henson Creek. Solely on the basis of size, the site was classified as a lithic resource procurement area for management purposes.

Kleinbach and Abbott visited the site on 26 October 1992 and it was divided into two subareas, A (erosional slopes) and B (alluvial tributary fill), based on geomorphic context and the potential for intact cultural deposits. Of the two, only Subarea B was judged to have the potential for intact deposits. A shovel testing crew returned on 9 November 1992 and excavated 41 shovel tests. Only six of the shovel tests were positive, with a

total return of seven flakes. Because results were inconclusive and the potential for more deeply buried cultural deposits existed, formal testing was recommended. Two backhoe and 2 to 4 m^2 of manually excavated test pits were recommended to determine the NRHP eligibility of Subarea B. Abbott and Ellis visited the site on 5 May 1993 to evaluate its potential for addressing questions of chert procurement and reduction strategies. Because no significant naturally occurring chert was observed, the site was excluded from further resurvey and no further management was recommended for Subarea A (Trierweiler 1994:A1082-1084).

5.44.1.3 New Work

Formal testing was completed in March 1995. Two backhoe trenches were mechanically excavated, and two test pits were manually excavated, one offset from either trench. Sizes and depths of each unit are listed in Table 5.84.

5.44.2 Results

This site includes a very unusual locality, consisting of a relatively thick (about 3 to 4 m) alluvial fill in the tributary valley that extends upstream to and abuts, but does not override, a pronounced knickpoint in the channel. Upstream from the knickpoint, alluvial deposits begin to thicken again, but are not more than 1 m thick. The ash lens noted by the original recorders was situated in the thick fill just downstream from this knickpoint.

Backhoe trench 1 was excavated on the south side of the tributary, just below the spring-fed knickpoint in the bedrock channel bed, and at the area that contained the ash with large bones. The trench revealed an unusual sequence of interfingering colluvial and alluvial sediments with at least one buried paleosol and two thick lenses of ashy fill that are inset against an abrupt, steeply sloping bedrock scarp. Overall, the trench revealed an A-Bw-2Ab-2Cb-3C1b-3C2b-4Cb profile composed of lenticular, concave-up strata (Figure 5.174). The A horizon was roughly 35 cm thick and consisted of weak blocky, very dark brown (10YR 2/2) gravelly clay loam. The Bw horizon consisted of massive, dark grayish brown (10YR 4/2) gravelly clay loam and was 35 cm thick. It contained a number of discrete, concave-up gravel stringers and tended to coarsen with depth. The 2Ab horizon was 40 cm thick and consisted of very dark gray (10YR 3/1), blocky gravelly clay loam. It contained a 5 to 10 cm thick, streamward-thickening ash lens and a few dispersed burned rocks and flakes. The 2Cb horizon was 85 cm thick and consisted of weakly blocky, dark grayish brown (10YR 4/2) gravelly loam that retained weak primary bedding. The fill was marked by stringers of gravel, reddish, brownish, and grayish mottling, and a few fine carbonate filaments. It was separated from the 3C horizon by an abrupt contact. The 3C1b horizon was 20 cm thick and consisted of massive, gray (10YR 5/1) loamy silt composed of up to 50% ash. It graded down into the 3B2b horizon, which consisted of 55 cm of dark gray (10YR 4/1), massive gravelly silty loam. The 4Cb horizon consisted of a wedge of dark grayish brown (10YR 4/2), mottled gravelly loam colluvium that mantles the steeply dipping bedrock surface.

Test pit 1 was offset from the west wall of BT 1 and was excavated to 230 cmbs (Figure 5.175). Occasional dispersed flakes, burned rocks, or bone fragments were found throughout the 230 cm with a light increase between 180 and 220 cmbs. Ashy matrix was noted between 200 to 220 cmbs and but no feature or defined occupation lens existed.

Table 5.84 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	7	1.5	3.1	T1 terrace
BT 2	7	1.5	2.8	T1 terrace
TP 1	1.00	1.00	2.30	T1 terrace
TP 2	1.00	1.00	2.20	T1 terrace

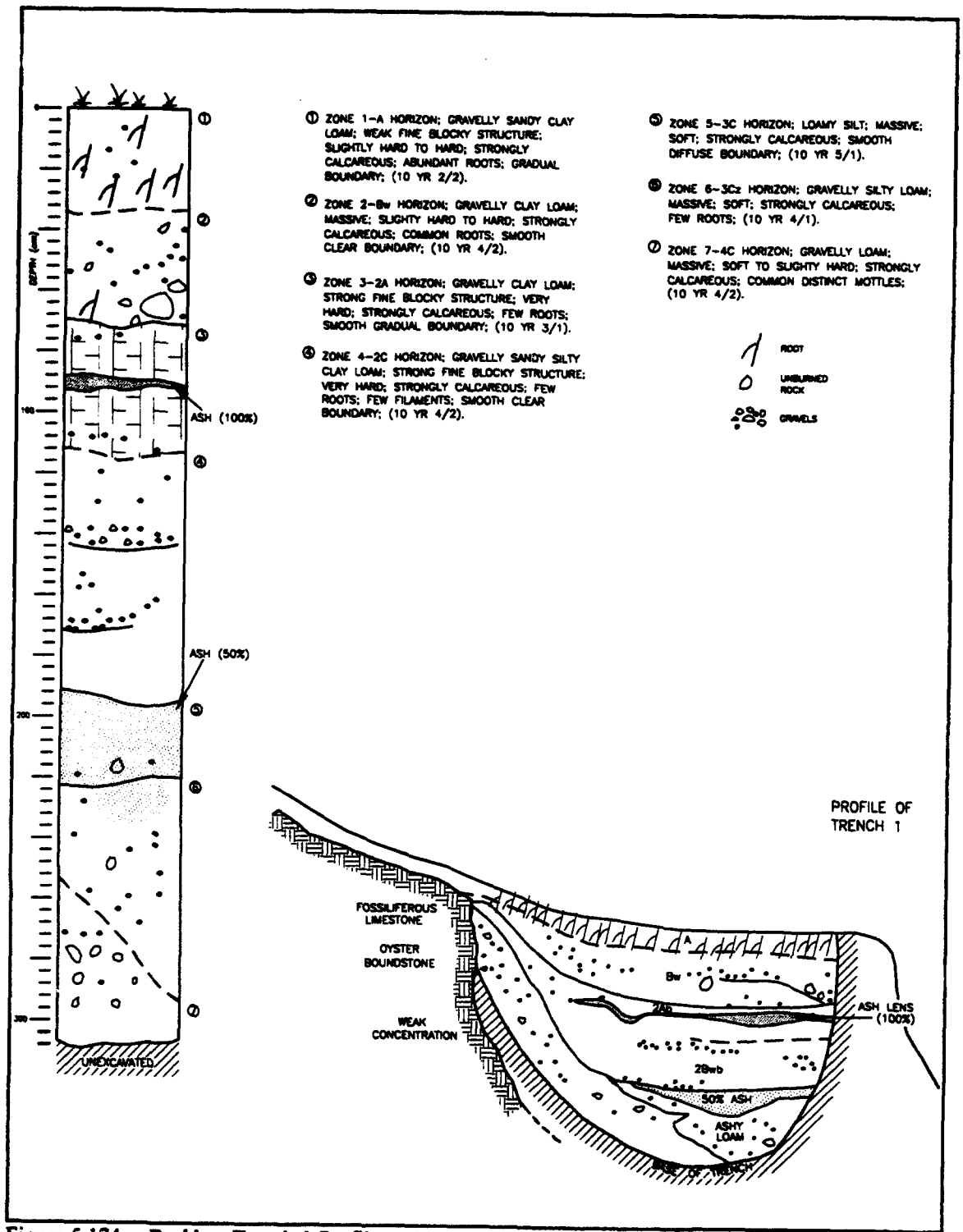


Figure 5.174 Backhoe Trench 1 Profile and Schematic Cross-section, 41CV918.



Figure 5.175 Test Pit 1, 41CV918.

Trench 2 was excavated on a small terrace on the north side of the confluence of the tributary and Henson Creek. It exhibited two stacked alluvial units, tentatively interpreted as the Ford and West Range fills of Nordt (1992). The upper depositional unit extended to 120 cmbs, and exhibited an A-C profile developed in massive to weakly stratified, very dark grayish brown (10YR 3/2) loamy alluvium. The underlying unit extended from 120 to 275 cmbs, and exhibited a truncated 2Bkb-2C1b-2C2b profile. The 2Bkb horizon was 40 cm thick and consisted of blocky, dark grayish brown clay loam that contained common fine carbonate filaments. The 2C1b horizon was 20 cm thick and consisted of a lenticular bed of massive loamy gravel. The 2C2b horizon was composed of very dark brown (10YR 3/1), massive, slightly gravelly clay loam, and was saturated below about 220 cmbs. A hearth was exposed in the north wall of the trench at 210 to 220 cmbs.

Test pit 2 was placed above the observed hearth (F 1) and excavated to the water table at 220 cmbs. No cultural material was found from 0 to 180 cmbs. From 180 to 190 cmbs, 14 flakes and three burned rocks were recovered, with 10 flakes and five burned rocks from 190 to 200 cmbs (Table 5.85). No artifacts were found from 200 to 210 cmbs, but the top of F 1 was encountered at 208 cmbs (Figure 5.176). The presence of artifacts above the hearth suggests either closely stacked occupations or possibly the hearth was prepared into the substrate of the living surface. After exposure, it was determined that about half of the hearth had been removed during trenching. The remaining part (60 x 40 cm) was composed of 12 burned rocks (6 kg), that ranged from 5 to 10 cm in length and 3 to 5 cm in width in a loss cluster on top of a charcoal stained matrix. On the north side of the hearth lay a large (40 x 40 cm) unmodified and unburned slab laying flat. The stained matrix consisted of a layer of charcoal and black feature fill, which defined the limits of an 8 to 10 cm deep shallow basin-shaped depression. No white ash or orange oxidized lens was present. Several small carbonized twigs remained intact and only the outer edges of the rocks within the hearth

Table 5.85 Artifact Recovery by Test Pit, 41CV918.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	3-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	12	-	0	0.0	0	2	0	0	0	0	0	-	unspec.
	13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	14	-	0	0.0	0	3	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	16	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	18	-	0	0.0	0	0	0	0	0	0	0	-	LP-II
	19	-	0	0.0	0	10	0	0	1	0	0	-	LP-II
	20	-	0	0.0	0	0	0	0	3	0	0	-	LP-II
	21	-	0	0.0	0	0	0	0	1	0	0	-	LP-II
	22	-	2	0.3	0	0	0	0	1	0	0	-	LP-II
	23	-	0	0.0	0	0	0	0	0	0	0	-	LP-II
	Total		3	0.5	0	15	0	0	9	0	0		
2	1-17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	18	-	0	0.0	0	0	0	0	0	0	0	-	LP-II
	19	-	3	1.0	0	0	0	0	14	0	0	-	LP-II
	20	-	5	2.0	0	0	0	0	10	0	0	-	LP-II
	21	F1	0	0.0	0	0	0	0	0	0	0	-	LP-II
	22	F1	12	6.0	0	0	0	0	0	0	0	-	LP-II
	Total		20	9.0	0	0	0	0	24	0	0		

had been thermally altered, suggesting a short term usage. A 27.2 g charcoal sample from this hearth, identified as oak wood provided a $\delta^{13}C$ (-27.0‰) corrected assay of 460 ± 70 BP (Beta-86983). Excavation was terminated at 220 cm because of the water table.

5.44.3 Analysis and Interpretations

5.44.3.1 Definition of Analytical Units

The two test pits yielded one hearth feature, 33 pieces of lithic debitage, 15 bone fragments, 23 burned rocks that weighed 9.5 kg, charcoal and snail shells. Most materials were assigned to the Late Prehistoric II period with a few to a temporally unclassifiable group. The Late Prehistoric II occupation was based on one charcoal date of 460 BP, but an absence of projectile points made phase association impossible. These two groups of materials are discussed below.

5.44.3.2 Summary of Late Prehistoric II Materials

These materials include hearth F 1, 30 pieces of lithic debitage, 10 bone fragments, 22 burned rocks, and charcoal. The 30 specimens of lithic debitage represent four identified and size unidentified chert types with 43% of the materials identifiable (Table H-334). Heiner Lake Tan dominates among the identified cherts with 69%, while the miscellaneous category is the highest among the indeterminates (59%). The amount of Heiner Lake Tan results in the Southeast Range materials to be the predominate chert province. The combined indeterminates occur in higher than expected frequency, while Heiner Lake Tan and Gray/Brown/Green occur in expected amounts, and all others occur in less than expected frequency (Table H-335). The exclusion of the indeterminates results in Heiner Lake Tan occurring in higher than expected amounts, and all others occurring in expected frequency.

The modal peak for size occurs at the 1.2 to 1.8 cm category (43%) with 70% of the materials smaller than 1.8 cm. The cortex data results in an almost even breakdown between cortical and noncortical debitage (Table H-336). However, 30 specimens is not a very large sample on which to base interpretations.

The ten bones fragments are all from TP 1, 180 to 190 cmbs and represent pieces of rib from a large to very large mammal such as a bison. These show light weathering and are unburned.

Twelve (6 kg) burned rocks were out of hearth F 1 with eight other pieces (3.3 kg) form the two levels just above the feature. A 27.2 g charcoal sample of oak wood from inside the basin hearth and provided a $\delta^{13}C$ (-27.0‰) corrected assay of 460 ± 70 BP (Beta-86983). A Floated matrix sample from this hearth yielded a light fraction the contained charred wood fragments of oak, elm, and possibly maple.

The charcoal assay places this occupation during Prewitt's Toyah phase (1981; 1985), although no

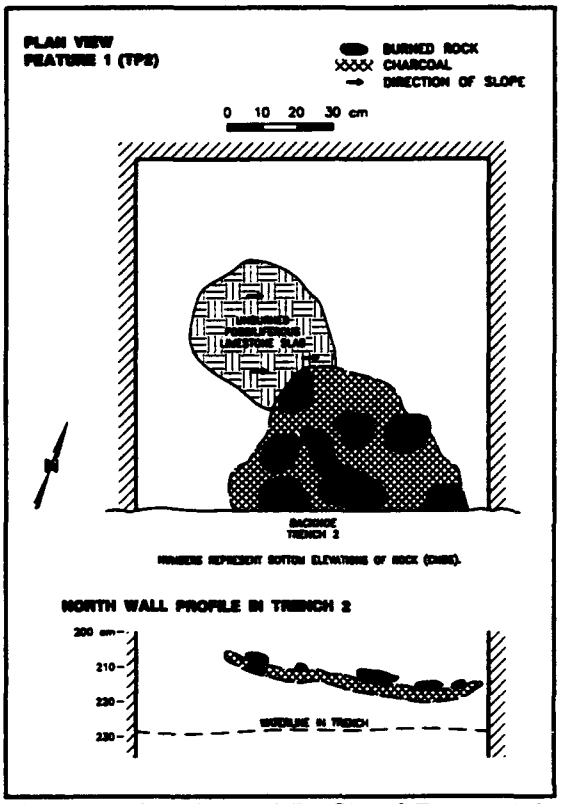


Figure 5.176 Plan and Profile of Feature 1 in Test Pit 2, 41CV918.

projectile points were recovered to make a definite phase assignment. Sites of this age are quite common in Fort Hood and in central Texas with recently reported mitigation investigations on Toyah phase materials having made significant contributions in the last few years. This site could also contribute to understanding the settlement patterns and subsistence choices in this region.

5.44.3.3 Temporally Unclassified Materials

These materials include three pieces of lithic debitage widely dispersed in TP 1, five bone fragments from levels 12 and 14 in TP 1, and two burned rocks that weighed 0.3 kg from 210 to 220 cmbs in TP 1. These scattered pieces may not represent in situ occupations but probably materials

disturbed through alluvial deposition or turbation activities.

The tiny bone fragments could not be identified to species with a phalanx, rib, and long bone fragments representing medium size mammals and two indeterminate pieces of some unknown size vertebrate (Table H-337). These pieces did not show evidence of being burned or spiral fractured and may not be culturally derived.

In general these few pieces are less than 460 years BP as they lie above the lower occupation. It is unclear if these are reworked items.

5.44.4 Conclusions

The unusual deposits downstream of the knickpoint, exposed in BT 1, appear to represent an unusual sediment trap. The general concave-up bedding, steep walled limestone boundary, and thick pockets of preserved ash suggest that this was an internally-drained depression formed either through structural collapse or damming of the drainage downstream (i.e., through a landslide, etc.). This implies that reintegration of the drainage occurred since aggradation of the fill. The vertical walls in the stream knickpoint suggest that structural collapse is the most likely explanation. If so, it follows that the depositional sequence documents activity on the surrounding slopes, including at least two episodes of burning, one of which appears to have occurred in the immediate vicinity of the depression (the concentrated ash interbedded in the 2Ab horizon) and the other in the broader catchment (the 3C1 horizon). If true, it follows that neither of these thick ash beds are necessarily cultural; on the other hand, it is possible that the depression contains a fairly high resolution record of paleoenvironmental conditions in the catchment for the period of aggradation, and merits further attention in this context.

The deposits near the confluence appear to represent late Holocene aggradation, and clearly contain one deeply buried cultural occupation, including at least one feature, in good sealed context that dates to the Late Prehistoric II period.

On this basis, site 41CV918 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the eligible components are deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. Protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent mechanical or manual excavations by military personnel.

5.45 SITE 41CV927

From late August through early September 1994, we conducted formal test excavations at prehistoric archeological site 41CV927. Testing was designed to evaluate eligibility for inclusion to the NRHP. Three trenches were mechanically excavated and one test pit (2.0 m^3) was hand excavated. The test excavations demonstrate that no significant cultural deposits are present. *As a result, the site is* evaluated as not eligible for inclusion to the NRHP. No further work is recommended.

5.45.1 Introduction

5.45.1.1 Site Location and Description

Site 41CV927 is in the northwestern sector of Fort Hood, in Training Area 48. This is a prehistoric open camp situated between two unnamed tributaries of Browns Creek on an ancient, deflated fan/pediment and on a narrow Holocene terrace (Figure 5.177). The site's maximum site dimension, as defined in 1993, measured 420 x 200 m with a north-south long axis, and cover an area of 8.4 hectares (20.7 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

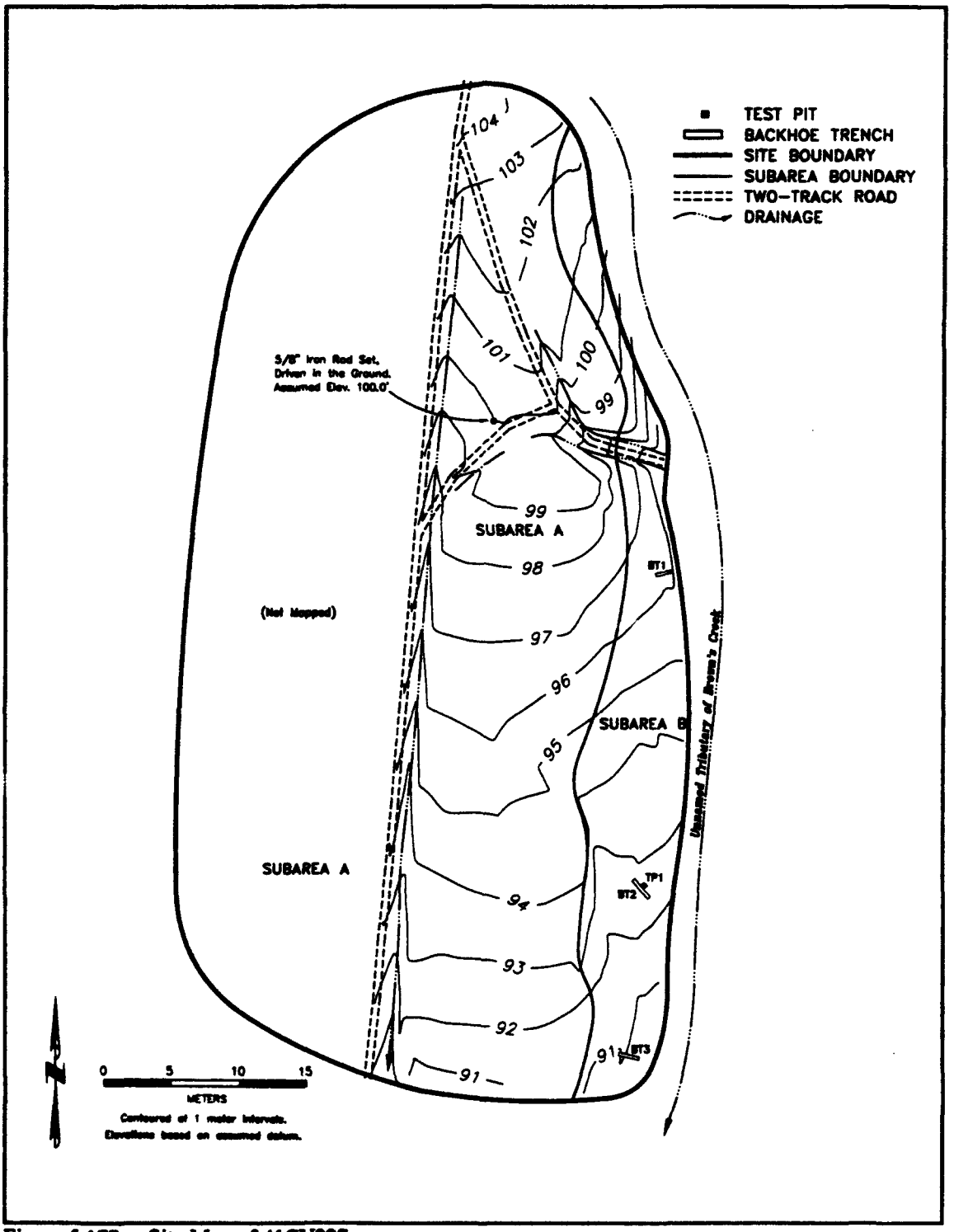


Figure 5.177 Site Map of 41CV927.

5.45.1.2 Previous Work

This site was initially recorded by Mesrobian and Strychalski on 11 April 1985, as a burned rock and lithic scatter (Carlson et al. 1988). One Plainview, one Pedernales, one Marshall, one Frio, one Ensor, one Ellis, three untyped dart points, one Scallorn, one Perdiz, and two untyped arrow points were collected. Debitage, burned rock, and bifaces were observed. The site was estimated to be 85% disturbed by roads, erosion, and vehicular traffic (Figure 5.178). The investigators concluded that there was a good potential for buried cultural deposits near the unnamed creek at the eastern edge. Site dimensions were determined to be 550 x 240 m, and the site was classified for management purposes as a lithic resource procurement area (in fact, no significant chert resource is present).

Kleinbach and Abbott revisited the site on 10 May 1993 and divided the site into two subareas on the basis of potential for intact cultural deposits. Subarea A was defined as the deflated fan/pediment and Subarea B as the Holocene terrace. Because the site had been classified as an lithic source area, it's potential to address questions of lithic resource procurement and reduction were addressed. However, because no significant amounts of naturally-occurring chert were observed, the site was excluded from further resurvey, and no further work was recommended for the upland Subarea A. On 13 May 1993 a crew excavated 15 shovel tests in terrace Subarea B. The only artifacts recovered were 59 pieces of bottle glass, all in the upper 10 m and in a single test. Nonetheless, the potential for intact cultural remains in the deeper deposits remained unknown, and two square meters of manually excavated test pits and two trenches were recommended to determine NRHP eligibility (Trierweiler 1994:A1085-1087).

5.45.1.3 New Work

Formal testing was completed in early September 1994. Three backhoe trenches and one test pit were excavated in Subarea B. The test pit was offset from BT 2 with the highest corner designated the datum for elevation control. The units and the depths of excavation are summarized in Table 5.86.

5.45.2 Results

Three trenches were excavated into the T_1 terrace of the unnamed tributary in Subarea B. Backhoe trench 1 was placed at the northern part of Subarea B. The depositional architecture exposed in BT 1 was relatively complex in comparison to the two other trenches, largely as a result of placement immediately adjacent to the extant channel. The surface (A) horizon consisted of a recent cap of dark gray (10YR 4/1), weak blocky coarse sandy loam 25 cm thick. It was underlain by a sequence of lenticular grayish brown gravelly chute channels, massive grayish brown gravelly loams, and very dark grayish brown massive gravelly clays (Figure 5.179). Overall, the sequence exhibited an A-C profile, and is interpreted as the temporal equivalent of the Ford alluvium of Nordt (1992). No cultural material was observed in the profile.

Trench 2 was placed at the central part of Subarea B, about 10 m west of the unnamed tributary. Trench 3 was placed at the southern end of Subarea B, about 5 m west of the tributary. These two trenches revealed broadly similar profiles consisting of two stacked, late Holocene alluvial units. The upper unit was 50 to 75 cm thick and consisted of a graded deposit of bedded gravels and coarse sands exhibiting an A-C profile. Underlying this uniform mantle of recent (e.g., Ford) gravels and sands, a thicker unit of late Holocene (West Range) alluvium was preserved. This deposit was composed of dark gray to grayish brown (10YR 4/1 to 10YR 5/2) gravelly sandy clay that graded abruptly into bedded sandy gravel about 200 cmbs (Figure 5.179). Although a few fine flecks of carbonate are present in the gravelly clay, it appears to represent dissolving primary grains rather than pedogenic translocation and reprecipitation. Overall, the two trenches exhibited

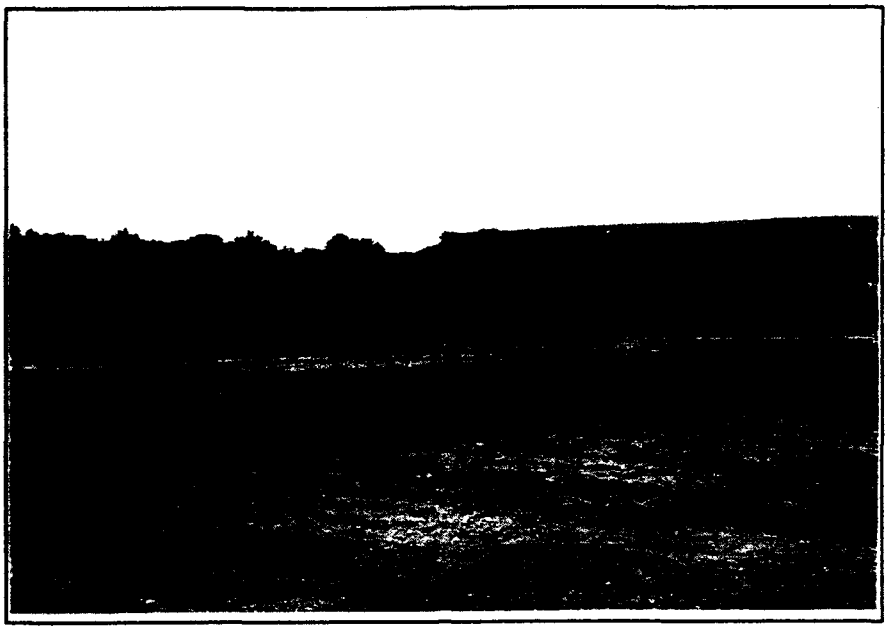


Figure 5.178 View South Across Subarea A, 41CV927.

an A-C-2Ab-2Bwb-2C profile about 200 to 240 cm thick. No cultural material was observed in either trench.

Test pit 1 was offset from the north wall of BT 2 and was excavated to 200 cmbs. Artifacts from the unit included one flake and a burned rock from 20 to 30 cmbs, one flake from 50 to 60 cmbs, and two flakes from 130 to 140 cmbs (Table 5.87). All artifacts were in dense alluvial gravels and are most likely in secondary context.

5.45.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences from the site are grouped together as a single temporally unclassified analytical unit. The one test pit yielded four pieces of cultural debitage and one burned rock (0.3 g), plus five snail samples. The one specimen of Fort Hood Yellow is the only identifiable chert (1.8-2.6 cm in size); two flakes of indeterminate light brown chert (0.9-1.2 and 1.2-1.8 cm in size) and one flake of indeterminate light gray chert (2.6-5.2 cm in size) complete the assemblage. No debitage pieces are smaller than 0.9 cm in size or bear cortex.

5.45.4 Conclusions

The revealed deposits represent alluvium laid down by an ephemeral upland tributary that exhibits flashy flow and therefore has poor potential to contain archeological materials in primary context. Two distinct alluvial fills, tentatively equated with the Ford and West Range fills of Nordt (1992), were observed in the trenches. The upper (Ford)

Table 5.86 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	1.5	2.0	T1 terrace
BT 2	12	1.5	2.1	T1 terrace
BT 3	10	1.5	2.0	T1 terrace
TP 1	1.00	1.00	2.00	T1 terrace

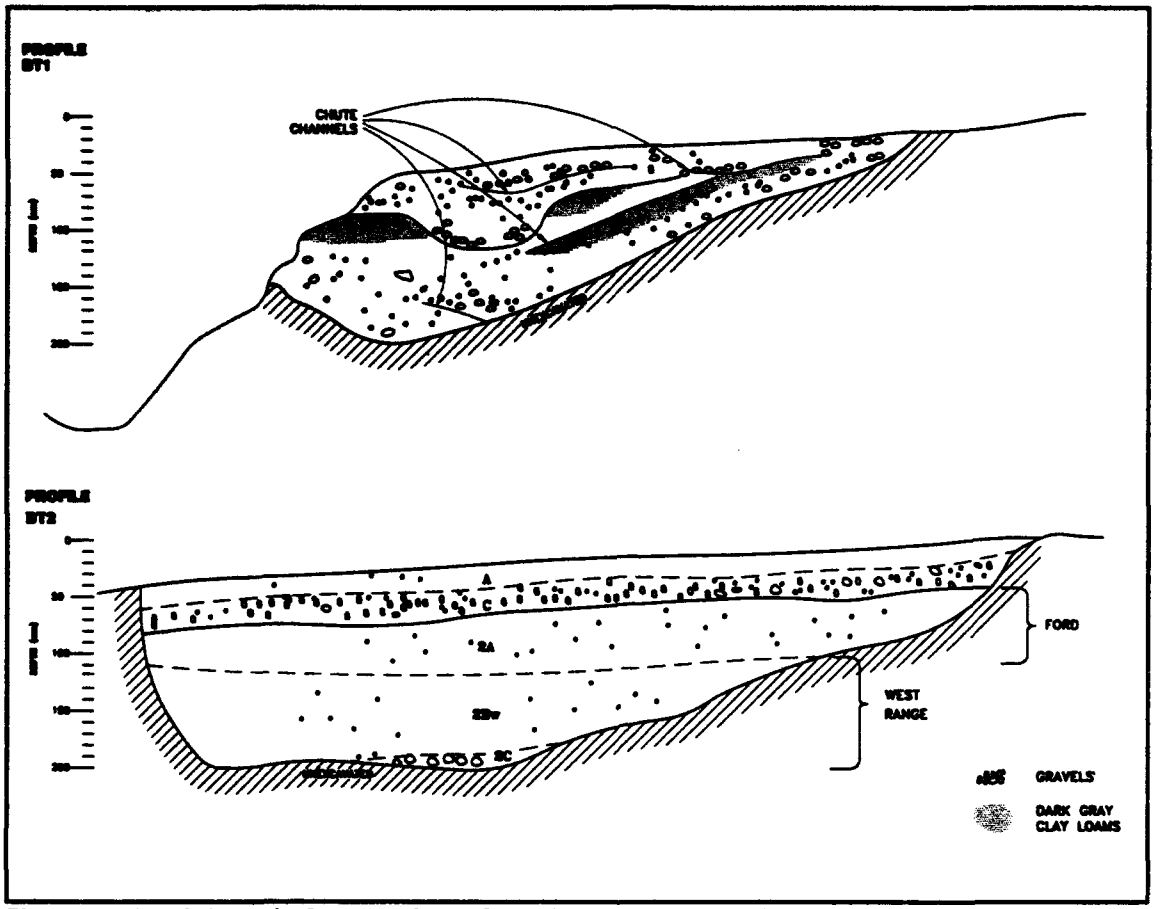


Figure 5.179 Schematic Cross-sections of Backhoe Trenches 1 and 2, 41CV927.

fill is extremely gravelly and exhibits an A-C profile; while significantly finer than the Ford fill, the lower (West Range) fill is still indicative of flashy, high energy deposition. It exhibits an A-Bw-C profile with little carbonate development. No cultural materials were detected in any of the trenches excavated during the testing phase. Manual excavation demonstrates that buried cultural material is sparse and in secondary context.

We conclude that site 41CV927 contains no significant archeological materials in good stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.46 SITE 41CV935

In February 1995, we conducted formal test excavations at prehistoric archeological site 41CV935. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits (0.4 m^3) were hand excavated. The test excavations demonstrate the presence of a buried occupation in good context that dates to the Late Prehistoric I period. These deposits have potential to inform on key research questions including

Table 5.87 Artifact Recovery by Test Pit, 41CV927.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	4-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7-13	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	15-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.3	0	0	0	0	4	0	0		

prehistoric technological and economic systems as well as prehistoric human biology. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.46.1 Introduction

5.46.1.1 Site Location and Description

Site 41CV935 is in the central section of western Fort Hood, in Training Area 44. This site is a large lithic resource procurement site including four rockshelters along the western margin (Figure 5.180). Maximum site dimensions, as defined in 1993, measure 1300 x 300 m, with a north-south long axis, and cover an area of about 39 hectares (96 acres). For purposes of this analysis, the site is considered a member of the Shell Mountain site group.

5.46.1.2 Previous Work

This site was initially recorded by Michaels, Drollinger, and others on 14 April 1985 as a very large (1,000 x 192 m) lithic procurement area with four rockshelters and three hearth areas (Carlson et al. 1988). One untyped dart point was collected and flakes, bifaces, cores, tested cobbles, charcoal, bone, mussel shell, and a low density of burned rock were observed. The site was estimated to be 30% disturbed by roads and military maneuvers. The site appeared to have been an infrequently used lithic procurement area and the chert was described as being very grainy and graded almost to chalcedony.

On 17 December 1992 the site was revisited by Abbott, Mehalchick, Kleinbach, and Turpin. It was assessed for the potential for intact deposits and the site map was revised. On the basis of potential for intact cultural deposits in different geomorphic settings, the site was divided into two subareas. Subarea A included the Manning surface upland and three sterile rockshelters along the margins. The denuded upland surface is mantled with a discontinuous residual soil. The soil is clay to clay loam and consists primarily of black to very dark reddish brown stony A horizon lying directly on limestone bedrock. Occasional pockets of reddish brown Bt horizon are preserved in depressions. A moderate amount of residual chert is present on and in the soil. This upland has been

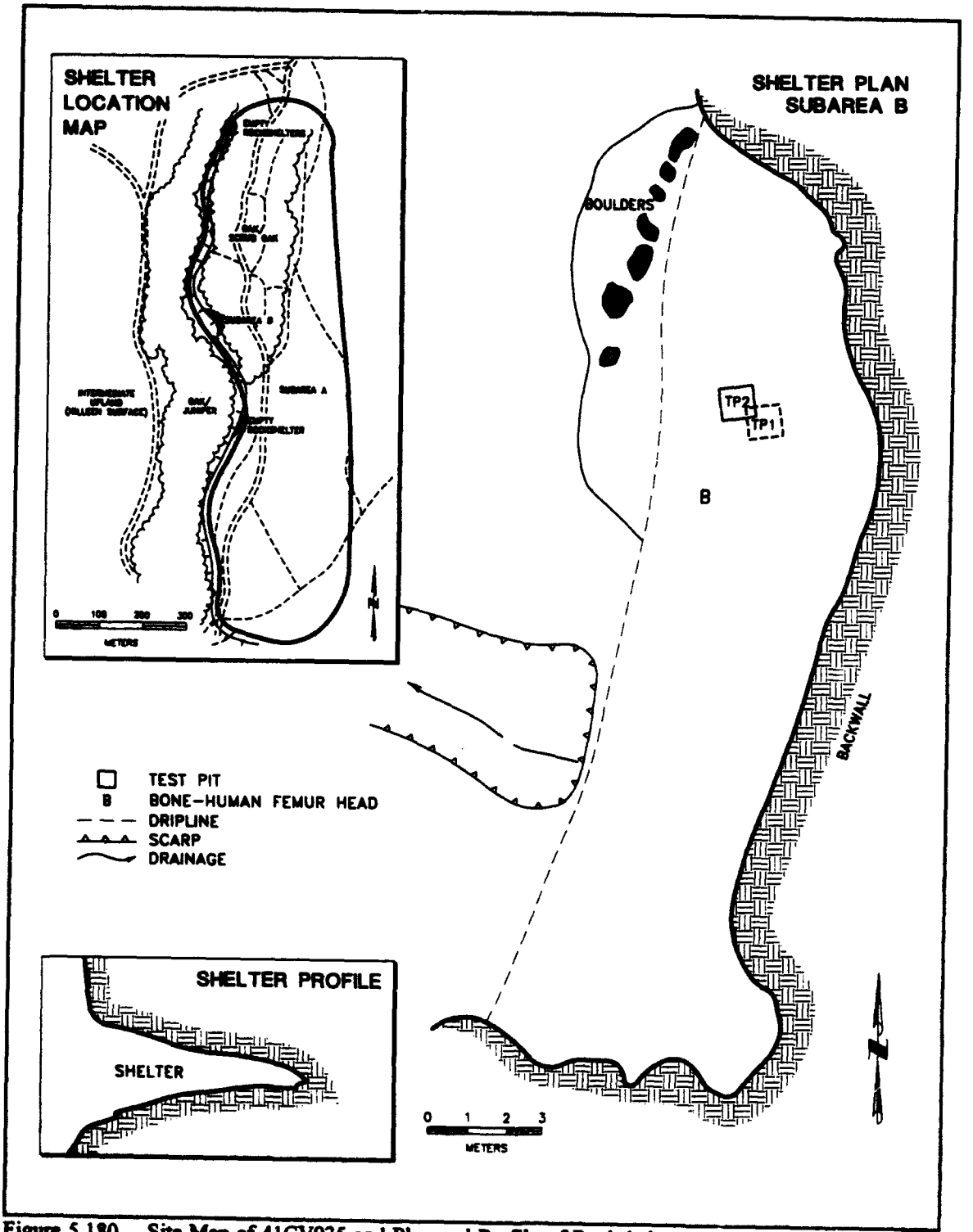


Figure 5.180 Site Map of 41CV935 and Plan and Profile of Rockshelter B.

a stable to erosional surface throughout the Holocene and has no potential for intact deposits. It served as a lithic procurement area for exploiting a natural chert outcrop and camping area as evident by the scattered burned rock features. Three relatively small rockshelters along the western side revealed moderate ground water discharge and lack fine grained deposits.

A moderately large rockshelter (estimated 50 m long x 10 m deep) with thick deposits was designated Subarea B. The fill was composed of light grayish brown silt with coarse, angular limestone inclusions and interbedded tufa lenses. Beneath the drip line in the northern half of the shelter, a lag of coarse clasts is preserved where occasional lateral flow issuing from a fissure in the cliff face has scoured the surface. The back wall and roof is covered with thick tufa deposits, and several small stalagtites on the roof suggest that spalling has not been active for quite some time (Figure 5.181). Flakes, burned rock, bone, mussel shell pieces, and an arrow point were observed on the surface. Because of these thick deposits and the presence of cultural material on the surface the rockshelter had potential for buried cultural materials.

On 31 December 1992, a shovel testing crew excavated three 35 cm diameter shovel tests in the Subarea B shelter. A complete drill was collected from the surface and the three shovel tests yielded 70 lithics and 12 bone fragments. Bedrock or a large roof spall was encountered at 20 cmbs in STs 1 and 2 , and at 35 cmbs in ST 3. Based on these positive results, the shelter was judged to contain cultural deposits of unknown significance, and formal testing was recommended to assess NRHP eligibility. Recommended testing included 1 to 2 m^2 of manually excavated test pits (Trierweiler 1994:A1090-A1094).

Abbott and Kleinbach revisited Subarea A upland on 13 May 1993 to evaluate its potential utility to address questions of lithic resource procurement and reduction. Chert and impact zones were identified, mapped and characterized and raw material samples were collected. Two heavily impacted burned rock concentrations (Fs 1 and 2) were identified and recorded. Because this upland surface had natural chert resources that were not completely destroyed by military activity, a resurvey crew returned on 27 May 1993 and completed 32 transacts. Based on resurvey results, the site was divided into three management units. Management Unit 1 is composed of Subarea B and an limited area of the upland immediately above the rockshelter. Management Units 2 and 3 are two separated areas of the upland which were judged to lack contextual integrity; no further work was recommended for either area.

5.46.1.3 New Work

A preliminary inspection of the Subarea B shelter was conducted in mid-February 1995 to determine test pit placement. A sketch map was prepared and the shelter was measured as about 23 m long by 5 m deep by about 1.3 m high. Ceiling height varies from about 1.05 to 2.15 m. During this inspection, the proximal head of a human femur was observed on the surface of the shelter. The Fort Hood Staff Archeologist was immediately notified and specified that test excavations should avoid this area of the shelter. Accordingly, a testing crew returned on 20 February 1995 and excavated two test pits at other locations within the rockshelter. Test pit 1 was placed in front of a tufa formation towards the northern end. Because this unit encountered a large roof slab just below the surface, TP 2 was placed slightly overlapping the southwest corner TP 1 to capture deeper deposits. Unit sizes and depths are presented in Table 5.88.

5.46.2 Results

In TP 1, only one level was excavated because a large roof spall or bedrock was encountered at 10 cmbs, except in the southwest corner where excavations went slightly deeper. Abundant flakes (n=119), 66 bone fragments, four burned rocks (0.5 kg), a graver, a utilized flake, and a proximal Scallorn arrow point were in the loose tan silt and

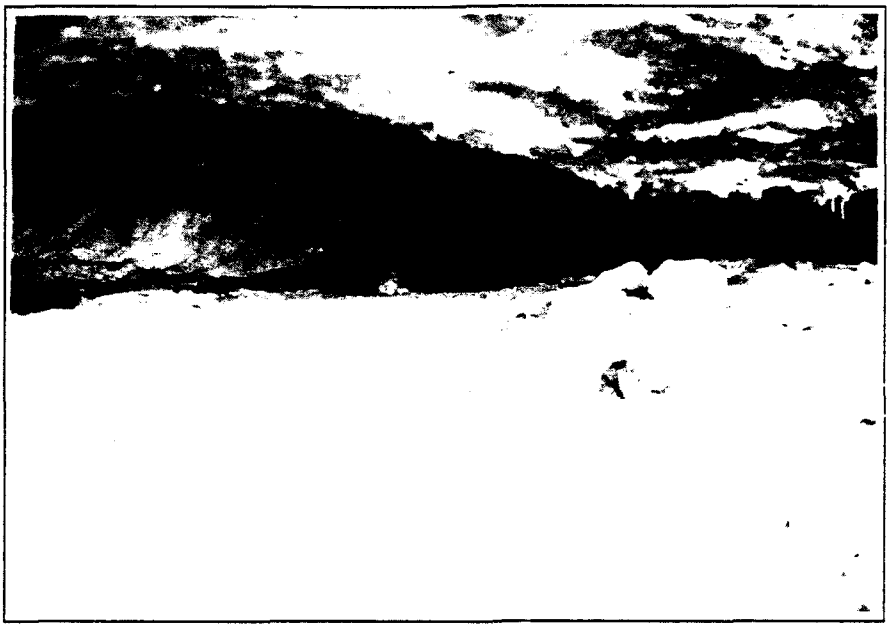


Figure 5.181 Cavern at Southern End of Rockshelter B, 41CV935.

small eboulis in this level. None of the bone fragments were identifiable as human in the field.

Test pit 2 was excavated to decaying bedrock at about 25 cmbs. It revealed a thin profile composed of stratified, heavily culturally modified internal sediments (Type 1 and Type 2 sediments of Abbott 1994; 1995) (Figure 5.182). The upper 5 cm of fill consisted of fresh limestone flour capping the lower fill that consisted of clearly stratified charcoal stained and oxidized lenses of internal silts and eboulis. From about 5 to 10 cmbs, the fill consisted of a very weak A horizon formed in internal silts. Over 200 flakes, 96 bone fragments, three small burned rocks (0.5 kg), six utilized flakes, two middle stage biface fragments, one complete finished biface, one edge modified flake, a complete Bonham point, a proximal end of an untyped arrow point, a proximal Young point, a distal dart tip, a drilled *Rabdotus* shell, and fragments of two mussel shells were recovered in the upper 10 cm (Table 5.89).

Below the A horizon, the fill was composed of discrete and undisturbed lenses of charcoal stained limestone flour, ash, and burned eboulis interstratified with lenses of oxidized silt. In profile, these intact lenses had abrupt boundaries, and at least two distinct burning episodes separated by lenses of orange oxidized silt were present. In level 2 (10 through 25 cm) over two hundred flakes, eight burned rocks (2.5 kg), a utilized flake, a edge modified flake, two complete Scallorn arrow points, one blade of an untyped dart point, a drilled *Rabdotus* snail, and 42 bone fragments were recovered. In the field, none of the bone fragments were identified as human. The substrate consisted of saprolitic limestone or roof spall, and extended to a minimum depth of 45 cm.

Table 5.88 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.10	rockshelter
TP 2	1.00	1.00	0.25	rockshelter

5.46.3 Analysis and Interpretations

5.46.3.1 Definition of Analytical Units

The two adjoining shallow test pits revealed considerable cultural materials which are all assigned to the Late Prehistoric I period based on the predominance of three Scallorn points and a charcoal assay of 780 BP. The two dart point fragments in apparent association are thought to be reused items and thus not indicative of later intact occupations. This absolute age places the cultural material in Prewitt's (1981 and 1985) Austin phase.

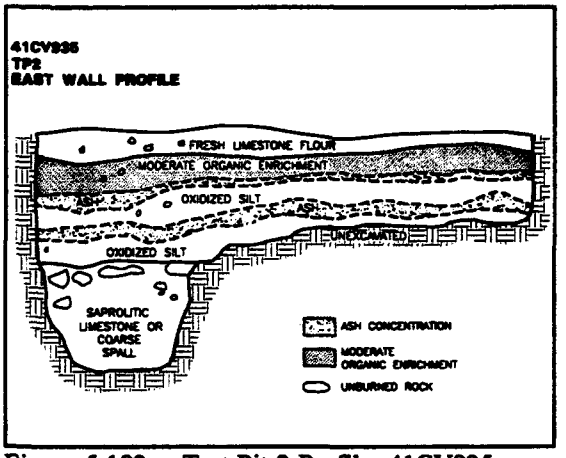


Figure 5.182 Test Pit 2 Profile, 41CV935.

5.46.3.2 Late Prehistoric I Materials

These material include 1,304 pieces of lithic debitage, fifteen stone tools, eight projectile points, 204 bone fragments, 15 burned rocks, two mussel shell umbos, two modified *Rabdotus* snail shells, charcoal, and snail shells. The 1,304 specimens of lithic debitage represent six identified and nine unidentified chert types (Table H-338). The indeterminate miscellaneous category dominates (48%) all the various indeterminate colors which shows that the light browns are prominent (21%). Fort Hood Yellow (42%) and Heiner Late Tan (31%) are the most frequent identified materials. The North Fort materials dominate the identified assemblage with three types and 61% based on the high amounts of Fort Hood Yellow and Gray/Brown/Green. The overwhelming dominance of the indeterminates (95%) results in the binomial finding of overrepresentation of the unidentified cherts (Table H-339). The exclusion of the indeterminates results in Heiner Lake Tan and Fort Hood Yellow occurring in greater than expected frequencies, Gray/Brown/Green in expected frequency, and Heiner Lake Blue (light), Owl Creek Black, and Cowhouse Novaculite in less than expected frequencies.

Table 5.89 Artifact Recovery by Test Pit, 41CV935.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	5	0.7	0	66	0	0	119	1	2	Scallorn	LP-I
	Total		5	0.7	0	66	0	0	119	1	2		
2	1	-	4	0.7	2	97	0	0	791	4	10	Bonham, Young, ?arrow, dart	LP-I
	2	-	11	3.3	0	43	0	0	394	3	2	Scallorn, ?dart, 780±70	LP-I
	Total		15	4.0	2	140	0	0	1,185	7	12		

The size modal peak is in the 0.5 to 0.9 cm category. Ninety percent of the debitage lacks cortex and coupled with 93% in the less than 1.8 cm in size category indicates a great deal of late stage biface manufacture and/or tool refurbishing (Table H-340).

The eight projectile points include two complete and one proximal Scallorn, a complete Bonham, the proximal half of a Young, an untypable arrow fragment, and two medial dart point fragments (Table H-341). Six points (75%) were manufactured out of indeterminate cherts with one Scallorn of Heiner Lake Tan and another Scallorn of Owl Creek Black. The latter two materials being local to the area but from two different source areas.

The 15 other stone tools include a complete drill from the surface, a complete finished biface, two middle stage biface fragments, two edge modified flakes, a graver, and eight utilized flakes (Table H-342). Material types are again are dominated (60%) by indeterminate cherts of various colors, followed by four Heiner Lake Tan (27%) specimens including two of the bifaces and the drill. These Heiner Lake materials came form the Southeastern Range chert province. One utilized flake was made of Owl Creek Black from the North Fort chert province. These material types are similar to those identified in the debitage.

The two mussel shell umbos represent *Lampsilis* sp. and Unionacea and neither was burned or otherwise culturally modified. It is unclear if these few specimens were the result of human behavior. The 204 bone fragments are dominated (66%) by deer size elements and fragments with about 50% of those burned which indicate definite cultural use. About four bird elements were identified with one large specimen burned. Small rodents and mice size species are also represented. Four elements of opossum (*Didelphis virgiania*) were identified but these are believed to be intrusive. Only three specimens were identified as rabbit and none of these were burned. Deer were apparently the primary subsistence resource but it is unclear what other food resources may have been used by the human occupants.

Of special note are two culturally modified mature *Rabdotus* snail shells. The modification is manifested by tiny drilled holes in the shell. One complete specimen is burned and has a drilled hole about 2.0 mm in diameter on the basal whorl. The second specimen exhibits a series of 13 circular holes drilled in a line around the entire basal whorl (Figure 5.183). Each hole is about 1.55 mm in diameter and is spaced about 2.12 mm apart. These two specimens are quite delicate and may have served in some non-functional role, possibly associated with the human burial.

The 15 burned rocks weighed 3.5 kg and did not appear to represent a distinguishable feature. One light fraction from a float sample out of TP 2, 10 to 25 cmbs, yielded charred wood fragments, but no charred seeds.

5.46.4 Conclusions

The shelter in Subarea B contains buried Late Prehistoric I occupations contained in very compressed deposits with high integrity. The upper few centimeters of the fill represent recent silt deposited by decomposition of the roof since the prehistoric occupations. Below this thin mantle, a very weak, 3 to 5 cm thick A horizon is formed. It probably represents dry decomposition of leaf litter that was blown into the shelter and buried by the rain of silt from the roof. From

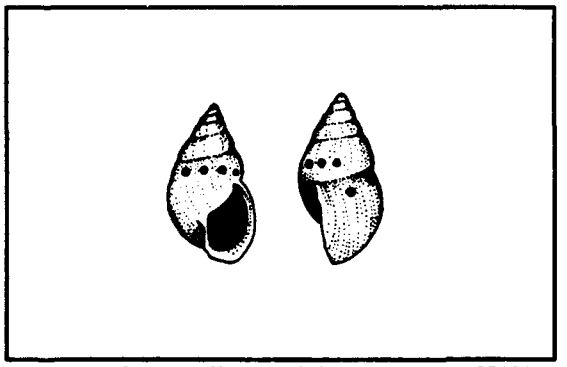


Figure 5.183 Drilled *Rabdotus* Shell, 41CV935.

about 10 to 25 cm, two distinct cycles of ash and charcoal-stained silt over oxidized silt are preserved. Importantly, *the shelter appears pristine* with no evidence of disturbance noted. The Late Prehistoric I period occupation reflected by the Austin phase materials (Prewitt 1981; 1985) is not unusual for Fort Hood rockshelters and is the most often period represented in these shallow shelters.

On the basis of the above, Subarea B of site 41CV935 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are shallowly buried in a setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.47 SITE 41CV936

In February 1995, we conducted formal test excavations at prehistoric archeological site 41CV936. Testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits (0.9 m^3) were manually excavated and demonstrated the presence of a buried prehistoric occupation in good context that dates to the Late Prehistoric I period, and has the potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.47.1 Introduction

5.47.1.1 Site Location and Description

Site 41CV936 lies in northwestern Fort Hood, in Training Area 44. This site is on the western slope of Manning Mountain and overlooks Stampede Creek drainage valley to the west. This open prehistoric camp, as defined in 1993, measured 200 x 150 m, with an east-west long axis (Figure 5.184). Area of the site is 3.0 hectares (7.4 acres). For purposes of analysis, this site is considered a member of the Shell Mountain site group.

5.47.1.2 Previous Work

This site was first recorded by Masson on 16 April 1985 as a temporary camp (Carlson et al. 1988). One untyped dart point was collected and flakes, cores, and bifaces were observed. The surface was estimated to be 20% disturbed by erosion and road use. Based on the presence of several cores and extensive lithic debris, a lithic working activity along with hunting and butchering activities were concluded.

Kleinbach and Abbott visited the site on 17 December 1992. The site was divided into two subareas based on geomorphic context and the potential for intact cultural deposits. Subarea A included segments of the upland Killeen surface, slope and coarse colluvial toeslope. In general, Subarea A is bare exposed limestone regolith, which is extremely fossiliferous with an occasional patch of thin dark stony clay loam A horizon but thickness of this slopewash-derived cover never exceeds about 5 cm. A Castroville point was collected from this surface and several flakes, cores, and a biface were observed. The archeological material is out of context and lacks integrity. Subarea A was judged to have very limited potential significance, and no further management was recommended.

Subarea B is a relatively level bench about two thirds of the way up the slope along the eastern side. This area had a relatively thick sediment cover derived from colluvial and slopewash sedimentation, and in situ disintegration of organic detritus. A Steiner arrow point was collected from the surface. Because Subarea B had the potential for intact cultural deposits, a shovel testing crew



Figure 5.184 View West of 41CV936.

returned on 31 December 1992 and excavated two shovel tests to no deeper than 40 cmbs. Both shovel tests contained cultural material to a depth of 30 cmbs, including 37 pieces of debitage, a biface, and two burned rocks. The density of artifacts generally decreased with depth. Based on shovel testing results, Subarea B was judged to contain intact cultural deposits which were of unknown significance and formal testing was recommended to determine NRHP eligibility. A minimum testing effort was recommended to include 2 to 3 m^2 of manually excavated test pits (Trierweiler 1994:A1096-1098).

5.47.1.3 New Work

Formal testing of Subarea B was completed on 14 February 1995. Two test pits were excavated on the mid-slope bench (Figure 5.185). Test pit 1 was near the northern edge of the bench and excavated to bedrock at 50 cmbs. Test Pit 2 was at the central part and dug to 40 cmbs. Unit sizes and depths are presented in Table 5.90.

5.47.2 Results

Test pit 1 exhibited an A-Bw-2R profile. The A horizon was 30 cm thick and consisted of a very dark grayish brown to black (10YR 2/1 to 10YR 3/2) loam with very few small gravels. The Bw horizon was 20 cm thick and consisted of a brown (10YR 4/3) clay loam with dense gravels and boulders. Cultural material was sparse and included 374 flakes, the distal end of an arrow point, the medial section of a dart point and nine burned rocks (Table 5.91). The lower two levels (20 cm) through the Bw horizon were culturally sterile.

Test pit 2 revealed a practically identical matrix profile. As with TP 1 and all cultural material was recovered from the black/dark brown loam A horizon. The upper 10 cm contained 18 flakes and a burned rock. Recovery increased dramatically from 10 to 20 cmbs, with 281 flakes, 11 burned rocks, 2 mussel shells, and 2 arrow point fragments. A tiny piece (0.1 g) of wood charcoal from this level was identified as oak and yielded a

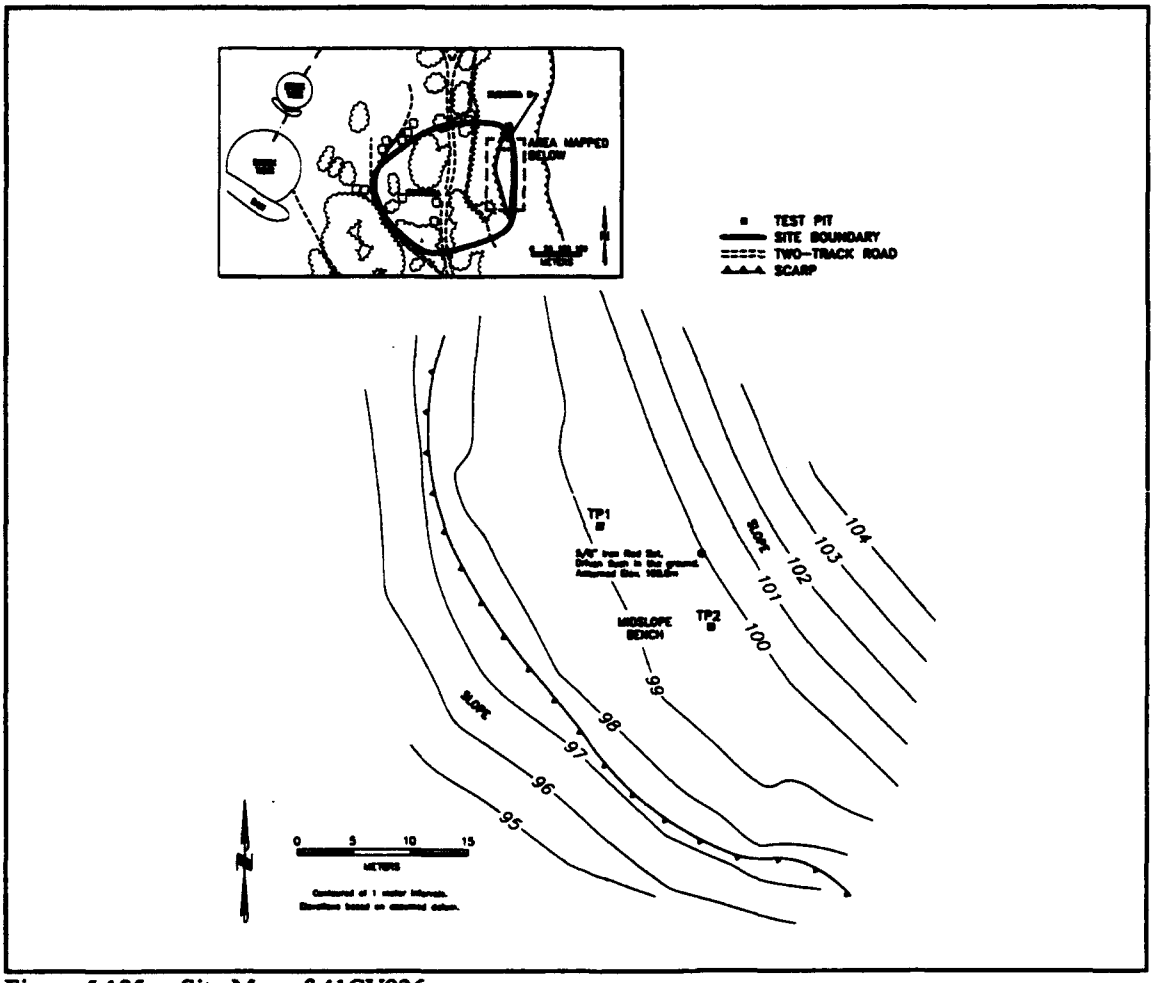


Figure 5.185 Site Map of 41CV936.

$\delta^{13}C$ (-26.7‰) corrected assay of 770 ± 60 BP (Beta-83529). Although recovery decreased between 20 to 30 cmbs with 97 flakes and 2 mussel shells found, a burned rock concentration/dispersed hearth (F 1) was present from 20 to 27 cmbs. This feature was composed of a single layer of 45 angular and blocky burned rocks (22 kg) that formed a slight arc shape from the southwest corner of the unit to the mid-point of the north wall (Figure 5.186). Flakes, scattered flecks of charcoal, and mussel shell were associated with the burned rocks but no ash, oxidation, or stained matrix was observed. Below this hearth feature, the lowest part of the dark loam from 30 to 35 cmbs contained eight flakes, three burned rocks and a mussel shell. Excavation was halted about 5 cm into the Bw horizon.

Table 5.90 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.50	midslope bench
TP 2	1.00	1.00	0.40	midslope bench

Table 5.91 Artifact Recovery by Test Pit, 41CV936.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	5	0	0	-	LP-I
	2	-	1	0.3	0	0	0	0	7	2	0	?arrow, ?dart	LP-I
	3	-	8	1.5	0	0	0	0	4	0	1	-	LP-I
	4-5	-	0	0.0	0	0	0	0	0	0	0	-	LP-I
	Total		9	1.8	0	0	0	0	16	2	1		
2	1	-	1	0.3	0	0	0	0	17	0	1	-	LP-I
	2	-	11	2.0	2	0	0	0	232	2	7	?arrow, 770±60	LP-I
	3	F1	45	22.0	2	0	0	0	103	0	0	-	LP-I
	4	-	3	1.0	1	0	0	0	6	0	0	-	LP-I
	Total		60	25.3	5	0	0	0	358	2	8		

5.47.3 Analysis and Interpretations

5.47.3.1 Definition of Analytical Units

For the purpose of analyses these two test pits were determined to represent a single Analytical Unit. The Subarea B bench appears to represent late Holocene deposits which contain a single cultural component mostly in the A horizon encompassing the top 30 cmbs. Based on the Steiner arrow point from the surface, three untyped arrow point fragments from the two test pits, and the intact burned rock feature that was charcoal dated to 770 BP, the cultural materials are assigned to the Late Prehistoric I period. The dart point midsection is thought to represent a reused curated tool, and therefore not indicative of the timing of this occupation.

5.47.3.2 Late Prehistoric I Materials

This component includes 374 pieces of lithic debitage, 69 burned rocks, nine stone tools, four unclassifiable projectile points, five mussel shells, and a single burned rock feature. The near absence of charcoal and lack of bones indicates poor preservation in these deposits. Abundant *Rabdotus* land snails were present in the upper 30 cmbs and samples were collected.

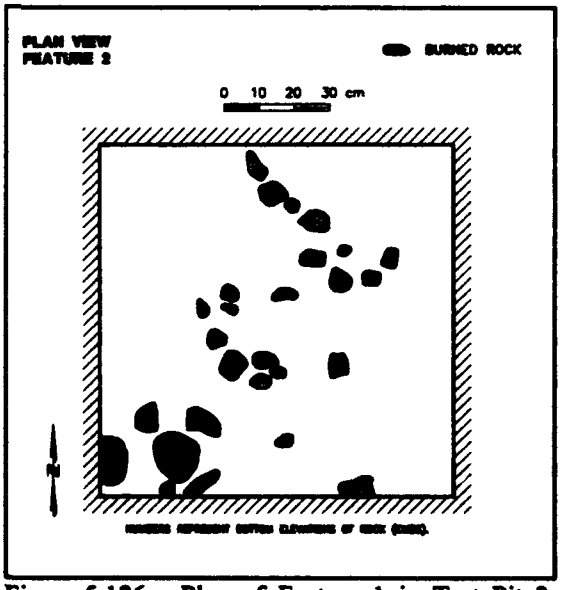


Figure 5.186 Plan of Feature 1 in Test Pit 2, 41CV936.

The 374 specimens of lithic debitage represent nine identified and eight unidentified chert types with only 22% of the materials identifiable (Table H-343). Heiner Lake Tan and Fort Hood Yellow stand out among the identified cherts at 24% and 51%, respectively. Although the Southeast Range cherts dominate with numbers of the different types of cherts (n=5), the North Fort materials with three types are 60% of the identified materials. The total indeterminates are overrepresented, the Fort Hood Yellow is at expected levels, and all others are below expected levels (Table H-344). The exclusion of the indeterminates results in Heiner Lake Tan and Fort Hood Yellow occurring at higher than expected levels, Fort Hood Gray and Heiner Lake Blue (light) at expected levels and other types below expected levels. The high frequency of Fort Hood Yellow debitage is not unexpected given the proximity of the site to North Fort chert province. The Heiner Lake materials are further away from their source in the Southeast Range chert province, but are anticipated to be major part of the debitage and tool assemblage due to the pattern of usage detected in the previous testing of 57 sites.

The modal peak in sizes is 0.5 to 0.9 cm, with almost 80% being below 1.2 cm. Almost 84% of the debitage is tertiary (Table H-345). One rejuvenation flake without cortex was identified. These small sizes and cortex patterns primarily indicate tool finishing and/or rejuvenation.

The three arrow points all lack the diagnostic stem parts but exhibited relatively broad blades, as does the medial dart fragment (Table H-346). One arrow point has a serrated tip, and one appears to have a reworked blade, possibly forming a drill stem. All four were manufactured on indeterminate chert types of various colors. The nine stone tools consist of six utilized flakes, an edge modified flake, a late stage biface fragment, and a complete Type B chopper (Table H-347). These imply processing activities. The material types represented by these tools are dominated (n=6) by indeterminate cherts with the late stage biface manufactured from Heiner Lake Tan chert from the Southeast Range chert province. This material use pattern is similar to that observed in the debitage.

The five unburned mussel shell umbos represent two taxon, Unionacea (n=1) and *Toxolasma* sp. (N=4) (Table H-348), and were scattered around and slightly above the burned rock feature. Their association with the hearth indicates their cultural use even though they lack any sign of modification. A tiny piece (0.1 g) of charcoal from TP 2, 10 to 20 cmbs was identified as oak wood and was sent for dating. This oak fragment yielded a $\delta^{13}C$ (-26.7‰) corrected assay of 770 ± 60 BP (Beta-83529). A light fraction from a float sample around the burned rocks in Feature 1 did not yielded identifiable carbonized plant remains.

5.47.4 Conclusions

This site is on a nearly level midslope bench that has served as a locus of deposition throughout the late Holocene. Although some relatively high magnitude runoff events may have scoured the profile, relatively low-intensity depositional energy seems to have predominated at most times. The formal test excavations demonstrate that this midslope bench contains a shallowly buried Late Prehistoric I component with an intact feature in good context. Stone tools, points, debitage, and burned rock are relatively abundant and reflect a short term campsite. The horizontal differences in material frequencies imply discrete activity areas and increase the importance of this component. The lack of bone preservation is the only negative aspect which hinders interpretation of the subsistence resources utilized. This bench is about 80 m downslope from a rockshelter (41CV935, Subarea B) that also contains a Late Prehistoric I occupation(s). This time period, reflects occupation during the Austin phase (Prewitt 1981; 1985) which is not often represented by single occupation sites, and few of these phase sites have been intensively investigated.

We conclude that site 41CV936 contains intact archeological deposits with significant potential to

address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible component is shallowly buried, protection efforts therefore should include measures to minimize the impact of traffic, prevent subsurface disturbance by vandalism, and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.48 SITE 41CV1033

In late September 1994, we conducted formal test excavations at prehistoric archeological site 41CV1033. Testing was designed to evaluate its eligibility for inclusion to the NRHP. Six trenches were mechanically dug and four test pits totaling 5.3 m^3 were manually excavated. These tests demonstrate that no significant cultural deposits are present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further work is recommended.

5.48.1 Introduction

5.48.1.1 Site Location and Description

Site 41CV1033 lies on a complex series of Pleistocene and Holocene terraces associated with Cowhouse Creek and an unnamed tributary. It is in Fort Hood Training Area 42. Cowhouse Creek parallels the southern site boundary and an unnamed tributary delimits the southeastern site margin. Many roads criss-cross the site and a gravel pit is present in the northwest corner. Maximum site dimensions, as defined in 1993, measure 650 m long and 100-200 m wide, with a north-south long axis. Site area is about 12 hectares (29.6 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.48.1.2 Previous Work

This large site was first recorded on 9 May 1985 by Turpin, Drollinger, Masson, and Michaels. Burned rock concentrations, along with a widespread scatter of flakes, burned rocks, and mussel shell were noted and four dart points including an Ensor and a Darl were collected (Carlson et al. 1988). In addition, high quality chert gravels were observed on the ridge top and evidence of primary reduction activity was present. The site was estimated to be impacted about 30% by a quarry, roads, and erosion. The site was considered an occupation overlying a lithic procurement area, and due to its large size was designated a lithic resource procurement area.

On 31 July 1992, Trierweiler and Frederick reevaluated the site and delineated two subareas on the basis of geomorphic context and potential for intact cultural deposits. Subarea A was defined as the Pleistocene terrace, with Subarea B as the Holocene terrace. Subarea A was covered with a light to moderate scatter of cores, tested cobbles, debitage, and burned rocks. A heavily impacted, former burned rock mound (Feature 1) remained near the southern margin of the subarea. The projected mound appeared to have been 15 m in diameter and presently less than 10 cm high. A Pedernales point was collected from this feature. About 150 m north of F 1, a poorly preserved 5 x 8 m burned rock concentration (F 2) was exposed in a road. A number of small burned rock concentrations, probably representing ephemeral hearths, were also noted along the erosive margins of the Pleistocene terrace. The surface had been extensively impacted by tracked vehicles and the gravel pit. The fill in Subarea A consisted of the Jackson alluvium of Nordt (1992), indicating that the terrace was a stable to erosional surface throughout the Holocene, and that any occupation should occur as a surface palimpsest with little contextual integrity.

On 25 May 1993, Kleinbach and Abbott revisited the site to evaluate its potential to address questions of lithic resource procurement and

reduction. Because upland Subareas A contained a chert resource and was not completely damaged, eight resurvey transects including 126 observation stops were completed on 11 June 1993. Results demonstrated low artifact ubiquity and limited potential to contribute to lithic-procurement research. Therefore, Subarea A was judged to be insignificant and ineligible for NRHP inclusion according to research issues outlined in Ellis et al. (1994). Subarea B subsumed the lower, Holocene terrace on which a very light burned rock and lithic scatter was noted. Cutbank exposures revealed several meters of alluvial deposition. This subarea was also disturbed by vehicular traffic, but to a much lesser extent than Subarea A. Thirty-three shovel tests were dug in Subarea B, of which 12 (36%) were positive, containing lithics and burned rocks. Most material was recovered from the upper 20 cm of deposit, however, two shovel tests contained significant subsurface recovery. These were located on the cutbanks near Cowhouse Creek and its tributary. Based on the depth of alluvial fill and potential for deeply buried cultural deposits below the extent of shovel testing, formal testing was recommended to determine NRHP eligibility, including four trenches and four square meters of manually excavation (Trierweiler 1994:A1180-A1185).

5.48.1.3 New Work

In September 1994, formal testing was conducted in Subarea B to determine NRHP eligibility. Six trenches were excavated to examine the alluvial stratigraphy and prospect for buried cultural material and four test pits were manually excavated to recover a sample of subsurface cultural material. Four trenches (BTs 1 through 4) and the four test pits (TPs 1 through 4) were excavated on the broad T_1 surface of the tributary, and two trenches (BTs 5 and 6) were excavated on the narrow wedge of the T_1 surface of Cowhouse Creek. The unit sizes and depths are presented in Table 5.92.

Table 5.92 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	9	0.8	2.1	T1 terrace
BT 2	12	0.8	2.6	T1 terrace
BT 3	7	0.8	2.8	T1 terrace
BT 4	7	0.8	2.0	T1 terrace
BT 5	10	0.8	1.7	T1 terrace
BT 6	7	0.8	2.2	T1 terrace
TP 1	1.00	1.00	1.00	T1 terrace
TP 2	1.00	1.00	1.90	T1 terrace
TP 3	1.00	1.00	1.70	T1 terrace
TP 4	1.00	1.00	0.80	T1 terrace

5.48.2 Results

5.48.2.1 Excavations in the Tributary T_1 Terrace

Backhoe trenches 1 through 4 all exhibited broadly similar profiles interpreted as probable equivalents of the Fort Hood alluvium of Nordt (1992). Trench 1, excavated near the edge of the terrace and exhibited an A-AB-Bk-C profile approximately 2 m thick (Figure 5.187). The A horizon (0 to 15 cm) and AB horizon (15 to 60 cm) were composed of blocky silty loam that graded from very dark brown (10YR 2/2) to very dark grayish brown (10YR 3/2) with depth. The underlying Bk horizon was 120 cm thick and consisted of massive, brown (10YR 4/3) silty loam containing common carbonate filaments. The C horizon was poorly exposed at the base of the trench and consisted of clast-supported alluvial gravels in a brown loamy matrix. No cultural material was noted.

Trench 2 was at the rear of the terrace about 50 m northwest of BT 1 and 15 m east of a scarp (Figure 5.188). This trench revealed clayey deposits interpreted as a distal facies of the same fill. Overall, the exposure exhibited an A-2A-2Bk profile 250 cm thick (Figure 5.189). The upper A horizon consisted of 35 cm of dark brown (10YR 3/3), weak blocky loam, and is interpreted as

slopewash riding off the adjacent slope. The 2A horizon extended to a depth of 80 cm, and consisted of black (10YR 2/1), strong blocky structured clay loam. The 2Bk horizon (80-250 cm) consisted of blocky brown (10YR 4/3) clay, and contained common carbonate films and filaments on the ped faces. Although the blocky structure was rather pronounced, the peds were very sticky and did not separate easily. Once again, no cultural material was observed in the profile. The sediments exposed in this trench appear to be a more distal, clayey facies of the same alluvial fill, and are tentatively interpreted as the Fort Hood alluvium of Nordt (1992).

Backhoe trenches 3 and 4 were dug farther down the tributary and below the extensive, degraded burned rock Feature 1 on the T_2 surface. Although both trenches contained burned rock in the upper meter, this material appears to be colluvial, originating from the feature on the T_2 terrace above.

Trench 3 was about 5 to 10 m east of a tank trail and about 30 m south of BT 1. It exhibited an A-Bk-C profile up to 250 cm thick, with a thick cap of more recent material that may represent the West Range alluvium, roughly coeval slopewash alluvium, or a combination of the two (Figure 5.190). The A horizon was 35 cm thick and consisted of black (10YR 2/1) granular loam. The upper Bk horizon was 80 cm thick and consisted of dark brown (10YR 3/3), blocky clay loam containing common fine filaments and a few dispersed burned rocks. The contact between the more recent cap and the older material appears to coincide roughly with the gradual contact between the upper and lower Bk horizons. The lower Bk, tentatively interpreted as the Fort Hood fill, also consisted of a brown (10YR 4/3) blocky clay loam, and contained abundant fine carbonate films and filaments. It graded into a C horizon consisting of brown (7.5YR 5/4) weak blocky sandy loam at a depth of 180 cmbs. Burned rocks were scattered between roughly 40 to 75 cmbs.

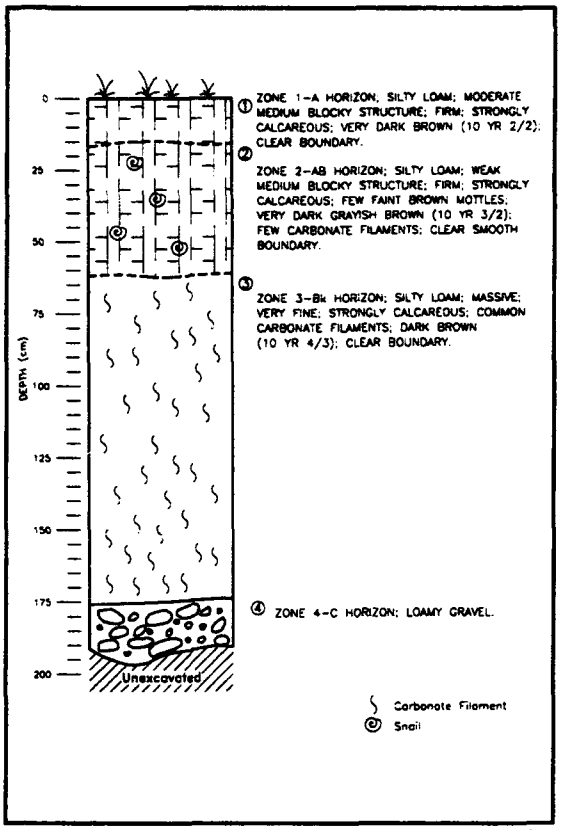


Figure 5.187 Backhoe Trench 1 Profile, 41CV1033.

Offset from the south wall of BT 3, TP 2 was placed above the exposed burned rocks in the trench, and was excavated to 190 cmbs. No feature was detected and only levels 6 and 8 were positive, with a combined recovery of three chert flakes and one burned rock (Table 5.93).

Trench 4 was located 60 to 70 m north-northwest of the Cowhouse Creek the unnamed tributary confluence. The trench exhibited a profile marked by a relatively dense lag of burned rock mantling the contact between a welded A horizon composed primarily of slopewash and the underlying Fort Hood fill. Overall, the trench exhibited an A-Bk profile. The A horizon was approximately 25 cm thick and consisted of black (10YR 2/1), granular gravelly sandy loam. The lower part of this

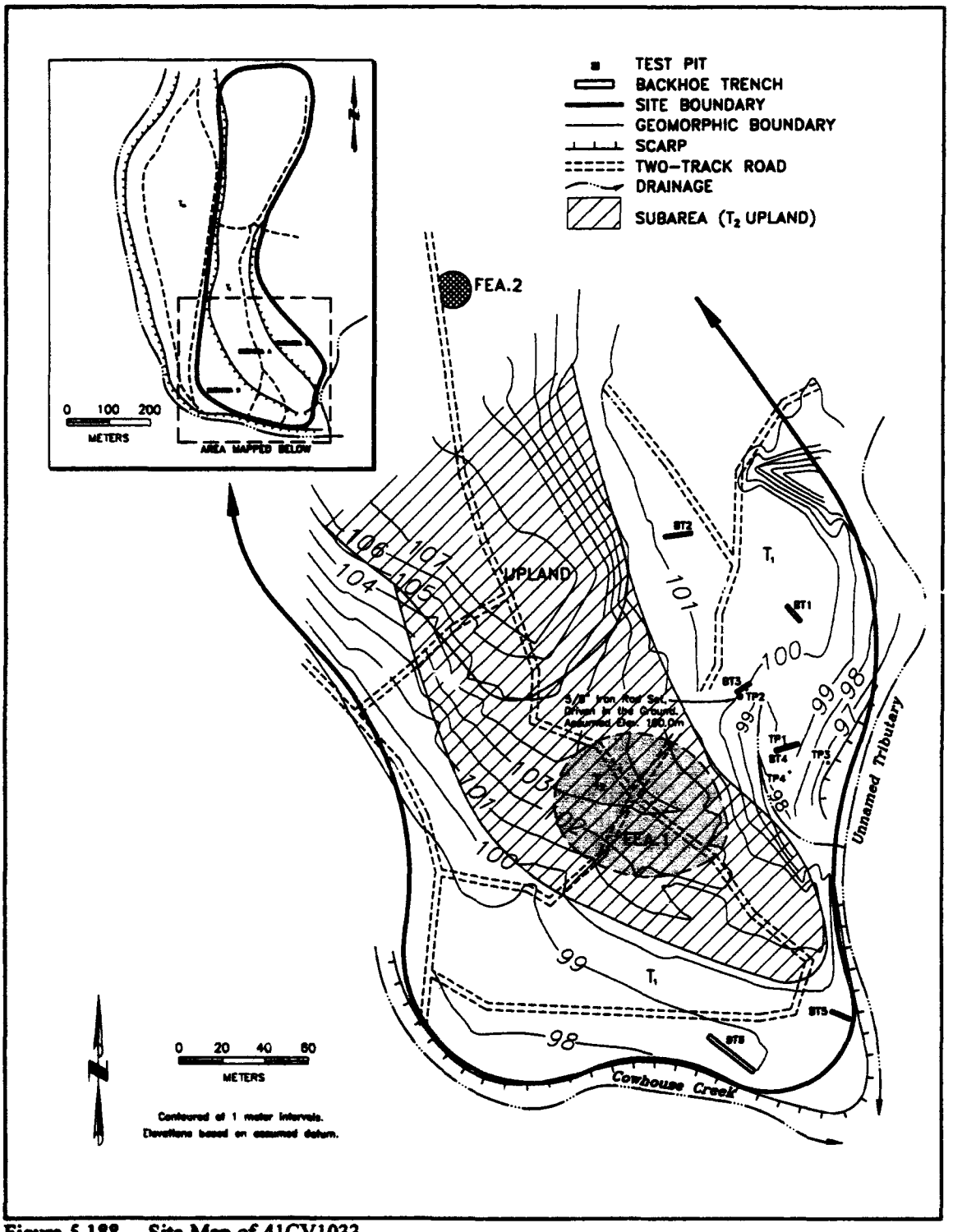


Figure 5.188 Site Map of 41CV1033.

horizon, between ca. 15 to 25 cmbs, contained an almost continuous scatter of colluvially-reworked burned rock associated with a degraded burned rock mound situated upslope on the T_2 surface. This burned rock lag mantled a gently sloping contact between the slopewash cap and the underlying alluvial fill. The Bk horizon extended to the base of the measured section at approximately 190 cm and consisted of dark brown (10YR 3/3) to brown (10YR 4/3) weak blocky silty clay loam containing a few fine carbonate filaments.

Test pit 1 was offset from the north wall of BT 4 where the densest burned rock layer was exposed in the trench. Cultural materials, lithics (n=4) and burned rocks (n=139; 47.3 kg), were recovered from the surface to 40 cmbs, with levels 5 through 10 being culturally sterile. A dense layer of burned rock was encountered 15 to 24 cmbs and extended across the entire unit. This layer, designated temporarily as F 3, consisted of a single layer of burned rock (n=125, 45.5 kg) exhibiting no horizontal patterning. The majority of rocks were medium sized (5-7 cm) and angular, with a few overlapping. Three chert flakes/chunks and one utilized chert flake were recovered from this same fill. Because the cultural material was later determined to be entirely colluvial, originating from the eroded burned rock midden on the T_2 surface above, the "Feature 3" designation was later deleted.

Test pit 3 was a free standing unit located 20 to 30 m southeast (downslope) of BT 4 and 10 m west of the tributary. No artifacts were recovered from the surface to 80 cmbs. One small burned rock was noted in level 9, with no recovery from level 10. From 100 to 160 cmbs, a few very small burned rocks (n=22; 1.2 kg) were found in levels 11 through 16, with a few mussel shell fragments noted in level 11, and five flakes in levels 14 and 15. Level 16 was culturally sterile and excavation was halted at 170 cmbs.

Test pit 4 was a free standing unit excavated approximately 10 m south of TP 1. No cultural material was recovered from level 1. A burned rock concentration (n=48; 3 kg) was encountered 12 to 22 cmbs and was identified as a continuation of the so-called Feature 3 burned rock layer. The concentration measured 53 x 46 cm and was confined to the northeast quadrant of the unit. This single burned rock layer, amorphous in shape, consisted of medium sized, angular rocks. One flake and two mussel shell fragments were in association and a Fairland point was recovered at 23 cmbs, directly beneath the burned rocks. In addition, a 10 x 10 cm burned area was

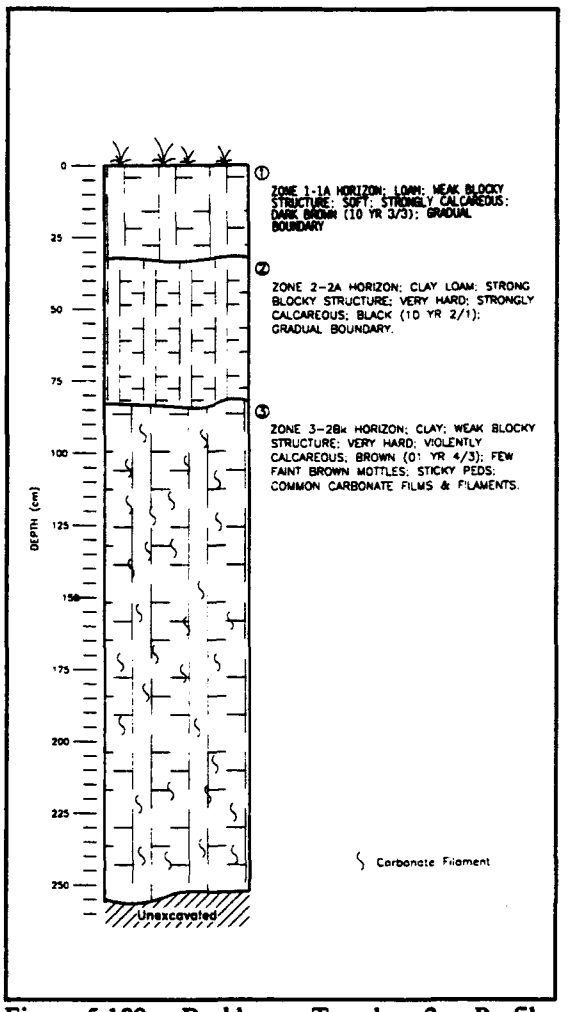


Figure 5.189 Backhoe Trench 2 Profile, 41CV1033.

encountered at 25 cmbs in the northwest corner of the test pit. Best visible in the north wall profile, this burn consisted of a 5 to 7 cm thick deposit of charcoal flecks and burned soil underlain by a 5 to 7 cm thick deposit of ash, charcoal flecks, and burned earth. From the base (about 40 cmbs) of the burned area, a root extended to 70 cmbs. Rather than the root being intrusive, it seemed to be coincident with the burn. Therefore this burned area apparently resulted from a tree/stump firing. Sparse artifacts were recovered from the remainder of level 3 (non-feature fill) and levels 4 through 5. No cultural material was found from 50 to 80 cmbs, at which point excavation was terminated.

Although no units were excavated on the lower, inset surface, the profile consists of a thick accumulation of slightly gravelly, dark grayish brown to black (10YR 2/1 to 10YR 4/2) clay loam exhibiting an A-Bk profile. This deposit is tentatively interpreted as the West Range alluvium.

5.48.2.2 Excavations in the T_1 Terrace of Cowhouse Creek

Two final trenches (BTs 5 and 6) were excavated on the relatively narrow T_1 surface of Cowhouse Creek overlooking the confluence. Trench 5 proved to consist primarily of a narrow wedge of Holocene colluvium inset against the margin of the Pleistocene fill underlying the T_2 surface. It exhibited an A-Bw-2Bw profile consisting of up to 160 cm of weakly bedded, grayish brown (10YR 5/2) colluvium containing a series of dipping gravel stringers over reddish yellow (7.5YR 6/5), weak blocky sandy loam Jackson alluvium. Approximately 100 m upstream (on Cowhouse Creek) of the confluence, BT 6 consisted of a thin wedge of dark grayish brown gravelly clay loam alluvium that represents either the Ford or West Range fills inset against massive brown loamy deposits tentatively interpreted as the Fort Hood fill. No cultural material was detected in BT 6, while the few flakes recovered in BT 5 were in clearly secondary context. Accordingly, test pits were not manually excavated into this terrace.

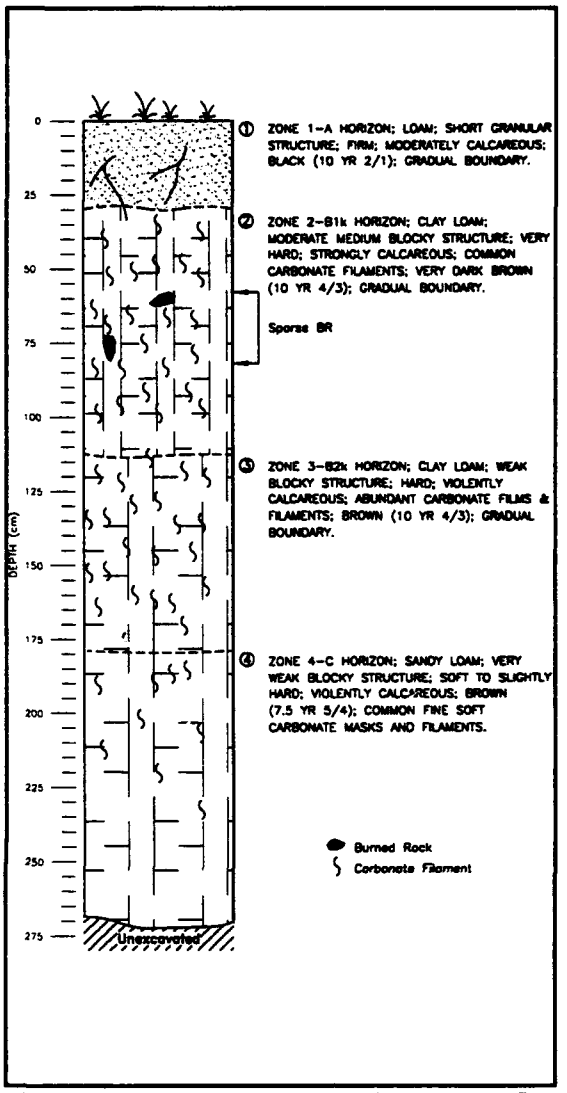


Figure 5.190 Backhoe Trench 3 Profile, 41CV1033.

5.48.3 Analysis and Interpretations

Because of overall gross similarity in context, and due to the lack of chronological markers or chronometric assays, all excavation proveniences are grouped together as a single temporally unclassifiable analytical unit. Three of six backhoe trenches (BTs 3-5) and all four test pits (5.3 m^3) yielded cultural material including 19 pieces of

Table 5.93 Artifact Recovery by Test Pit, 41CV1033.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	1	0.9	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	3	0	1	-	unspec.
	3	-	125	45.5	0	0	0	0	1	0	0	-	unspec.
	4	-	13	0.9	0	0	0	0	0	0	0	-	unspec.
	5-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		139	47.3	0	0	0	0	4	0	1		
2	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	1	0.3	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	9-19	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		1	0.3	0	0	0	0	3	0	0		
3	1-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	9	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11	-	1	0.2	0	0	0	0	0	0	0	-	unspec.
	12	-	4	0.2	0	0	0	0	0	0	0	-	unspec.
	13	-	8	0.3	0	0	0	0	0	0	0	-	unspec.
	14	-	5	0.2	0	0	0	0	2	0	0	-	unspec.
	15	-	3	0.2	0	0	0	0	3	0	0	-	unspec.
	16	-	1	0.1	0	0	0	0	0	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		23	1.4	0	0	0	0	5	0	0		
4	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	48	3.0	0	0	0	0	0	0	0	-	unspec.
	3	-	6	0.9	0	0	0	0	5	1	0	Fairland	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	2	0.9	0	0	0	0	1	0	0	-	unspec.
	6	-	2	0.9	0	0	0	0	0	0	0	-	unspec.
	7-8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		58	5.7	0	0	0	0	7	1	0		

debitage, one Fairland projectile, one utilized flake, 221 burned rocks (54.7 kg), four charcoal samples (5.3 g), and 29 snail samples. The most productive units were all located near the base of a slope below a large destroyed burned rock feature. Consequently, the burned rock scatter and layer detected in BT 4 and TP 4 respectively were attributed to F 1 material being redeposited downslope from colluvial action. The Fairland point discovered in association with the burned

rock layer (58 burned rocks weighing 5.7 kg) in TP 4 implies a Late Archaic period of use for F 1. Test pits 1 and 2 yielded four and three pieces of debitage respectively with a utilized flake in level 2 of TP 1. It appears the majority, if not all cultural material from these units were redeposited, probably originating from the destroyed burned rock feature in the upland immediately above these units.

The 19 specimens of debitage represent three identified and five unidentified chert types (Table H-349). All the identified chert types are from the Southeastern Range chert province, on the opposite end of the Fort. Only the extremes of the size range are not present. The majority (79%) of the debitage is tertiary in nature (Table H-350). Both stone tools were of indeterminate cherts; the Fairland point is a light gray and the utilized flake a mottled chert.

5.48.4 Conclusions

The four trenches excavated into the T_1 terrace above the confluence all exhibited broadly similar profiles interpreted as probable equivalents of the Fort Hood alluvium of Nordt (1992). Although quantities of burned rock were observed in the profiles of two of these trenches (BTs 3 and 4) and lithic artifacts were recovered from the manually excavated test pits (TPs 3 and 4), all of the cultural material observed in this terrace is in a secondary context, originating from the eroded burned rock Feature 1 on the T_2 surface above. Similarly, no cultural material in primary context was observed in the two trenches (BTs 5 and 6) excavated into the narrow T_1 surface overlooking Cowhouse Creek. These trenches exhibited a gravelly clay loam (either Ford or West Range fills) inset against massive brown loamy deposits tentatively interpreted as the Fort Hood fill.

We conclude that site 41CV1033 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for NRHP inclusion and recommend no further management.

5.49 SITE 41CV1080

In November 1994, we conducted formal archeological test excavations at prehistoric rockshelter site 41CV1080. Formal testing was designed to evaluate eligibility of this rockshelter for inclusion to the NRHP. One test pit (0.9 m^3) was manually excavated. Testing demonstrates the presence of buried cultural components in good context. These deposits have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, this rockshelter is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.49.1 Introduction

5.49.1.1 Site Location and Description

Site 41CV1080 is in northwestern Fort Hood in Training Area 51. The site is across the uplands and colluvial slope at a north-flowing head of an unnamed tributary of Henson Creek. Maximum site dimensions, as defined in 1993, measure 50 x 100 m with a north-south long axis, and cover an area of about 0.4 hectare (1.0 acre). The site includes a diffuse lithic scatter on the deflated upland surface and on the north margin, a north facing rockshelter containing buried prehistoric cultural material. The shelter measures about 9 m wide by 2 m deep by 1.6 m high (Figure 5.191). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.49.1.2 Previous Work

Turpin and Bradle originally recorded the site on 23 June 1985 as a lithic scatter on an upland surface and a rockshelter on the northern edge (Carlson et al. 1988). No cultural material was

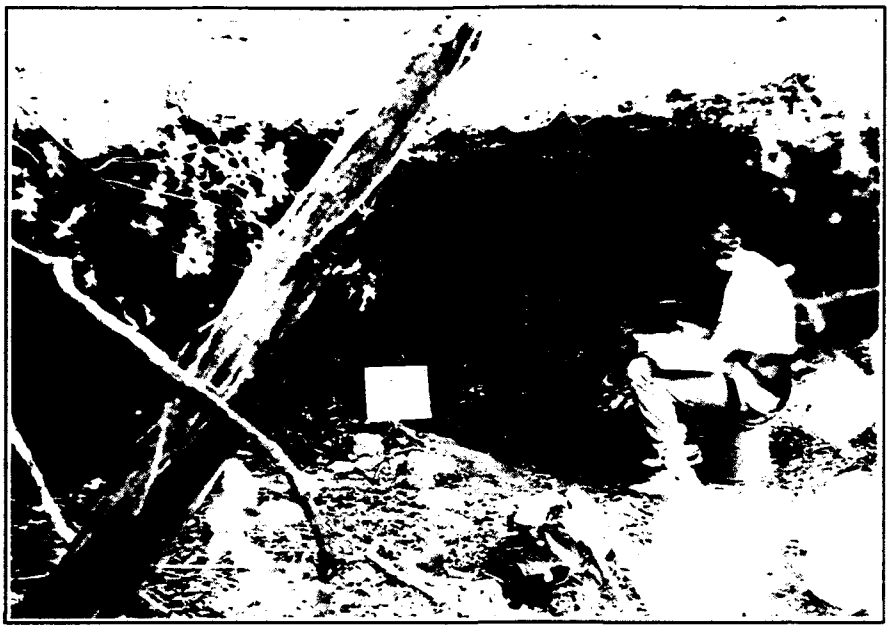


Figure 5.191 View Southwest of Test Pit 1 Inside Rockshelter, 41CV1080.

observed in the rockshelter and a low density of debitage and bifaces were noted on the upland surface although a Darl dart point was collected from that surface. The rockshelter condition was not noted, although the upland surface was estimated to be 27% disturbed by vehicular traffic, bulldozing, and bivouac activities.

Mires and Doering visited the site in February 1992 and reassessed it based on geomorphic context and the potential for intact cultural deposits. The stable, flat upland Manning surface consisted a thin (20 cm) mantle of clay rich residual soil that exhibited A/R and A/C/R profiles. These profiles reflect the old age of this surface, and indicate a period of stripping during the Holocene. A diffuse scatter of debitage across this upland revealed no potential for intact cultural deposits therefore, no further work was recommended for this part of the site.

The rockshelter contains shallow, colluvially derived clay matrix of unknown age. Because of the potential for intact cultural material, a crew excavated a 50 x 50 cm test pit (TP 1) to bedrock at 60 cmbs in the rockshelter on 13 March 1992. An abundance of cultural material including 75 flakes, 18 bones, three bivalve shells, 97 burned rocks, an edge modified flake, a core, and charcoal were recovered. The majority of this material was recovered from 30 to 50 cmbs, below a roof fall zone. Based on this shovel testing result the rockshelter was thought to contain significant and in situ cultural deposits and protection was recommended (Trierweiler 1994:A1207-12010). Subsequently, the State Historic Preservation Officer suggested that further testing was warranted to more clearly document NRHP eligibility.

5.49.1.3 New Work

Formal testing was completed in November 1994. A single test pit (TP 2) was placed adjacent to the 1992 test pit and was excavated to 90 cmbs (Figure 5.192).

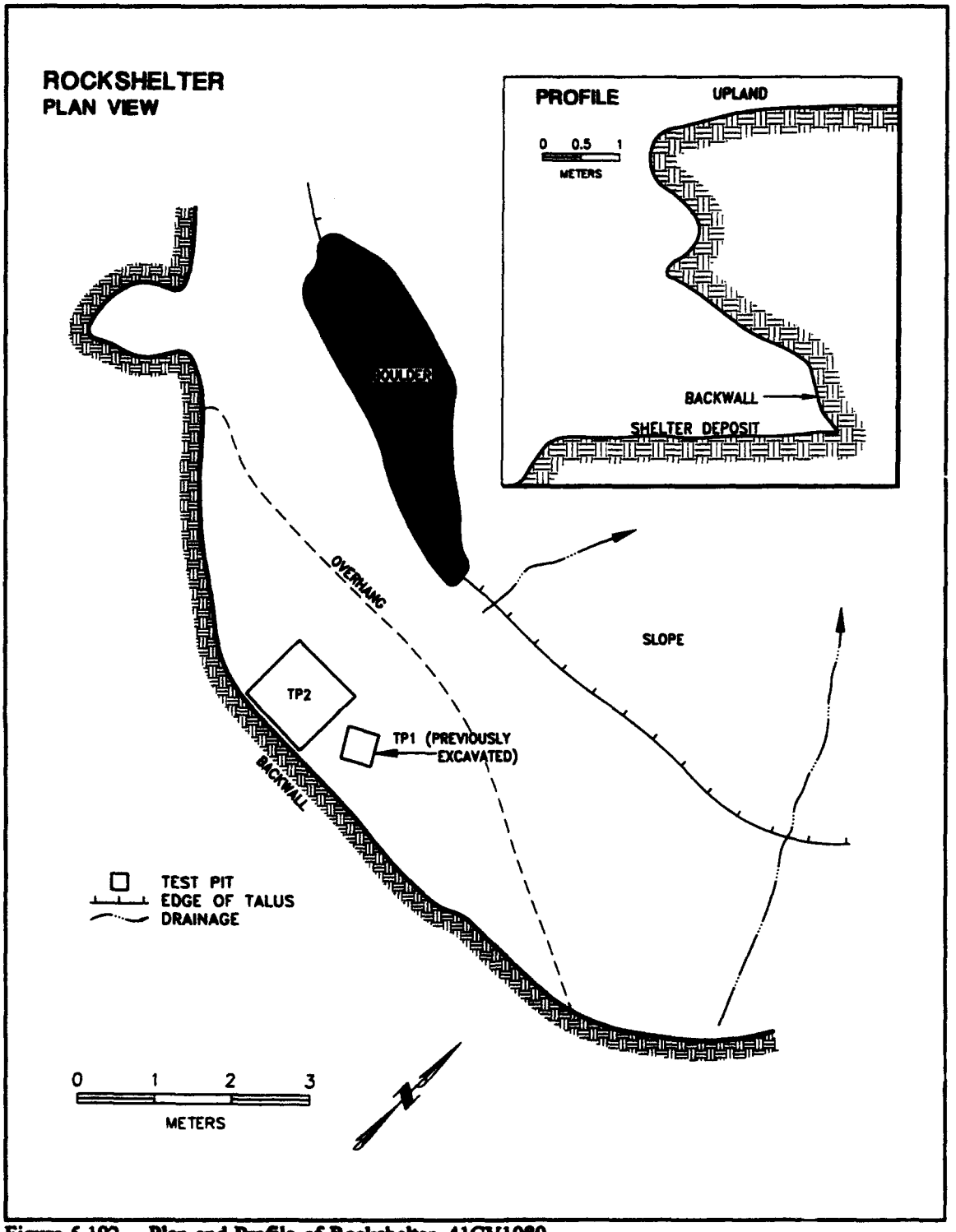


Figure 5.192 Plan and Profile of Rockshelter, 41CV1080.

5.49.2 Results

Test Pit 2 revealed a relatively homogeneous profile composed of coarse limestone spalls and black (10YR 2/1) clay loam of probable external origin. A 3-5 cm thick brown silt caps this deposit. Cultural material was recovered from each excavated level (Table 5.94). The upper two levels contained a moderate frequency of flakes (n=120), abundant bone fragments (n=181), mussel shell fragments, and charcoal pieces. A peak in cultural material frequency was documented in level 3, where over a hundred flakes, numerous bone fragments, three Scallorn points, two burned rocks, a mussel shell umbo were recovered.

A small (1.8 g) charcoal sample from level 3 yielded a $\delta^{13}C$ (-25.6‰) corrected assay of 1250 ± 60 BP (TX-8429). This sample was identified as white Oak. In the succeeding four levels, debitage counts remained high, while the bone fragment counts quickly declined. In addition, charcoal was present in each level, level 4 contained another Scallorn, and level 5 yielded an unnotched Fresno. A float sample from level 4 did not yield any carbonized plant remains. A small piece of ocher was recovered from level 5. From level 7, a small (1.4 g) sample of wood charcoal was also identified as white Oak and provided a $\delta^{13}C$ (-25.6‰) corrected assay of 1950 ± 60 BP (Beta-83264). The bottom two levels (8 and 9) contained a few flakes. No features were identified and no obvious stratigraphy was evidence. The unit was terminated at decaying bedrock.

5.49.3 Analysis and Interpretations

5.49.3.1 Definition of Analytical Units

This single productive test pit yielded results which indicate at least two major periods of use based on two charcoal dates and seven projectile points and point fragments. The first use period was during the Late Archaic period and is based on the charcoal sample dated to 1950 BP. No projectile points were associated with this date and minimal cultural materials were recovered between 50 to 90 cmbs. These cultural materials rested on bedrock and were mixed around small roof fall slabs. It is possible that some of the recovered material may have originated in the occupation directly above

Table 5.94 Artifact Recovery by Test Pit, 41CV1080.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
2	1	-	0	0.0	0	88	0	0	22	0	1	-	LP-I
	2	-	0	0.0	0	88	0	0	98	1	1	?arrow	LP-I
	3	-	3	0.7	1	95	0	0	268	3	2	Scallorn, 1250±60	LP-I
	4	-	13	0.7	1	25	0	0	128	2	1	Fresno, Scallorn	LP-I
	5	-	0	0.0	0	22	0	0	114	2	2	Fresno, ?arrow	LP-I
	6	-	2	0.3	0	3	0	0	46	0	0	-	LA
	7	-	0	0.0	0	2	0	0	36	0	0	1950±60	LA
	8	-	0	0.0	0	2	0	0	6	0	0	-	LA
	9	-	0	0.0	0	0	0	0	0	0	0	-	LA
	Total		18	1.7	2	325	0	0	718	8	7		

and over time worked their way into this zone through various turbation activities.

The second use period, the Late Prehistoric I, contained quantities of material from 0 to 50 cmbs. The arbitrary division between these two time periods was made where a major decrease in artifact frequency existed at 50 cmbs. This period is evident from four Scallorn points, three in level 3 and one in level 4, two arrow point fragments in level 2 and a Fresno in level 5, coupled with the charcoal date of 1250 BP from level 3. These items were associated with quantities of lithic debris, small bone fragments, snail shells, scattered mussel shell fragments, burned rocks, and charcoal pieces.

5.49.3.2 Late Archaic Materials

This 40 cm thick zone at the base of the shelter yielded 88 pieces of lithic debitage, seven bone fragments, one burned rock, scattered charcoal and several snail shells. No features, diagnostic artifacts or stone tools were recovered.

The 88 specimens of lithic debitage represent seven identified and six unidentified chert types with 31% of the cherts identified (Table H-351). Indeterminate light brown cherts contribute 44% to the unidentified materials and are just under a third of the total assemblage. Only Fort Hood Yellow comes close to the quantities of light brown. All four chert provinces are represented in the assemblage albeit in small numbers with North Fort being the most utilized chert source. The combined indeterminates occur in higher than expected frequencies, Fort Hood Yellow occurs in expected frequencies, and all other materials are in quantities lower than anticipated (Table H-352). When the indeterminates are excluded, Fort Hood Yellow occurs in higher than expected amounts, while all others occur in expected quantities.

There is not a strong modal peak in the sizes; 72% of the debitage is less than 1.8 cm in size. As expected with the amount of small-sized debitage, tertiary debitage is 82% of the entire sample (Table H-353). Based on the limited data, biface reduction was probably a major part of the lithic reduction taking place a this site.

The seven bone fragments represent medium to large mammals and a *Leporidae*. Three pieces were burned with others showing various degrees of weathering. The one burned rock from level 6 was small (0.2 kg) and along with other tiny fragments of material may have been displaced by a large root that ran diagonally across the unit. A 1.4 g charcoal sample, identified as white Oak wood, provides a $\delta^{13}C$ (-25.6‰) corrected assay of 1950 ± 60 BP (Beta-83264). This age places the associated cultural material in Prewitt's (1981; 1985) Uvalde phase. This phase is poorly represented in rockshelters and in alluvial terrace sites in Fort Hood, although many burned rock midden here have yielded points of this period. This sparse occupation could yielded important information concerning this period.

5.49.3.3 Late Prehistoric I Materials

The top 50 cmbs of TP 2 yielded 630 pieces of lithic debitage, 320 bone fragments, 12 burned rocks that weighed 1.0 kg, a Fresno point, four Scallorn points, and two arrow point fragments, seven other stone tools, roughly 25 g of charcoal flecks, two mussel shell umbos, a piece of ocher, and lots of snail shells.

The 630 specimens of lithic debitage represents nine identified and eight unidentified chert types with less than 10% of the total assemblage being identified (Table H-354). Indeterminate light brown debitage overwhelms both the total assemblage (50%) and the unidentified materials (55%). No other chert type is even close to having this frequency. The Cowhouse materials have only a slight advantage over the North Fort and Southeast Range materials in terms of dominance of chert types. As expected given the dominating presence of light brown debitage, the combined indeterminates occur in higher than expected quantities (Table H-355). All other chert types occur at less than anticipated amounts. The

exclusion of the indeterminates results in Fort Hood Yellow and Cowhouse Mottled occurring in higher than expected quantities, and Cowhouse White, Anderson Mountain Gray, Heiner Lake Tan, Gray/Brown/Green, and Cowhouse Dark Gray occurring in expected frequencies, while only Owl Creek Black and Cowhouse Mottled with Flecks occur in less than expected quantities. The presence of Anderson Mountain Gray from southwestern Fort Hood is in line with the site being part of the Shell Mountain site group on the western side of Fort Hood.

The modal peak for size occurs in the 0.5 to 1.2 cm categories, as these two groups are separated only by five flakes. Sixty-six percent of the debitage is less than 1.2 cm and 88% is smaller than 1.8 cm. As expected if biface reduction is the technology that produced the majority of these flakes, 76% of the debitage is lacking cortex (Table H-356), 21% of the debitage has evidence of partial cortex. Debitage with the highest quantities of cortex occurs in the 1.2 to 1.8 cm category which experimental work (Tomka 1990:222) has shown to be a size grade that has one of the highest frequencies during biface reduction. A further interpretation is that the flake-blanks being imported still require a great deal of final trimming and reduction.

The eight projectile points include four Scallorn, two untyped distal arrow fragments, and a complete and a proximal Fresno point (Table H-357). These were manufactured from mostly (75%) unidentifiable chert types with one untyped arrow o Fort Hood Yellow and one Scallorn a Heiner Lake Tan. The other seven stone tools include a utilized specimen, a Clear Fork Type B Tool, an edge modified flake, a proximal middle stage biface, a medial late stage biface, a medial finished biface, and a medial drill section (Table H-358). Three (43%) tools were of indeterminate chert types, whereas Heiner Lake Tan (43%) and Fort Hood Yellow were again moderately represented.

The 326 bone fragments were identified as mostly representing small to medium mammals including *Leporidae* (n=10), although unidentified bird (n=1), turtle (n=3), rodent (n=7), snake (n=3), and large mammal elements were all present (Table H-359). Opossum (n=10), armadillo (n=7), skunk (n=1), and rats (n=2) were specifically identified. The one bird element is an unidentified long bone of a medium size bird. Most of the medium to large size mammal fragments appear to be deer size. The opossum and armadillo, and possibly the skunk and rat were recent intrusions into the matrix and definitely indicate some disturbances. The two mussel shell umbos were identified as *Amblema plicata*. Both were unburned and other wise unmodified by humans. One is a left and the other is a right and may represent a single specimen. It is unclear if this shell represents a human food resource or was brought here by some animal.

A 1.8 g charcoal sample from 60 to 70 cmbs yielded a $\delta^{13}C$ (-25.6‰) corrected assay of 1250 ± 60 BP (TX-8429). This sample was identified as white Oak. This age is time equivalent to Prewitt's (1981; 1985) Austin phase which is common among the small rockshelters at Fort Hood and the surrounding area with very few occupations recognized in the alluvial terrace deposits.

5.49.4 Conclusions

The shelter at 41CV1080 is infilled with a stony black clay that probably represents an admixture of coarse roof spall and black clay loam derived from erosion of the upland A Horizon. It is possible that at least some of the black clay loam is the result of in situ weathering of shelter sediments due to groundwater seepage. Although the sediment may be introduced from outside the shelter, the variety and vertical distribution of cultural material suggests that the majority, if not all, is in primary context. Only minor disturbances to the cultural deposits were noted by root and rodent activity at depth and surface alterations.

The last use period, the Late Prehistoric I, is not unusual for the Fort Hood rockshelters. However, the Late Archaic age of 1950 BP during the Uvalde phase is rare. This age is one of the oldest thus far obtained from a Fort Hood rockshelter and represents a time period usually associated with burned rock midden deposits.

We conclude that the rockshelter at site 41CV1080 contains intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, this part of the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Because the known eligible components are relatively shallowly buried in a kind of setting that is well known for its capacity to yield artifacts, protection efforts therefore should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.50 SITE 41CV1129

In August 1994, we conducted formal test excavations at prehistoric archeological site 41CV1129. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Eight trenches were excavated by backhoe and five test pits totaling 7.5 m^3 were dug by hand. These tests demonstrate the presence of intact, buried, and stratified cultural components dating to the Early and Late Archaic periods which have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.50.1 Introduction

5.50.1.1 Site Location and Description

Site 41CV1129 is in Fort Hood Training Area 42. Cowhouse Creek forms the western site boundary, whereas an unnamed tributary forms the southern and eastern boundaries. This site is a lithic resource procurement site and lies on high Pleistocene and various Holocene terraces of Cowhouse Creek and its tributary (Figure 5.193). Maximum site dimensions, defined in 1993, measure 480 x 190 m, with a north-south long axis, and cover an area of about 8 hectare (19.8 acres). For purposes of analysis, the site is considered a member of the West Cowhouse site group.

5.50.1.2 Previous Work

Strychalski, Mesrobian, Turpin, and M. Masson originally recorded this site on 6 August 1985. The site was described as a burned rock scatter/camp, with debitage, bifaces, burned rocks, and mussel shell (Carlson et al. 1988). Four Late Archaic dart point fragments (untyped) were collected. The site was about 30% impacted by erosion, burning, roads, and "hull down" excavations. The area was also considered plowed due to the presence of two historic sites in the vicinity and the burned rock was scattered across the site surface.

On 5 February 1986, Strychalski monitored the site. At this time, the site dimensions were slightly enlarged to include possibly subsurface materials towards Cowhouse Creek.

On 12 October 1992, Turpin and Abbott revisited the site and delineated three subareas on the basis of geomorphic context and potential for intact cultural deposits. Subarea A consists of a broad, Pleistocene terrace that lies 15 to 20 m above modern Cowhouse Creek. This terrace is toped by a thick, rubified soil containing abundant fine carbonate nodules. The upper horizons of the soil developed on this terrace have been truncated in

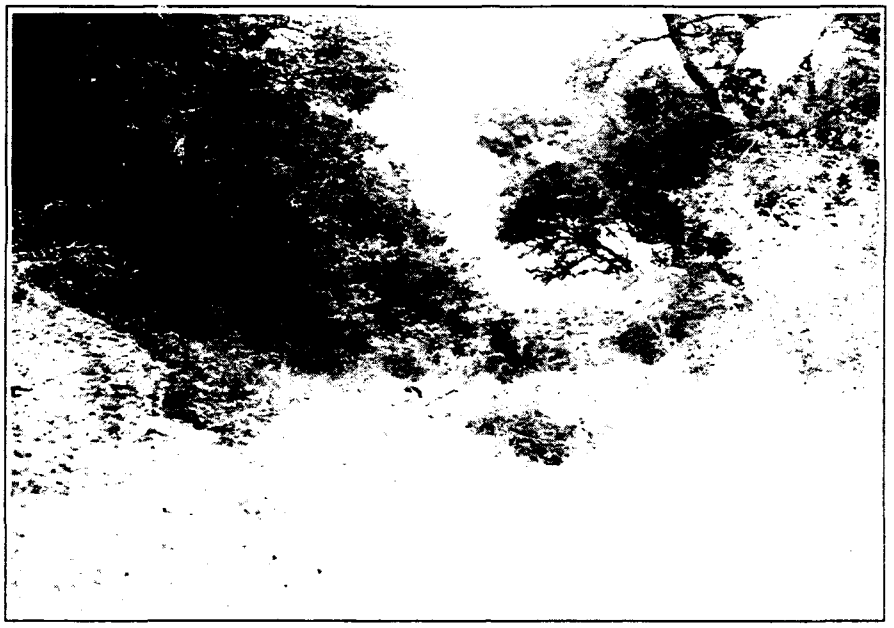


Figure 5.193 View of Backhoe Trench 3 on Western Margin of 41CV1129.

most places, resulting in a Bw-Bk-Cox or weak Bt-Bk-Cox horizon sequence up to 2 m thick. This terrace is mantled with a moderate scatter of residual chert cobbles, scattered burned rocks, debitage, and historic material. However, this old, high stable terrace has no potential to yield cultural material in good context and therefore no subsurface testing was undertaken in Subarea A.

Subarea B subsumes the Holocene terraces of the unnamed tributary along the southeastern side. Exposures revealed up to 2 m thick deposits, with burned rock accu. ılations and associated debitage in the upper 20 cm in the higher tributary terrace. Subarea C encompassed the Holocene terrace of Cowhouse Creek along the southern side. Up to 4 m of alluvium was noted. Very little cultural material was observed, however, a Pedernales point was collected. These terraces had the potential to contain intact buried cultural deposits.

On 2 November 1992, a crew excavated 22 shovel tests in Subarea B and five shovel test in Subarea C. From the 22 shovel tests in Subarea B, three tests (14%) were positive producing five artifacts including flakes and burned rock. In Subarea C, two holes (40%) yielded a total of two flakes. Although this shovel testing indicated limited archeological potential in the upper 40 cm, it was recognized that intact cultural materials could be buried below the limits of testing. Therefore, formal testing of Subareas B and C was recommended to determine NRHP eligibility. The recommended testing effort included three backhoe trenches and two to four square meters of manually excavated test pits in Subarea B and two trenches and two square meters of manually excavated test pits in Subarea C (Trierweiler 1994:A1267-A1271).

On 25 May 1993, Abbott and Kleinbach again revisited the site, specifically Subarea A, to evaluate it's potential to address questions of lithic resource procurement and reduction. Chert zones and impact zones were mapped and samples of natural raw chert were collected. Chert resources were present in this non-depositional Subarea A

which was determined to be not completely disturbed.

On 1 June 1993 a crew resurveyed Impact Zones 1 and 2 in Subarea A, completing six transects and recording 84 total observation stops. This work concluded that both zones have negligible potential to contribute to lithic procurement research due to low artifact ubiquity. As a consequence, Subarea A was judged to be ineligible for NRHP inclusion according to research issues outlined in Ellis et al. 1994.

5.50.1.3 New Work

Because this site was possibly in an endangered species habitat, a field inspection was conducted on 8 August 1994 by Gil Eckrich (Fort Hood, Fish and Wildlife). After inspecting the areas in which excavations were to be undertaken, Eckrich granted permission for the archeological work to proceed. Formal testing was completed in late August 1994. Five backhoe trenches (BTs 4-8) and three test pits (TPs 2-4) were excavated in Subarea B, and three trenches (BTs 1-3) and two test pits (TPs 1 and 5) were excavated in Subarea C (Figure 5.194). Unit sizes and depths are presented in Table 5.95.

5.50.2 Results

5.50.2.1 Excavations in the Cowhouse Creek T_{1A} Terrace

Backhoe trench 1 was on the southern end of T_1 of Cowhouse Creek overlooking the tributary confluence. This trench was excavated to 390 cm and revealed a thick A-AB-B21k-B22k-B3k-C profile (Figure 5.195). The A horizon was 35 cm thick and consisted of blocky to platy, very dark grayish brown (10YR 3/2) silty loam. It graded into a 45 cm thick AB horizon composed of blocky, dark brown (10YR 3/3) silty clay loam containing very few fine carbonate filaments. The B21k horizon was about 5 cm thick and consisted of strong blocky, dark yellowish brown (10YR 4/4) silty clay loam. It graded downward into a B22k horizon 110 cm thick composed of strong blocky, dark yellowish brown (10YR 4/4) silty clay and then into a 145 cm thick B23k horizon composed of a fine matrix similar to the B22k horizon but containing common dispersed gravels. Filamental carbonate and fine carbonate nodules were common to abundant in the B21k and B22k horizons and relatively sparse in the B23k horizon. The basal zone consisted of a C horizon composed of gravelly clay, of which only the upper 10 cm were exposed in the trench. No cultural material was observed in BT 1. This fill is tentatively interpreted as the Fort Hood fill of Nordt (1992) on the basis of color and overall soil development, but the unusually strong expression of pedogenic carbonate suggests that it may in fact represent an unusual variant of the older Jackson fill.

Test pit 5, excavated to 110 cmbs, was offset from the west wall of BT 1. Recovered cultural material consisted of a single flake from level 6 (Table 5.94).

Trench 2 was excavated on the outside edge, north margin, of the principal T_1 surface overlooking Cowhouse Creek. This trench exposed a wedge-shaped mantle of Holocene alluvium inset against and draped over the beveled margin of a terrace composed of late Pleistocene Jackson alluvium. Where the Holocene wedge was inset, the trench exhibited an A-B21k-B22k-2Btk profile, whereas away from the stream, the Holocene wedge pinched out and the trench exhibited an A-Btk profile developed in Pleistocene (Jackson) alluvium. The Holocene A horizon was 25 cm thick and consisted of fine blocky, dark gray (10YR 3/1) sandy clay loam. It graded into a blocky, very dark grayish brown (10YR 3/2) sandy clay loam B21k horizon 70 cm thick containing common carbonate filaments and few fine soft masses. The B22k horizon was 75 cm thick and consisted of blocky, yellowish brown (10YR 5/4) sandy clay loam containing a few filaments, flecks, and very fine soft masses of carbonate. Zone 4 consisted of strong brown (7.5YR 4/4), very strong blocky Btk horizon developed in Pleistocene alluvium. It contained abundant carbonate masses and dissolving limestone lithoclasts, as well as a

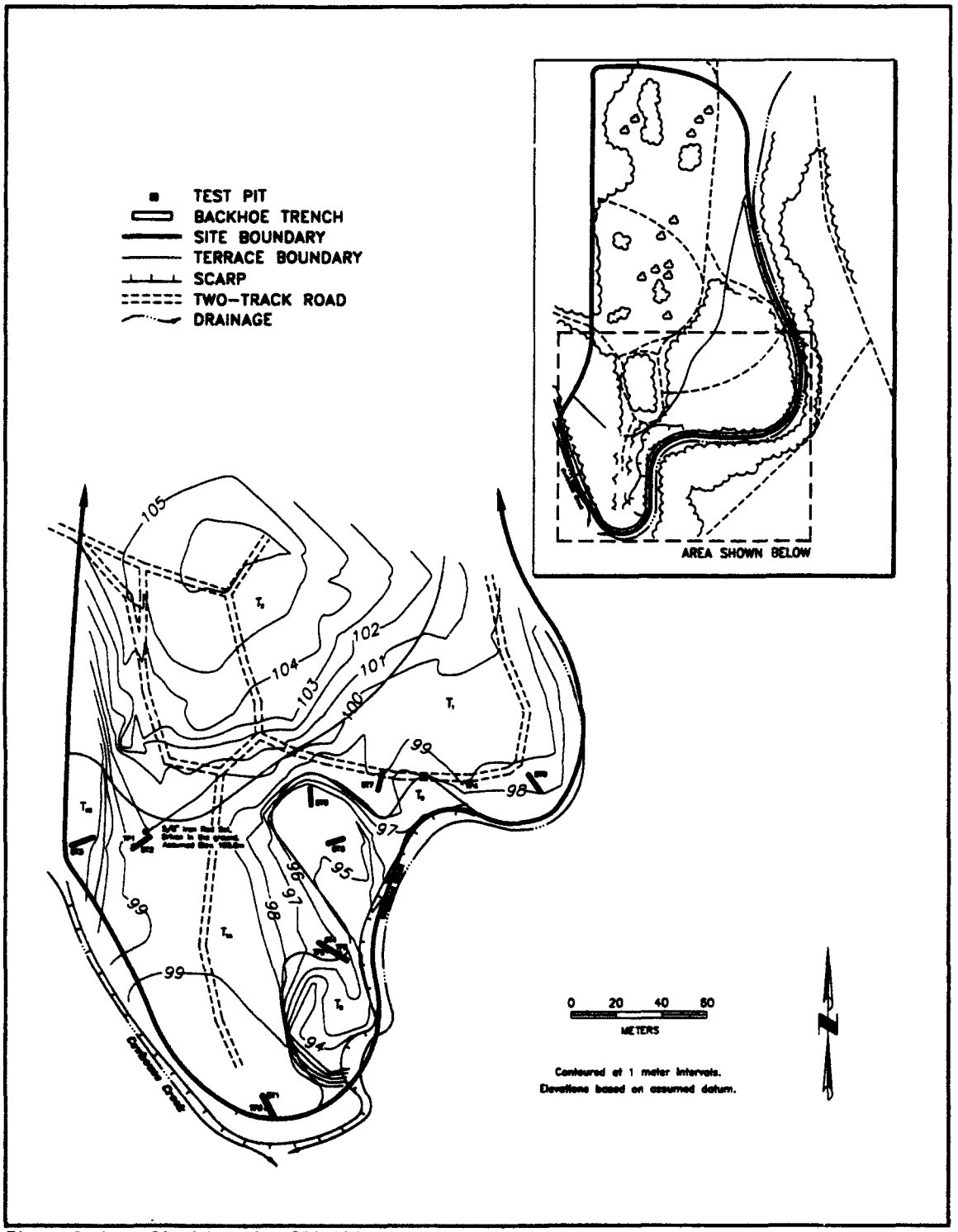


Figure 5.194 Site Map of 41CV1129.

few possible hard pedogenic nodules. Overall, BT 2 sediments appear to represent a wedge of Holocene Alluvium (either the Fort Hood or West Range fills of Nordt 1992) inset against the beveled edge of a late Pleistocene terrace. The B22k horizon at the base of the Holocene fill represents a transition between the two fills, and appears to be composed primarily of colluvium and slopewash reworked from the older unit. An amorphous burned rock feature (F 1) composed of burned limestone and charcoal flecks was revealed in the trench wall, roughly at the transition between the B21k and B22k horizons (105 to 110 cmbs). Sparse burned rocks were observed distributed throughout the B horizons of the Holocene fill, both above and below F 1.

Test pit 1, offset from the north wall of BT 2 where the apparent feature was exposed, was dug to 170 cmbs. From surface to 90 cmbs, sparse lithic debitage was recovered in each level (1 to 6 pieces). No lithic debitage was in level 10, however, the top of F 1, a hearth, was encountered at 100 cmbs and extended to 107 cmbs. Judging from the profile exposed in the sidewall of BT 1, the hearth measured roughly 1 m in diameter and was centered in the test pit (Figure 5.196). At 105 cmbs, the feature covered about 95% of the unit, extending slightly beyond the limits of the test pit in each direction (Figure 5.197). Edges to the hearth were present in the NW, NE and SE corners of the test pit. The hearth consisted of burned limestone cobbles (n=148, 48 kg), averaging 5 to 10 cm in size, and horizontally laid. The cobbles were two layers thick around the perimeter, with a single rock layer towards the center. Many rocks were fire cracked in situ and a compact construction suggests virtually no disturbance. Two flakes and a Barber point base with extensive ground edges and basal concavity (Figure 5.198) were directly beneath the feature. Levels 12 through 17, yielded very little cultural material (4 flakes).

Trench 3 was on a narrow bench inset into the front of the terrace below and west of BT 2. The trench consisted of a thin (less than 1 m) wedge of dark gray-brown sandy loam overlying a truncated, fine-grained Pleistocene calcrete. The trench exhibited an A-2K profile. No cultural material was detected in this trench.

Table 5.95 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	1.5	4.0	T1a terrace
BT 2	11	0.8	3.1	T1a terrace
BT 3	13	0.8	2.3	T0 terrace
BT 4	16	0.8	2.9	T1 terrace
BT 5	9	0.8	1.7	T0 terrace
BT 6	7	0.8	1.8	T0 terrace
BT 7	8	0.8	1.7	T1a terrace
BT 8	7	0.8	1.5	T1a terrace
TP 1	1.00	1.00	1.70	T1a terrace
TP 2	1.00	1.00	1.70	T1 terrace
TP 3	1.00	1.00	2.00	T1 terrace
TP 4	1.00	1.00	1.00	T1 terrace
TP 5	1.00	1.00	1.10	T1a terrace

5.50.2.2 Excavations in the Unnamed Tributary T_1 Terrace

Backhoe trenches 4, 7 and 8 were excavated on segments of the tributary T_1 surface, which was inset against and lay slightly below the T_1 of Cowhouse Creek.

Trench 4 was on a long, narrow extension of the T_1 surface between two deep scallops where the T_0 surface abuts the higher T_1 of Cowhouse Creek. A wealth of cultural material was revealed in the trench, which consisted of about 2.4 m of sandy to gravelly clay loam that exhibited an A-Bk-C profile. The A horizon was 35 cm thick and consisted of dark gray (10YR 4/1), fine blocky sandy clay loam. It graded into a 35 cm thick B21k horizon composed of sediments with the same textural, structural, and color characteristics, but contained common thick films and filaments of carbonate. Scattered burned limestone clasts and several thick lenses of *Rabdotus* snail shells were

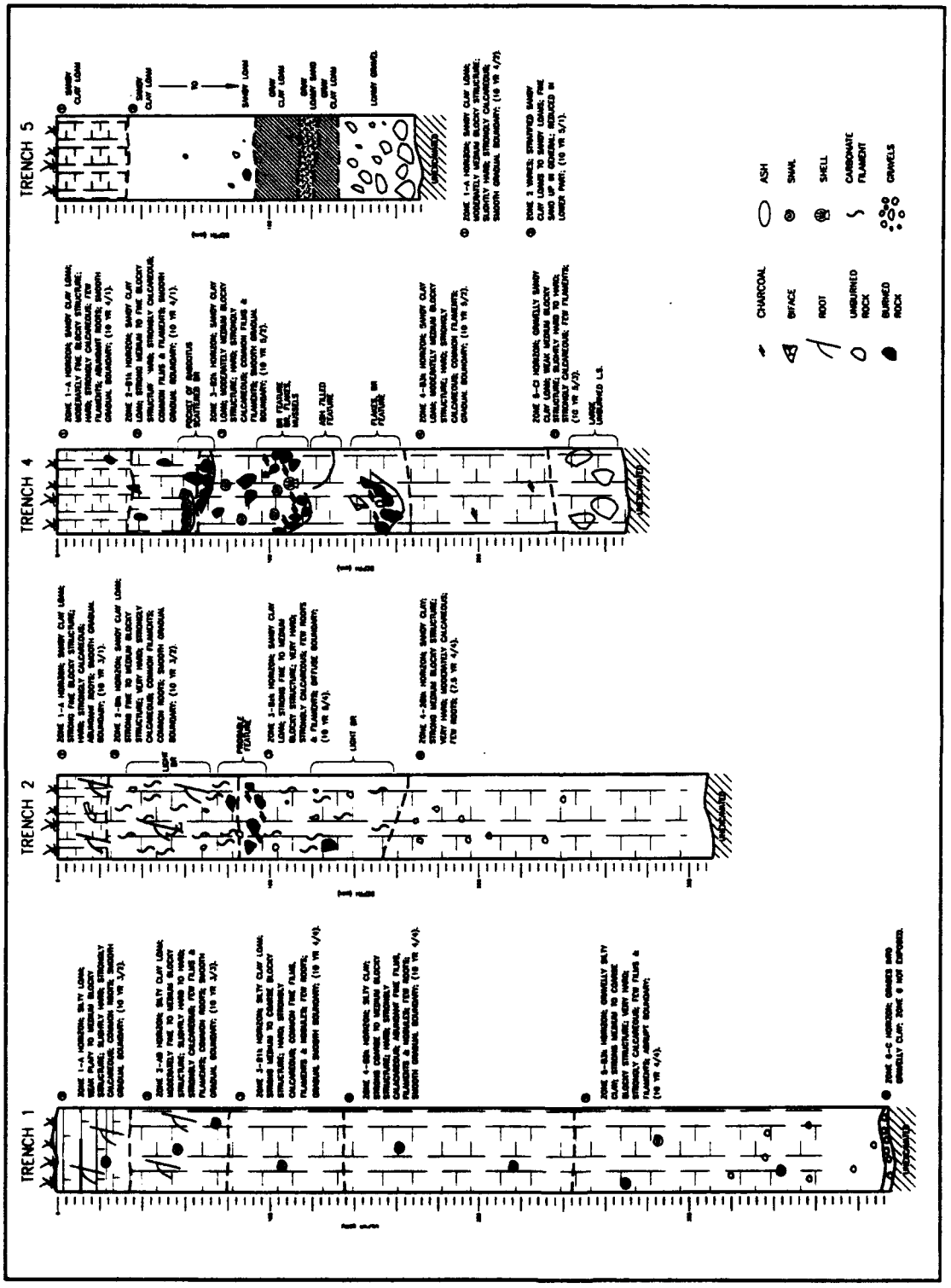


Figure 5.195 Profiles of Backhoe Trenches 1, 2, 4 and 5, 41CV1129.

present in the profile. The B22k horizon was also a blocky sandy clay loam, but was lighter in color (grayish brown-10YR 5/2). It also contained common carbonate films and filaments and extended to about 170 cmbs. Dense cultural material, including flakes, mussel shell, and abundant burned rock was distributed throughout the zone. A minimum of three shallow to relatively deep basin hearths and a probable ash-filled basin were noted in the profile at depths ranging from 70 to 180 cmbs. An obvious hearth exposed in the south wall profile (about 160 to 180 cmbs) and also visible in the east wall of a safety bench was designated F 2. Although this feature was unexcavated, it was drawn, photographed, and a charcoal sample was taken. This 1.2 g sample yielded a $\delta^{13}C$ (-27.8‰) corrected assay of 1400 ± 60 BP (Beta-83265). In profile, the hearth measured 60 cm in length and averaged 20 cm in thickness. About 15 angular and tabular burned rocks comprised the hearth, with charcoal and ash noted in the fill. Below this, the B23k horizon extended from 170 to 235 cmbs, and consisted of similar sediments with very little interstratified cultural material. It graded downward into a sandy clay loam channel deposit containing large limestone clasts that extended to the base of the trench at 270 cm. The color and degree of profile development suggested that the fill consists primarily of tributary alluvium equivalent to the West Range fill of Nordt (1992). Radiocarbon dates from materials exposed in the trench wall and adjacent test pits support this interpretation.

Test Pit 2 was offset from the south wall profile of BT 4 where an apparent burned rock feature was exposed. No cultural material was recovered between 0 to 20 cmbs. From 20 to 100 cmbs, a light to moderate density of artifacts was recovered, with a peak frequency (25 items) from 70 to 80 cmbs. This probably correlates to a buried occupation represented by an apparent burned rock feature exposed 60 to 80 cmbs in the trench profile. At 106 cmbs, F 3, a basin shaped hearth, was encountered and extended to 124 cmbs. Feature 3 was mainly confined to the northwest quadrant of the unit, with maximum excavated

Table 5.96 Artifact Recovery by Test Pit, 41CV1129.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	1	-	unspec.
	3	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	5	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	3	0	0	-	unspec.
	9	-	1	0.5	0	0	0	0	1	0	0	-	unspec.
	10	-	3	0.5	0	0	0	0	0	0	0	-	EA
	11	F1	148	4.8	1	0	0	0	2	1	0	Barber	EA
	12	F1	0	0.0	0	0	0	0	0	0	0	-	EA
	13-14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	16	-	1	0.5	0	0	0	0	0	0	0	-	unspec.
	17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		153	6.3	1	0	0	0	17	1	1		
2	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	3	0.2	0	1	0	0	2	0	0	-	unspec.
	4	-	1	0.1	0	0	0	0	1	0	0	-	unspec.
	5	-	5	0.3	1	0	0	0	8	0	0	-	unspec.
	6	-	5	0.5	1	0	0	0	5	0	0	-	unspec.
	7	-	9	0.5	1	0	0	0	7	0	0	-	unspec.
	8	-	15	1.5	0	0	0	0	8	0	1	-	unspec.
	9	-	1	0.2	0	0	0	0	4	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	11	-	3	0.2	0	0	0	0	0	0	0	-	LA
	12	F3	6	1.5	0	0	0	0	0	0	0	2140±70	LA
	13	F3	2	0.2	0	0	0	0	0	0	0	-	LA
	14	-	3	0.2	0	0	0	0	0	0	0	-	LA
	15	-	1	0.1	0	0	0	0	0	0	0	-	unspec.
	16-17	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		54	5.5	3	1	0	0	36	0	1		
3	1-2	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	3	-	3	2.0	0	0	0	0	1	0	0	-	unspec.
	4	-	2	1.0	0	0	0	0	0	0	0	-	unspec.
	5	-	0	0.0	0	1	0	0	1	0	0	-	unspec.
	6	-	14	2.0	0	4	0	0	10	0	0	-	unspec.
	7	-	11	1.5	0	0	0	0	3	0	1	-	unspec.
	8	-	6	0.3	0	0	0	0	4	0	0	-	unspec.
	9	-	11	0.8	0	0	0	0	5	0	0	-	unspec.
	10	-	15	1.0	7	5	0	0	20	0	2	-	LA
	11	-	3	2.5	1	7	0	0	28	0	0	-	LA
	12	F4	37	5.0	1	16	0	0	50	0	2	1550±110	LA
	13	F4	14	1.5	0	3	0	0	15	0	0	-	LA
	14	F4	3	1.0	0	6	0	0	3	0	1	-	LA
	15	-	7	1.0	0	2	0	0	6	0	1	-	unspec.
	16	-	4	0.5	0	10	0	0	6	0	0	-	unspec.
	17-20	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		130	20.1	9	54	0	0	152	0	7		
4	1	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	2	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	5	-	2	3.7	0	0	0	0	0	0	0	-	unspec.
	6	-	1	0.7	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	2	0	0	0	0	0	0	-	unspec.
	9-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		3	4.4	2	0	0	0	2	0	0		
5	1-5	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	6	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	7-11	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	1	0	0		



Figure 5.196 Feature 1 in Test Pit 1, 41CV1129.

dimensions of 69 x 75 cm. Based on test pit excavations, in addition to exposure in the unit and trench profiles, minimum feature dimensions were 108 x 85 cm, which suggests an ovate shape. This shallow basin hearth consisted of two layers of tightly compacted, overlapping tabular, angular, and rounded burned rocks (n=44, 56 kg), some of which were fire cracked in-situ (Figure 5.199). About 90% of the burned rocks were 10 to 20 cm in size. One-third of the burned rocks sloped in various directions, with one upright. Charcoal, at 115 cmbs, was 1 to 5 cm thick amongst the second rock layer, particularly towards the feature center. A large (32.8 g) charcoal sample yielded a $\delta^{13}C$ (-27.0‰) corrected assay of 2140 ± 70 BP (TX-8421). A diffuse scatter of burned earth was present at the base of the hearth. Besides snail shells, no other material was noted in the feature matrix, with 10 burned rocks in the non-feature fill. Aside from rootlets and trench bisection, the hearth was apparently undisturbed. From 124 to 150 cmbs, only a few burned rocks were recovered per level. No cultural material was found 150 to 170 cmbs, at which point excavation was halted.

Test pit 3 was dug over a possible ash feature exposed in the north wall profile of BT 4. This unit was about 3 m east of TP 2 and excavated to

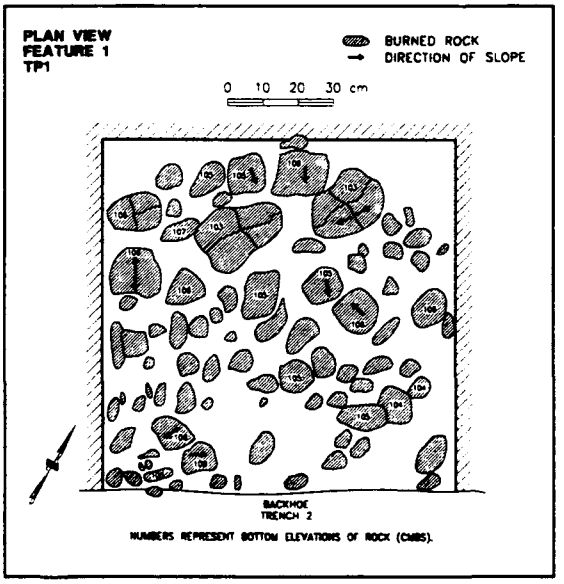


Figure 5.197 Feature 1 Plan in Test Pit 1, 41CV1129.

200 cmbs. The upper 20 cm were culturally sterile, with a few artifacts recovered from the next three levels. A low density of artifacts; lithics, bone, charcoal, and or burned rocks were recovered from 50 to 90 cmbs. Of note was a concentration (75 to 100) of snail shells associated with charcoal between 65 to 73 cmbs in the southeast corner. Maximum dimensions of the concentration were approximately 30 x 30 cm. The snail lens was also visible in the north wall profile of BT 4 and extended about 35 cm east of the unit and was slightly thicker. Below this level, a sharp increase in artifact recovery occurred in levels 10 and 11 (an average of 49 items per level). These latter two levels also contained a very diffuse and sparse scatter of ash. From 110 to 131 cmbs, F 4, an ash lens, was encountered. In level 12, the feature covered the entire unit, whereas in level 13, about 75% of the western half of the unit was non-feature fill (Figure 5.200). The ash lens, however, was visible in all three walls of the test pit. The upper half of the feature consisted of ash and burned soil, with the lower portion composed of ash and charcoal. No internal patterning was apparent and the base of the lens was irregular. Shell, bone, lithics, and burned rocks were scattered throughout, with the two latter artifact types accounting for 85% of the recovery. A few large roots had bisected the feature. From 127 to 131 cmbs, charcoal chunks underlain by snails were noted in the southeast corner of the feature. A large (39.1 g) sample of wood charcoal gave a $\delta^{13}C$ (-27.0‰) corrected assay of 1550 ± 110 BP (TX-8422). Maximum dimensions were 30 x 30 cm. In general, based on feature morphology and lack of internal patterning, this ash lens probably represents a "dump," most likely from a hearth. A similar artifact array (including a complete drill in level 14) was recovered 130 to 160 cmbs, with an average of 18 artifacts per level. Two bone fragments were recovered from level 17, with levels 18 through 20 being culturally sterile.

Trench 7 was farther up the tributary on another segment of the tributary T_1. It exhibited an A-B21k-B22k-B23k-BC profile in a 2 m thick blocky, dark grayish brown (10YR 4/2) sandy clay

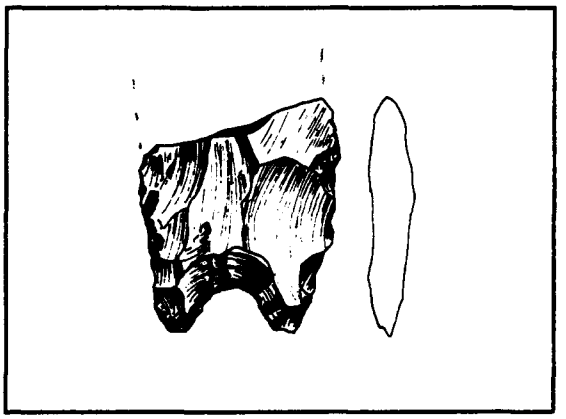


Figure 5.198 Proximal End of Barber Point, 41CV1129.

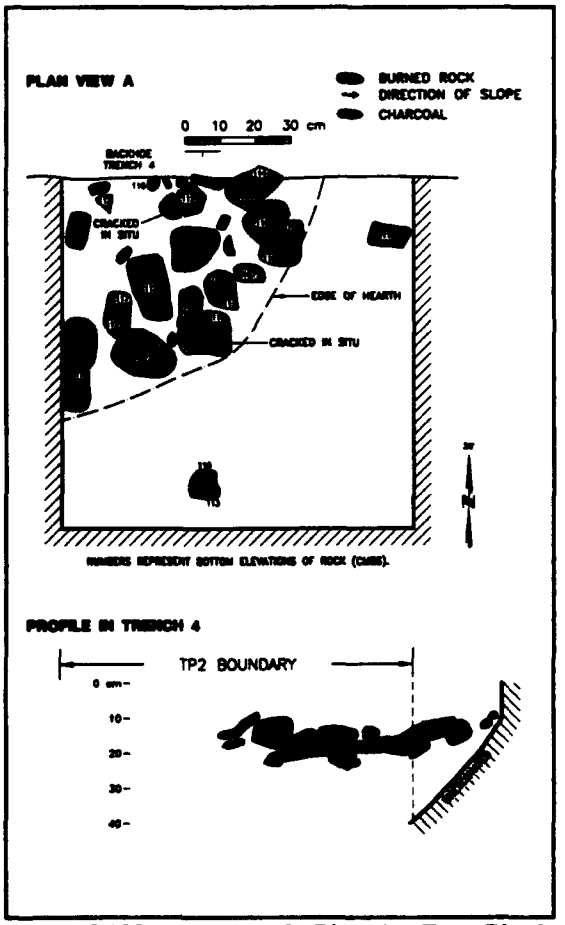


Figure 5.199 Feature 3 Plan in Test Pit 2, 41CV1129.

loam cut with a stringer of bedded sands and gravels of probable slopewash origin (the B22k horizon). These deposits are interpreted as being the West Range fill of Nordt (1992). No cultural material was noted.

Trench 8 was about 80 m east of BT 7 and further from the valley slope than BT 7, and therefore contained no slopewash. It exhibited a similar A-B21k-B22k-B23k-BC profile and interpreted as the West Range fill of Nordt (1992). No cultural material was detected in this trench.

5.50.2.3 Excavations in the Unnamed Tributary T_0 Terrace

Two additional trenches (BTs 5 and 6) were excavated on the inset T_0 surface of the tributary. Trench 5 was about 50 m north of BT 4 on a high spot of the T_0 surface. This trench exhibited an A-C profile developed in stratified, grayish-brown sandy clay loams, sandy loams, and gravelly loams that graded down into a basal loamy gravel. These deposits appear to represent the Ford alluvium (Nordt 1992). One burned rock was detected.

Trench 6 was below a limestone outcrop about 20 m north of BT 5 and excavated 1.8 m deep, across a low swale delimiting a former channel in the T_0 surface. This trench was composed of massive, gray sandy loam overlain by a light brown loamy flood drape up to 25 cm thick. It is interpreted as Ford alluvium (Nordt 1992) with no observed cultural material.

Test pit 4, excavated to 100 cmbs, was between BTs 7 and 8, just south of a road where burned rocks were exposed in the roadcut. A total of two flakes, three mussel shell umbos, and three burned rocks were recovered from five of the ten levels. In addition, most levels contained moderate to dense gravels.

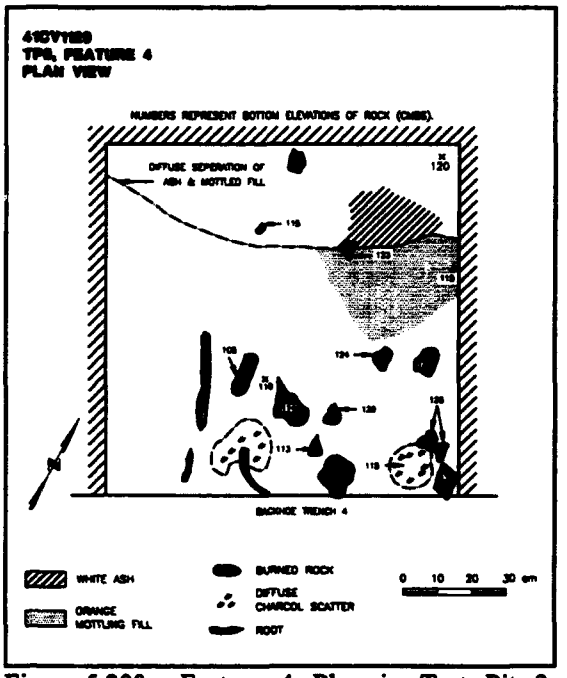


Figure 5.200 Feature 4 Plan in Test Pit 3, 41CV1129.

5.50.3 Analysis and Interpretations

5.50.3.1 Definition of Analytical Units

The five test pits yielded four features, 208 pieces of lithic debitage, one projectile point, nine stone tools, 55 bone fragments, 15 mussel shell umbos, 340 burned rocks, charcoal and snail shells. Part of these materials were assigned to two time periods, the Early Archaic and the Late Archaic, whereas some 35% of the materials were unclassifiable to a time period. The Early Archaic is represented by sparse materials in TP 1, 90 to 120 cmbs centered around burned rock hearth F 1 associated with one Barber point. The Late Archaic is represented by materials in TPs 2 and 3, between 100 to 140 cmbs and 90 to 140 cmbs respectively, based on two charcoal dates of 1553 and 2137 BP from Fs 3 and 4. All other materials above and below these levels were not assigned to a specific time period. The materials above and possible below the Late Archaic materials in TPs

2 and 3 may represent the Late Archaic, but the direct evidence is lacking.

5.50.3.2 Early Archaic Materials

These materials include hearth F 1, two pieces of lithic debitage, a single projectile point, one mussel shell umbo, 151 burned rocks that weighed 5.3 kg, and a few snail shells. The two lithic debitage specimens represent two indeterminate chert types (light gray and miscellaneous). Specimens are 0.9 to 1.2 and 1.2 to 1.8 cm in size and lack cortex. The point is the base of a Barber made of indeterminate white chert.

The one umbo was identified as Unionacea which was not burned. However, it was associated with hearth F 1 that contained the 148 burned rocks that weighed 4.8 kg. Three float samples from inside this hearth yielded 44.2 g of light fraction but no charcoal or carbonized seeds.

Prewitt (1981; 1985) did not assign the Barber point type to a phase in his Central Texas sequence. Turner and Hester (1993) assign it to the Paleoindian period as it is similar in style to the Golondrian and Plainview points. Because absolute dates are currently unavailable from Central Texas occupations, it is uncertain to which time this point represents. No matter what time period it represents, this occupation is in excellent context and represents a time and occupation which is not well known or dated. It is unfortunate that charcoal and or bone was not recovered from F 1, although a few *Rabdotus* shells were present.

5.50.3.3 Late Archaic

These materials include Fs 2, 3, and 4, 116 pieces of lithic debitage, five stone tools, 37 bone fragments, nine mussel shell umbos, 86 burned rocks that weighed 13.1 kg, charcoal and snail shells. The 116 lithic debitage specimens represent 10 identified and nine unidentified chert types with 36% of the materials being identifiable (Table H-360). The identifiable specimens indicate that at least three known chert provinces including two on the east end of Fort Hood supplied the raw materials for their tools. Cowhouse Mottled dominates the identified materials (31%) while light brown dominates the indeterminates (42%). The location of this site along the West Cowhouse explains the dominance of Cowhouse cherts with four types and 71% of the materials. As would be anticipated, the combined indeterminates occur in higher than expected frequencies, while all the Cowhouse materials occur in expected quantities, and all others occur in less than expected frequency (Table H-361). The exclusion of the indeterminates results in Cowhouse Mottled occurring in higher than expected amounts, and all others occurring in expected amounts.

The modal peak for size occurs in the 1.2 to 1.8 cm size category with a more gradual drop off to the larger size categories. Almost 70% of the debitage is larger than 1.2 cm in size although all size categories are present. Only 54% of the materials are tertiary, 3.5% are completely cortexed, and 37% of the debitage exhibit partial cortex (Table H-362). These data suggest that large tools possibly with a great deal of edge trimming as evidenced by the presence of small flakes were a primary lithic reduction task here as evidenced by the presence of late stage and finished bifaces.

The five stone tools include a complete drill, a utilized flake, a medial section of a late stage biface, and two finished biface sections (Table H-363). The material represented are similar to those identified in the lithic debitage and indicate use of multiple source areas.

The 37 bone fragments represent mostly (81%) medium to large (n=12) and large to very large (n=18) long bone fragments with a single small mammal and a single turtle carapace present (Table H-364). Sixty-two percent of the fragments are burned indicating cultural modification and definite use. Deer and possibly bison size animals apparently served as the principle food resource.

Mussel shell umbos were identified as *Amblema plicata* (n=4), *Potamilus purpuratus* (n=1), *Lampsilis* sp. (n=4), *Tritigonia verrucosa* (n=1), and Unionacea (n=1). Not a single specimen was burned or revealed other signs of human alterations with four whole specimens in TP 3, 90 to 100 cmbs. All nine specimens were in the levels directly above the ash/oxidized lens F 4 in TP 3.

The 86 burned rocks weighed 13.1 kg. Two specimens were from F 3 and they weighed 0.2 kg and 54 specimens from F 4 weighed 7.5 kg. The latter were scattered across the top and mixed in with the ash lens. Two float samples from F 3 matrix yielded 78.5 g of light fraction with some carbonized wood pieces but no seeds. A 32.8 g charcoal sample from hearth F 3 provided a $\delta^{13}C$ (-27.0‰) corrected assay of 2140 ± 70 BP (TX-8421). Six float samples from F 4 yielded 87.7 g of light fraction. The largest (55.8 g) sample was submitted for identification and less than 25 pieces of carbonized wood were present with no seeds etc. present. A 39.1 g sample of charcoal was mostly of indeterminate wood and provided a $\delta^{13}C$ (-27.0‰) corrected assay of 1550 ± 110 BP (TX-8422). Other charred wood from F 4 consisted of hackberry and white oak.

The 2137 to 1553 BP time span falls in Prewitt's (1981; 1985) Uvalde Twin Sisters phases with key index markers of Castroville, Montell, and Marcos points from the former and Ensor and possibly Frio for the latter. Although these points are well represented in midden deposits in Fort Hood and elsewhere, few isolated components of this period have been intensively investigated from which lifeway patterns can be inferred.

5.50.3.4 Temporally Unspecified Materials

These materials include 90 pieces of lithic debitage, four stone tools, 18 bone fragments, five mussel shell umbos, 103 burned rocks, and sparse snail shells. The 90 specimens of lithic debitage represent seven identified and nine unidentified chert types with only 22% of the materials identifiable (Table H-365). Only light brown chert stands out among the debitage assemblage at 39%. The Cowhouse materials with four types and 50% of the debitage have a slight advantage over the Southeast Range with two types and 35% of the debitage. As anticipated the combined indeterminates occur in higher than expected amounts, Heiner Lake Tan and Cowhouse Mottled with Flecks occur in expected amounts, and all others occur in less than expected frequency (Table H-366). The exclusion of indeterminates results in all materials occurring in expected amounts.

Two size categories are at the peak of frequency: 1.2 to 1.8 and 1.8 to 2.6 cm. Only the smallest size category is not present. The split between partially cortex and no cortex is close to even (Table H-367). However, the sample size is rather small to be making any interpretive judgments, but seems to reflect a mix of core and biface reduction strategies.

The four stone tools include two utilized flakes of indeterminate white and Cowhouse Mottled with Flecks plus two edge modified flakes of Cowhouse Dark Gray and Fossiliferous Pale Brown. The material used for the tools is similar to the materials represented in the debitage.

The 18 bone fragments includes medium to large mammals long bone splinters with small mammals represented by two burned bones (Table H-368). In all 11 bone (61%) are burned with some nine specimens exhibiting spiral fractures. Five unburned umbos are present and represent *Amblema plicata* (n=4) and *Toxolasma texanensis* (n=1). Deer size animals appear to be the dominate source of food.

The 103 burned rocks weighed 17.9 kg and were scattered across many levels both above and below the identified Late Archaic zones in TPs 2 and 3. These pieces could potentially represent more events of this same period. These levels did yield sparse charcoal scattered among the burned rocks. The materials below the zone identified as Late Archaic could also be of this same time period as Feature 2 observed in the BT 4 at 180 cmbs provided a 1.2 g charcoal sample that yielded a

$\delta^{13}C$ (-27.8‰) corrected assay of 1400 ± 60 BP (Beta-83265). This date also indicates a Late Archaic feature and implies multiple occupations closely spaced in these deposits.

5.50.4 Conclusions

Deposits of at least four distinct depositional episodes were revealed in the eight trenches excavated on 41CV1129. The recent Ford Alluvium was restricted to two trenches (BTs 5 and 6) excavated on the T_0 surface associated with the tributary. Deposits of West Range age were detected in BTs 4, 7, and 8 on the T_1 surface of the tributary, in BT 3 on a narrow inset bench overlooking the Cowhouse Creek channel, and possibly in BT 2 on the margin of the Cowhouse T_1 surface. Cultural features (Fs 2, 3, and 4) associated with this fill were detected in BT 4. Deposits interpreted as the Fort Hood fill of Nordt (1992) were revealed in BT 1 and a wedge in BT 2. No cultural material was detected in association with BT 1. However, F 1 detected in BT 2 is Early Archaic in age. Late Pleistocene age deposits were detected in BT 2 and at the base of BT 3.

The Early Archaic occupation with F 1 in TP 1 is one of less than a half a dozen such occupations known at Fort Hood (as of this writing). It is in relatively good context just below a contact zone. The Late Archaic zone with Fs 2, 3, and 4 and associated materials identified in TPs 2 and 4 is probably much more vertically extensive than the tightly defined zone and reflects multiple events closely spaced in slowly aggraded deposits. Most cultural material of this age are represented by burned rock midden deposits at the base of toeslopes, with few intact occupations known in good alluvial settings.

On the basis of the foregoing, we evaluate site 41CV1129 as eligible for inclusion to the NRHP. Accordingly, the site should be preserved and protected from adverse impacts. Because the known eligible components are relatively deeply buried, they are fairly well protected from training and other activities that affect only the surface of the site. However, adverse impacts from uncontrolled excavations and from erosion pose substantial threats. Protection efforts therefore should include measures to prevent mechanical or manual excavations by military personnel and minimize the impact of traffic on the alluvial surfaces.

5.51 SITE 41CV1165

In August 1994, we conducted formal test excavations at prehistoric archeological site 41CV1165. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Two test pits (1.3 m^3) were hand excavated. Formal test excavations demonstrate the presence of intact, buried, cultural components, some dating to the Late Archaic period, including human remains. These occupations have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.51.1 Introduction

5.51.1.1 Site Location and Description

Site 41CV1165 is in northwestern Fort Hood in Training Area 45. This site is an extensive upland lithic scatter with a cave and a sinkhole (Figure 5.201). It is on the Manning surface uplands of Shell Mountain. The maximum site dimensions, defined in 1993, measure 700 m long x 350 m wide with an east-west long axis, and cover an area of approximately 24 hectares (59 acres). For purposes of analysis, the site is considered a member of the Shell Mountain site group.

5.51.1.2 Previous Work

This site was initially recorded by Rodriguez and Mehalchick on 13 February 1986 as a 450 x 750 m lithic scatter with a cave ("Western Cave") and a sinkhole ("Fern Cave"). Seven temporally

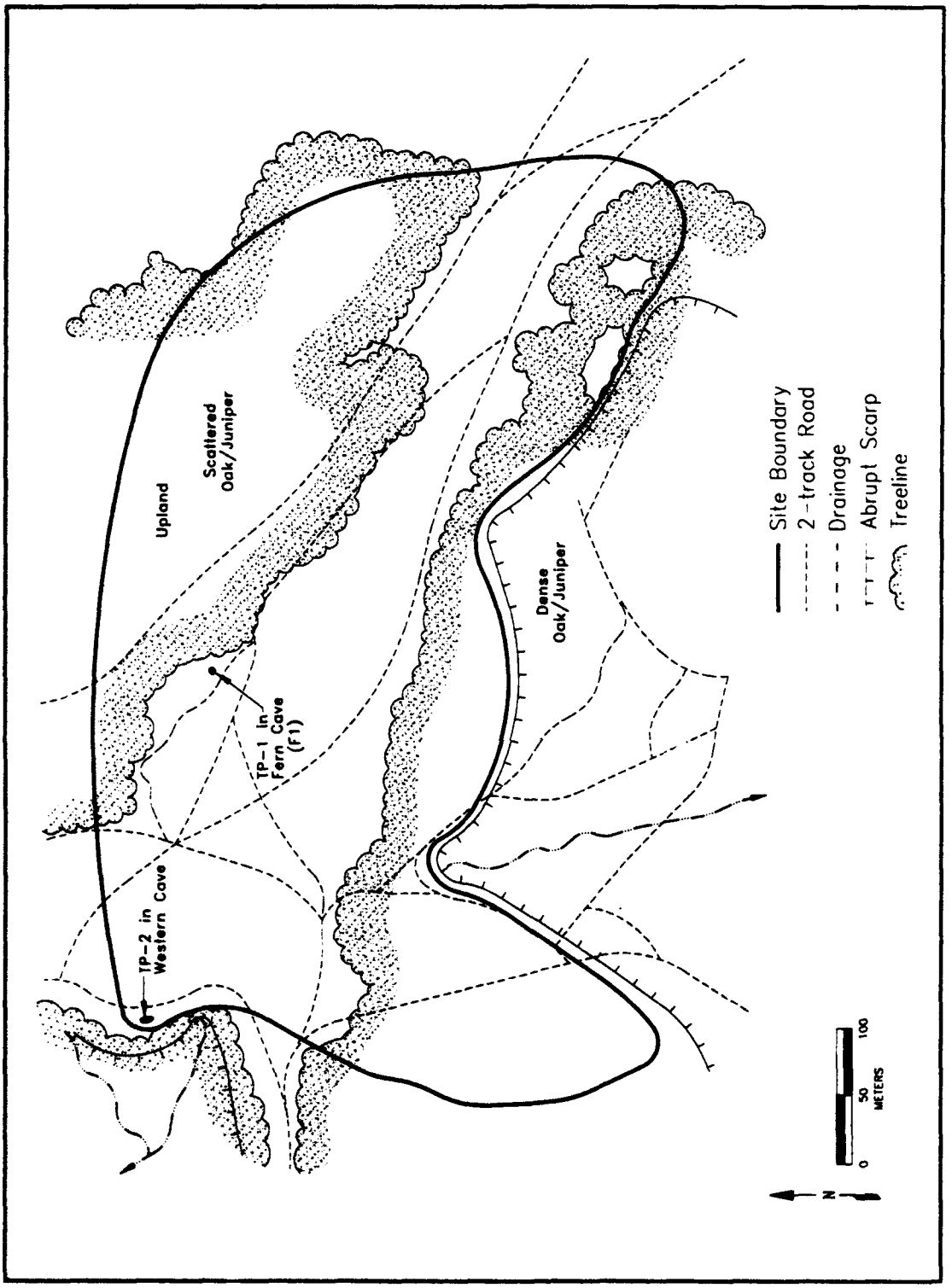


Figure 5.201 Site Map of 41CV1165.

diagnostic projectiles were located during the original recording, including two Marshall points, a Bulverde, a Castroville, a Godley, an untyped dart point, and an untyped arrow point (Kock et al. 1988). The upland surface was estimated to be 86% disturbed by vehicle traffic, erosion, cattle, and bivouac activities. Rodriguez concluded that the cave was large enough to have been inhabited by man.

Turpin and Abbott revisited the site on 26 January 1993, and reevaluated the site on archeological and geomorphic observations. On the basis of potential for intact cultural deposits the site was divided into two subareas. Subarea A, the upland part is mantled with a thin, discontinuous soil exhibiting an A/Bt/R profile. The A horizon varies from a very dark grayish brown to light brown and is rarely more than 5 cm thick; in most of the site it has been totally truncated by sheet erosion. The Bt horizon is a rubified stony clay loam, locally up to approximately 20 cm thick. As in most upland sites in Fort Hood the cultural material has been dispersed and disturbed by heavy vehicular traffic, bulldozing, and sheet erosion.

Abbott and Kleinbach revisited Subarea A on 7 June 1993 to evaluate the potential utility of the upland scatter to address questions of lithic resource procurement and reduction. No natural chert was observed on surface, and Subarea A was excluded from resurvey. No further work was recommended for Subarea A.

Subarea B with Western cave and Fern sinkhole exhibited no prehistoric cultural material on their surfaces, but recent military trash was present in each. Because the caves had the potential for intact cultural deposits, a crew returned on 23 April 1993 and excavated one shovel test (ST 1) to 150 cmbs in the Fern Cave sinkhole and three shovel tests (STs 2, 3, and 4) in the Western Cave. Sketch maps of the caves were also drawn. Although no obvious prehistoric cultural material was recovered from these shovel tests, some charcoal was recovered in Fern Cave and bone was recovered Western Cave. Further investigations were warranted because of the high probability of buried prehistoric deposits (Trierweiler 1994:A1298-A1301).

5.51.1.3 New Work

Formal test excavations were conducted on 15 through 16 August 1994. One test pit (TP 1) was placed directly below the opening of Fern Cave and excavated to 80 cmbs. In Western Cave, a test pit (TP 2) was placed on a bench just inside the entrance and excavated to bedrock at 40 cmbs. The unit sizes and depths are presented in Table 5.97.

5.51.2 Results

Fern Cave or sinkhole has a surface opening about 1 m in diameter, but the chamber below opens up considerably (Figure 5.202). The drop from the opening to the floor below is roughly 150 cm. Test pit 1 revealed the first 30 cm contained an abundance of recent debris including cans, metal, and plastic and was not screened and material was not collected. From 30 to 80 cmbs, a low frequency of lithic debitage (less than 6 pieces) was recovered from each level (Table 5.98). Charcoal and flotation samples were collected from each level. A small (3.8 g) charcoal sample from level 8 yielded a $\delta^{13}C$ (-25.8‰) corrected age of 1581 ± 80 BP (TX-8430). At 78 cmbs, a long bone was exposed. While exposing this bone for identification, a human second phalanx was exposed directly aside the long bone, providing positive determination of human remains. At this point the Fort Hood Staff Archeologist was notified, and pursuant to Fort Hood standard procedures, the human remains were left in place,

Table 5.97 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
TP 1	1.00	1.00	0.85	sinkhole
TP 2	1.00	1.00	0.40	cave

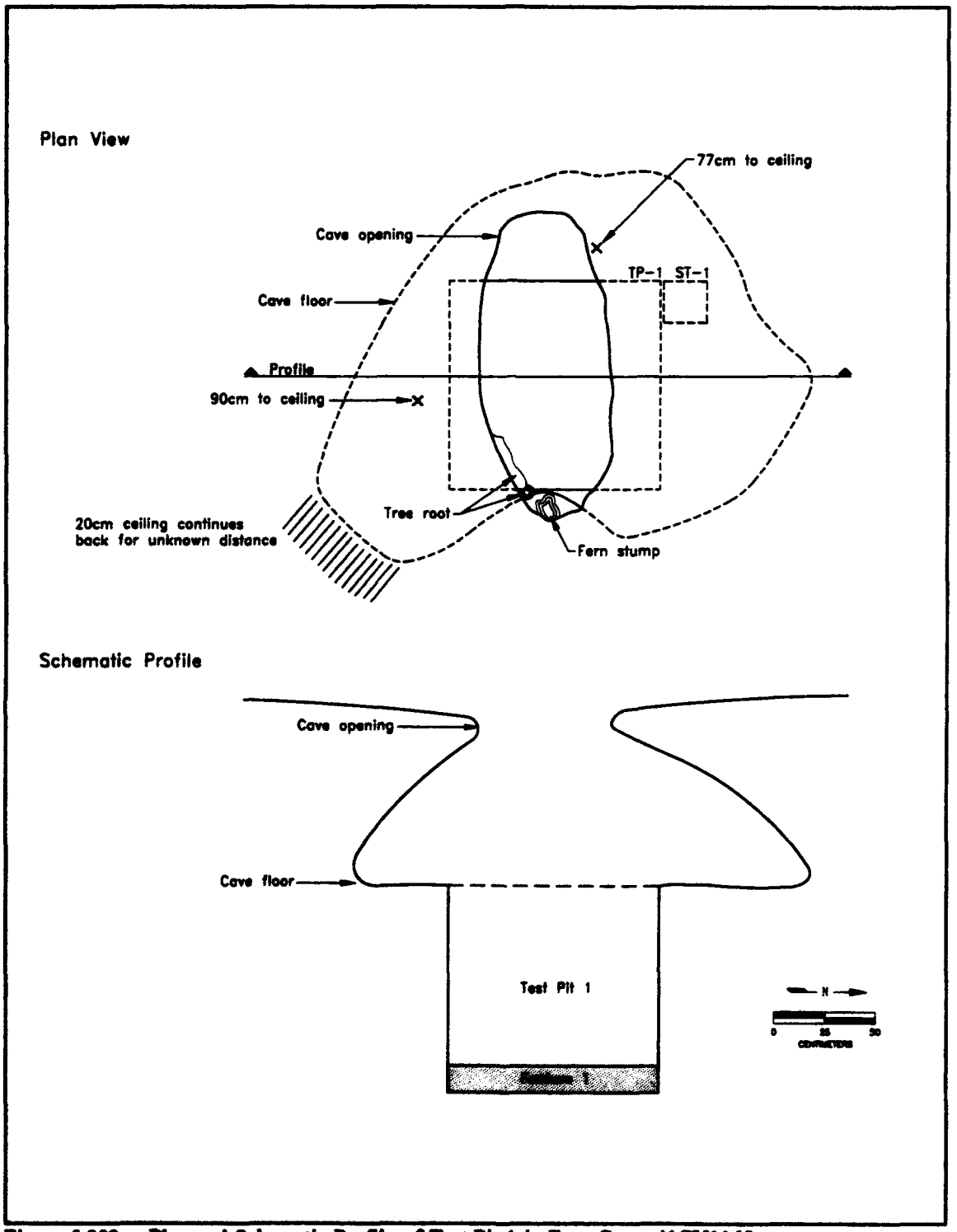


Figure 5.202 Plan and Schematic Profile of Test Pit 1 in Fern Cave, 41CV1165.

Table 5.98 Artifact Recovery by Test Pit, 41CV1165.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	10	2.0	0	0	0	0	0	0	0	-	unspec.
	2-3	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	4	-	0	0.0	0	0	0	0	3	0	0	-	LA
	5	-	0	0.0	0	0	0	0	6	0	0	-	LA
	6	-	0	0.0	0	0	0	0	1	0	0	-	LA
	7	-	0	0.0	0	0	0	0	4	0	0	-	LA
	8	-	0	0.0	0	0	0	0	0	0	0	1580±80	LA
	Total		10	2.0	0	0	0	0	14	0	0		
2	1	-	0	0.0	0	0	0	0	0	0	0	-	mixed
	2	-	0	0.0	0	0	0	0	6	0	0	-	mixed
	3-4	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		0	0.0	0	0	0	0	6	0	0		

and TP 1 was backfilled. No human remains were collected. The burial was designated F 2.

The mouth of the Western Cave sinkhole is roughly 4 x 2 m, and opens onto a steep talus ramp on the margin of the chamber (Figure 5.203). The interior chamber is roughly 20 m in diameter, and can be entered relatively easily by walking down the talus slope. Judging from the amount of trash present, the cave has been visited repeatedly in the recent past. The floor is littered with historic and modern debris. Several apparent potholes, up to 75 cm deep, had been excavated into the fill. The fill is composed of clearly stratified material derived both from in situ weathering of cave spall and from erosive stripping of soil on the upland surrounding the mouth. Despite the recently turned deposits, no prehistoric cultural material was observed on the surface.

Test pit 2, yielded brown bottle glass and pieces of metal in an ashy matrix in level 1 and in the upper portion of level 2. In the lower portion of level 2, six flakes and a large chunk of charcoal were recovered. A flotation sample was also taken at this depth. No cultural material was found from 20 to 40 cmbs.

5.51.3 Analysis and Interpretations

5.51.3.1 Definition of Analytical Units

The two test pits revealed sparse cultural material which was assigned to two analytical units. The material from TP 1 in Fern Cave was assigned to the Late Archaic period based on a charcoal assay of 1581 BP from 70 to 80 cmbs. The material from TP 2 in Western Cave was considered mixed because of the recent materials. Each is discussed separately below.

5.51.3.2 Late Archaic Materials

The Late Archaic consisted of only 14 pieces of lithic debitage, and no tools, mussel shell, or other cultural items. Two human bones were discovered



Figure 5.203 Western Cave Entrance, 41CV1165.

but were left in place. These undoubtedly constitute a human burial. Although not collected, this burial feature is of importance and can contribute to our understanding of the past. A small 3.8 g charcoal sample from 70 to 80 cmbs, the same level as the human bones, yielded a $\delta^{13}C$ (-25.8‰) corrected age of 1581 ± 80 BP (TX-8430). Other charred wood from this sample included hackberry, pecan, and a leguminous wood. This age would place this material in the Twin Sisters phase (Prewitt 1981; 1985) which is poorly represented throughout Central Texas. Burials of this age have not been reported.

One identified and six unidentified chert types are reflected in the debitage recovery of 14 specimens (Table H-369). As would be expected the total indeterminates are overrepresented in the sample (Table H-370). Over 50% of the flakes are larger than 1.2 cm in size; however, these large-sized materials are over 70% tertiary (Table H-371). This may reflect the production of larger tools are the importation of large partially decortified flake-blanks.

5.51.3.3 Mixed Materials

Material from Western Cave could not be separated into time units and is therefore considered mixed. Only six pieces of lithic debitage were recovered along with 10 burned rocks which weighed 2 kg. No other cultural material was identified form these levels. The six specimens of lithic debitage are of two indeterminate types: dark brown (n=2) and light brown (n=4). Thirty-three percent fall into the 1.2 to 1.8 cm size and 66% in the 2.6 to 5.2 cm size range. All flakes are tertiary and imply tool reduction activities.

5.51.4 Conclusions

Western Cave does not contain intact cultural deposits. This portion of site 41CV1165 is evaluated as not significant and not eligible for inclusion to the NRHP. No further cultural resource management is warranted for Western Cave.

In contrast, while the upper 30 cmbs of the Fern Cave are heavily disturbed as evidenced by historic and military trash, the lower 50 cmbs, with its sparse lithic material and apparent human burial, are in primary and undisturbed context. Charcoal from 70 to 80 cmbs yielded a $\delta^{13}C$ corrected assay of 1581 BP to place these remains from Fern Cave into the Late Archaic period, probably the Twin Sisters phase (Prewitt 1981; 1985). The age of these deposits are similar to some of the ages identified in the rockshelters and many burned rock middens. Isolated components of this time have not been investigated therefore this is an extremely important component. On this basis, we judge the Fern Cave sinkhole part of 41CV1165 to be significant and eligible for NRHP inclusion by virtue of containing cultural and environmental data that can contribute substantially to the current state of development of prehistory for Central Texas in general and the Fort Hood area in particular. We therefore recommend that the sinkhole be avoided and protected to prevent the loss of significant scientific information. Although the sinkhole is largely protected from damage by vehicles, the shallow deposits require measures to protect it from vandalism.

5.52 SITE 41CV1166

In October 1994, we conducted formal test excavations at prehistoric archeological site 41CV1166. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. One test pit (0.4 m^2) was manually excavated in the rockshelter. The test excavation demonstrates the presence of in situ buried cultural components that date to the late Prehistoric I period and have the potential to inform on key research questions including prehistoric technological and economic systems. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.52.1 Introduction

5.52.1.1 Site Location and Description

Site 41CV1166 is in northwestern Fort Hood, in Training Area 45. The site is on the southern end of Shell Mountain above the head of an unnamed tributary of Cowhouse Creek (Figure 5.204). The site is a lithic scatter on a deflated upland surface but also includes a very small west facing rockshelter that contains buried prehistoric cultural material. Site boundaries, as defined in 1993, form a triangle with sides measuring about 125 m, with a site area of roughly 0.7 hectare (1.7 acres). For purposes of analysis, 41CV1166 is considered a member of the Shell Mountain site group.

5.52.1.2 Previous Work

Rotunno, Kooren, and Mesrobian originally recorded the site on 14 February 1986 as a lithic scatter and a rockshelter on an upland surface (Kock et al. 1988). Flakes and mussel shell fragments were observed in the rockshelter and a low density of debitage, bifaces, and two collected untyped dart points were noted on the upland surface, just above the shelter. The rockshelter was estimated to be 13% disturbed by roof fall, animals, and military activities, whereas the upland lithic scatter was estimated to be 95% disturbed by erosion and vehicular traffic.

On 31 January 1992 Oglesby, Lintz, and Abbott reassessed the site based on geomorphic context and the potential for intact cultural deposits. The site was divided into two subareas. The upland surface was designated Subarea B and consisted of a diffuse scatter of debitage over a flat to gently sloping upland above the Manning escarpment. Extensive bare limestone with patches of residual soil, less than 10 cmbs, are present. Subarea B was determined to be not eligible for inclusion to the NRHP and no further work was recommended.

The rockshelter was designated Subarea A and exhibited small flakes on the surface. The shelter matrix was internally derived and apparently was

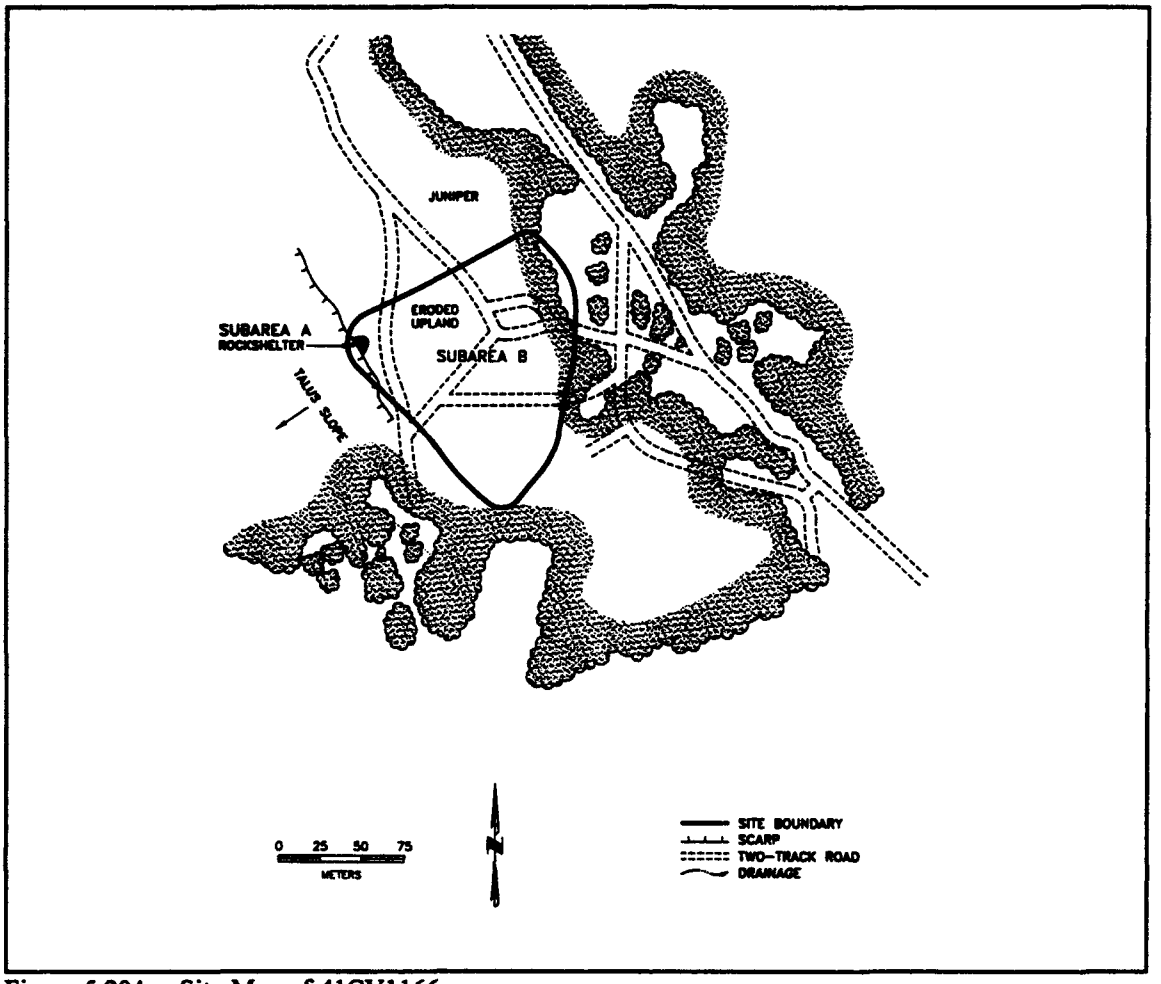


Figure 5.204 Site Map of 41CV1166.

a slow accumulation of weathered material and rooffall during the late Holocene. Because of the potential for intact cultural deposits, the shelter was shovel tested in March 1992. Two small shovel tests were excavated at the shelter. Shovel test A was dug in the shelter matrix to bedrock at 25 cmbs and ST B was excavated out in front to bedrock at 40 cmbs. Shovel test A yielded abundant (n=70) cultural material including flakes, bone, shell, and burned rock. Shovel test B was less productive with only 11 artifacts. Generally, the material was from 0 to 30 cmbs. Based on these positive results the shelter was thought to contain in situ cultural deposits, therefore formal testing was recommended to determine NRHP eligibility (Trierweiler 1994:A1302-A1305).

5.52.1.3 New Work

Formal testing was conducted in October 1994 through the excavation of one test pit. The test was immediately adjacent to ST A inside the shelter and was excavated to bedrock which sloped from 20 cmbs near the back of the shelter to about 40 cmbs near the dripline (Figure 5.205).

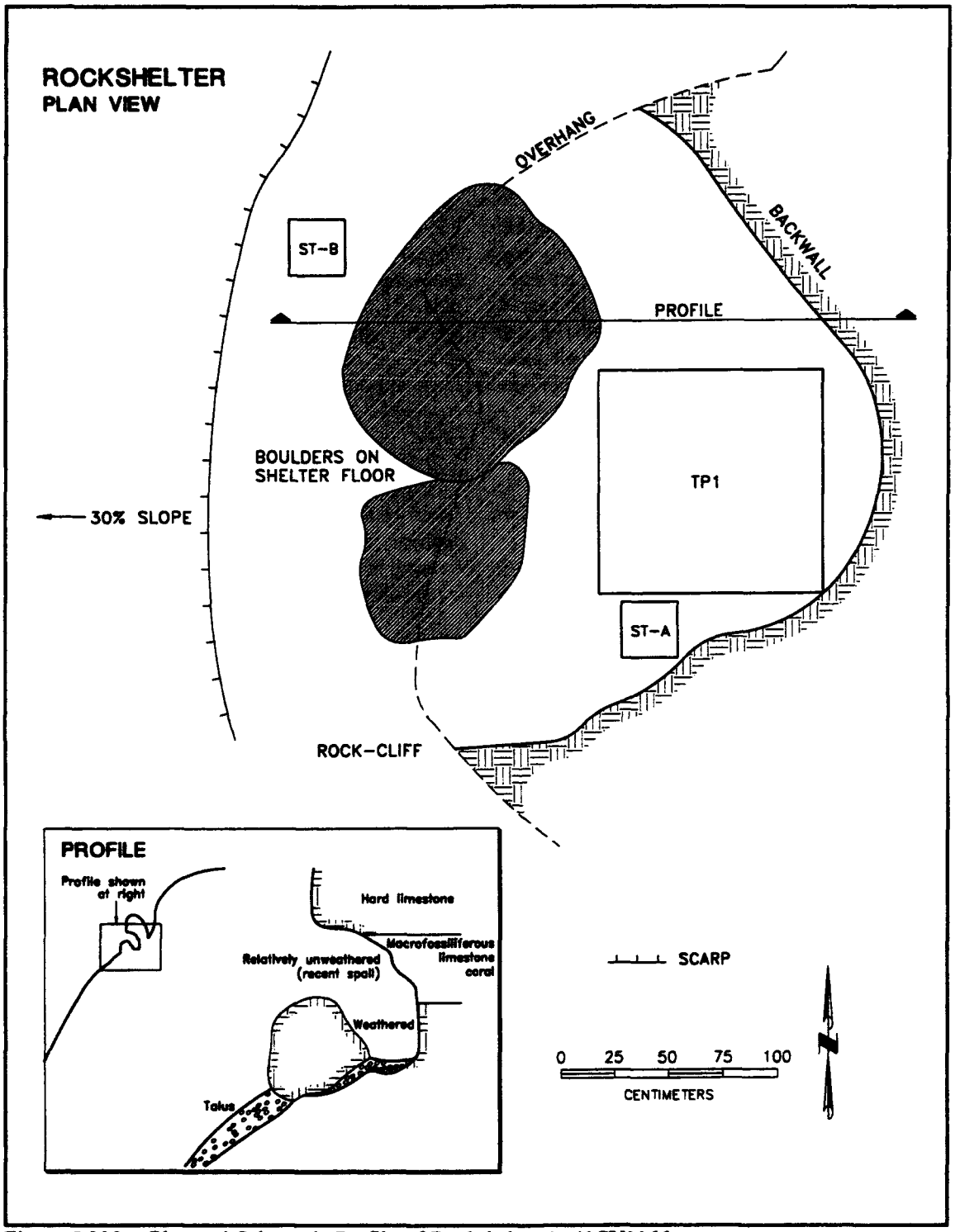


Figure 5.205 Plan and Schematic Profile of Rockshelter A, 41CV1166.

5.52.2 Results

This rockshelter measures about 3 m wide x 2 m deep x 2 m high and is located on the downslope side of a large limestone block which has detached and slid slightly downslope from the escarpment edge (Figure 5.206). Test pit 1 revealed an A-C to A-R profile composed of grayish-brown silty to sandy loam that appears to represent an admixture of internally-derived inorganic sediment and decomposed leaf litter. The top 10 cm contained 228 pieces of debitage, as well as a six burned rocks (0.8 kg), one bone, one hammerstone, one biface, two arrow point fragments, a complete Edgewood point, and mussel shell fragments (Table 5.99). In level 2, a semicircular row of 18 burned rocks was exposed at the western part of the test pit. These rocks were interpreted as the boundary of a hearth Feature 1 (Figure 5.207), although no definite internal pit or distinctive internal matrix was distinguished. However, at least one of the rocks had cracked in place. The remaining part of this feature lies outside TP 1. In addition to the hearth, 103 pieces of debitage, mussel shell fragments, and charcoal chunks were recovered. A matrix sample taken from the interior of the feature was floated and small flecks of charcoal totaling 0.6 provided a $\delta^{13}C$ (-25.5‰) corrected assay of 810 ± BP (Beta-83530). Below F 1, 20 to 30 cmbs, nine flakes, several mussel shell fragments, and one burned rock were recovered.

5.52.3 Analysis and Interpretations

5.52.3.1 Definition of Analytical Units

The cultural material from TP 1 was divided into three analytical units, which correspond to each of the three excavated levels. The top 10 cmbs contained mixed materials as evident from the presence of two arrow point fragments and one complete Edgewood dart point. Level 2, 10 to 20 cmbs revealed an intact hearth and associated charcoal which provided an age of 810 BP, falling into the Late Prehistoric I period or Austin phase (Prewitt 1981; 1985). The lower 10 cm yielded no diagnostic artifacts and no datable organic material, thus is not clear what age this lower material represents. This latter material was then unclassifiable. One could argue that all the cultural material from TP 1 belongs to the same cultural period, the Late I Prehistoric since there is no visual stratigraphy to guide the sorting. The deposits are shallow enough that over time they may have been vertically dispersed. The Edgewood dart point along with two arrow point fragments in level 1 could all be associated since the dart point may have been collected and reused by later groups, and thus not indicative of the actual age of the deposits or events. The present division into three analytical units is a conservative approach.

5.52.3.2 Late Prehistoric I Material

These materials include 103 pieces of lithic debitage, one mussel shell umbo, 18 burned rocks forming a hearth, some charcoal and snail shells, but no stone tools, projectile points, or bones.

The 103 specimens of lithic debitage represent two identified and six unidentified chert types with only two flakes of identified chert (Table H-372). The high frequencies of indeterminate cherts results in expected statistical overrepresentation (Table H-373). The light brown materials contribute 36% to the total assemblage and may suggest the manufacture of small Heiner Lake Tan tools; however, this can not be tested since no tools were recovered.

The modal peak of debitage size is 0.5 to 0.9 cm. The small size may contribute to the low rate of identification of the chert types. About 87% of the debitage is classified as tertiary (Table H-374).

The single umbo was that of *Tritigonia verucos* which was not burned or otherwise modified.

Hearth F 1 contained all recovered burned rock. The rocks weighed 9 kg and varied in size from 25 to 3 cm in diameter. One rock was cracked in place. No ash or oxidized matrix was in this rock



Figure 5.206 View of Test Pit 1, 41CV1166.

lined hearth and the internal matrix was the same color as that outside the rocks. Tiny flecks of charcoal were scattered about. A matrix sample taken from the interior of the feature was floated but the light fraction yielded only tiny flecks of charcoal, rodent pellets, and no other carbonized plant remains. Tiny flecks of charcoal (0.6 g) from the light fraction provided a $\delta^{13}C$ (-25.5‰) corrected assay of 810 ± BP (Beta-83530). No recognizable stone tools or bone fragments were recovered in association with the hearth.

5.52.3.3 Mixed Material

These materials include 228 pieces of lithic debitage, three points, two stone tools, one bone fragment, one mussel shell umbo, six burned rocks (0.8 kg) and snail shells. The 228 specimens of lithic debitage represent five identified and nine unidentified chert types with only 11% identifiable (Table H-375). Cowhouse materials dominate with two types and 52% of the debitage. The combined indeterminates result in higher than expected frequencies, with all identified types less than expected. However, the exclusion of the indeterminates results in Cowhouse Mottled with flecks to be higher than expected and all other types were at expected levels (Table H-376).

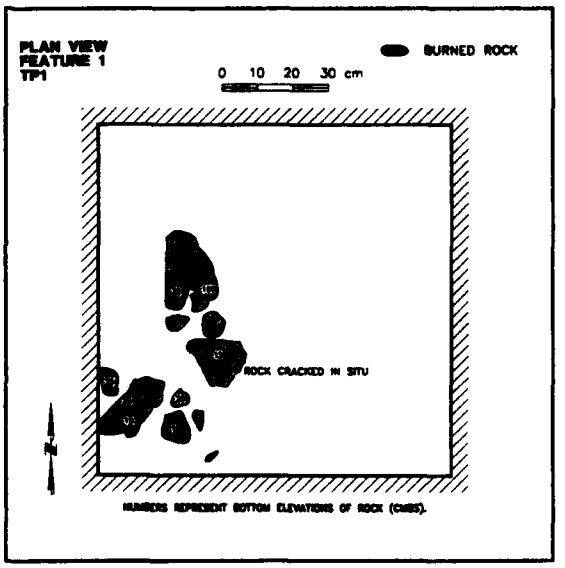


Figure 5.207 Feature 1 Plan in Test Pit 1, 41CV1166.

Table 5.99 Artifact Recovery by Test Pit, 41CV1166.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	8	1.1	1	1	0	0	228	3	2	Edgewood, ?arrow	mixed
	2	F1	24	12.0	1	0	0	0	103	0	0	810±60	LP-I
	3	-	2	1.3	0	0	0	0	9	0	0	-	unspec.
	Total		34	14.4	2	1	0	0	340	3	2		

The modal peak of sizes is the 0.5 to 0.9 cm category with 77% of the materials less than 1.2 cm in size and over 90% less than 1.8 cm in size. Almost 80% of the debitage is tertiary (Table H-377). The small size implies tool finishing and rejuvenation over core reduction activities.

The stone tools include a fragment of a limestone hammerstone, the proximal end of a finished biface that is on a indeterminate light brown chert, a completed Edgewood dart point manufactured out of Fort Hood Yellow, and two distal ends of arrow points. One of the latter is indeterminate chert, the other a Gray/Brown/Green chert. The presence of the hammerstone and finished biface support the debitage findings.

The single bone was a humerus fragment of a medium to large ungulate, probably a deer. It had extensive weathering and acid pot marks. The single mussel shell umbo was identified as Unionacea, which was unburned and unmodified. It is unclear if these are recent specimens that are intrusive to the prehistoric occupation or actually belong with the occupation.

5.52.3.4 Temporally Unspecified Material

Level 3, 20 to 30 cmbs yielded minimal cultural material including nine pieces of lithic debitage and only one burned rock. The nine specimens of debitage were all of indeterminate chert types of various colors with only light brown, dark brown and white (probably patinated) having more than one specimen (Table H-378).

The modal peak of sizes is at 0.9 to 1.2 cm category. Approximately 90% of the cherts are tertiary (Table H-379). No stone tools, bone or mussel shell were recovered. The lack of diagnostics and the absence of charcoal prevented the assignment of these materials to a particular time period.

5.52.4 Conclusions

The upland part of site 41CV1166 (Subarea B) has been previously determined to be ineligible for inclusion in the NRHP (Trierweiler 1994:A1302-A1305), and the current work did not investigate it further.

Testing in the rockshelter designated Subarea A revealed approximately 30 cm of cultural deposits. The recovery of both arrow and dart points in bioturbated level 1 indicates possible mixing of the near surface deposits. Based on the 810 BP date from intact hearth F 1 in level 2 and the conservative approach to the assignment of the cultural deposits, only the material from 10 to 20 cmbs is assigned to the Late Prehistoric period I, but it is possible that the mixed material above and

the unclassifiable material below it represent the same time period. The Late Prehistoric I occupation period is not unusual for Fort Hood rockshelters - in fact most rockshelter occupations appear to represent this time.

The intact hearth feature and associated lithic assemblage have potential to contribute to research issues outlined in the research design for Fort Hood (Ellis et al. 1993). Furthermore, deposits outside the present drip line of the shelter may be covered by the extremely large slabs, indicating that at least some of the deposits outside the shelter may preserve data from earlier occupations. We conclude that Subarea B, the rockshelter, on site 41CV1166 is eligible for inclusion to the NRHP. Accordingly, the shelter should be preserved and protected from adverse impacts. Because the eligible components are shallowly buried and are in a setting that is well known for its capacity to yield artifacts, protection efforts should include measures to prevent subsurface disturbance by vandalism and prevent manual excavations or surficial disturbances by military personnel during training exercises.

5.53 SITE 41CV1378

From late October through early November 1994, we conducted formal test excavations at prehistoric archeological site 41CV1378. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Three trenches were dug by backhoe and one test pit (0.8 m3) was hand excavated. The test excavations demonstrate the presence of intact, buried cultural components which have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.53.1 Introduction

5.53.1.1 Site Location and Description

Site 41CV1378 is in southwestern Fort Hood Training Area 31. Maximum site dimensions, as defined in 1993, measure 365 x 200 m, with a northwest to southeast axis (Figure 5.208). Site area is 7 h (17.3 acres). For purposes of analysis, the site is considered a member of the Turkey Run site group.

5.53.1.2 Previous Work

Dureka and Strychalski first recorded the site on 9 January 1987 as consisting of a burned rock mound, lithic debitage, burned rock scatters, and knapping stations (Mueller-Wille and Carlson 1990b). The area encompassed a knoll, various benches, and terraces, with most cultural material noted on the knoll and benches. The burned rock mound was considered "one of the largest BR mounds ever seen on Fort Hood by these recorders." The mound was bisected by a tank trail, with about half of the feature removed. Remaining feature dimensions measured 40 x 10 x 1.25 m. Very few lithics were directly associated with the mound. Overall, the site was impacted 70% by tank trails, construction of Old Copperas Cove Road, erosion, and vehicular traffic.

On 7 February 1992, Oglesby and Abbott evaluated the site and divided it into two subareas based on archeological potential and geomorphic context. Subarea A (about 90% of the entire site) subsumed an upland surface, associated erosional valley slopes, and colluvial toe slopes. One large, heavily impacted burned rock mound (F 1) was noted on the upland surface, with moderate amounts of burned rocks and lithic debitage observed on the adjacent slopes. Feature 1 was exposed along a tank trail and measured about 9 x 2.5 x 0.4 m. The burned rocks ranged from 2 to 10 cm in size, with a few pieces of lithic debitage noted in association. With the exception of F 1, Subarea A consisted of a strongly impacted, erosional surface with no context. Subarea B

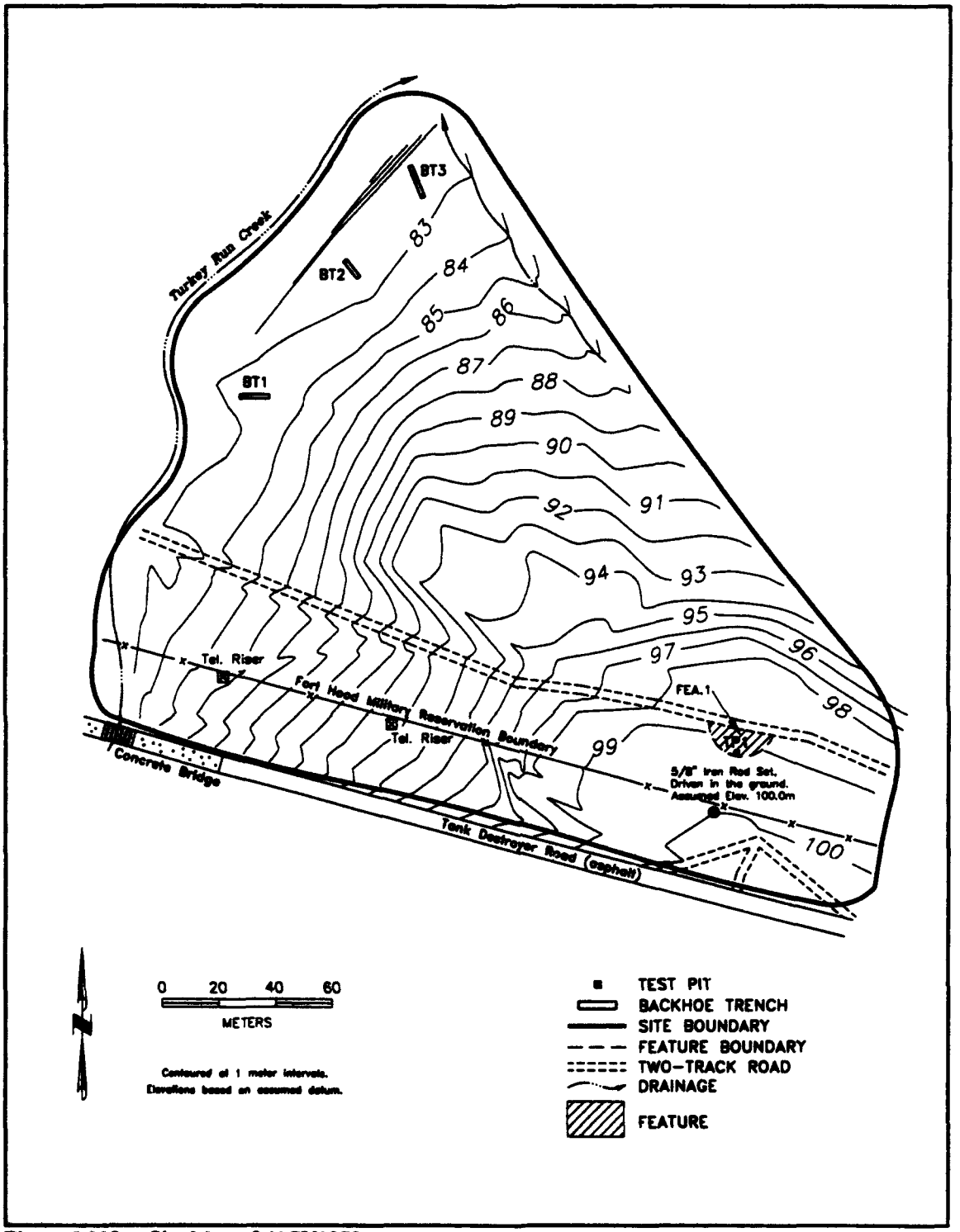


Figure 5.208 Site Map of 41CV1378.

consisted of a narrow floodplain paralleling Turkey Run Creek. No cultural material was observed on the surface, but the cutbank exposed Holocene deposits about 2 m thick. This subarea appeared minimally disturbed by vehicular traffic and clearing.

On 27 February 1992, a crew returned and excavated a total of six shovel tests (A through F). Shovel tests A and B in Subarea A, yielded seven cultural items in 8 cm of deposits with bedrock encountered at 8 cmbs. At that time, shovel test A was believed to have been dug in F 1. Subarea A - including F 1 - appeared to contain a very shallow deposit with negligible archeological potential. No cultural material was recovered from any of the four shovel tests excavated to 40 cmbs in Subarea B. However, it was believed that intact cultural deposits might be present below the limits of shovel testing. No further work was recommended for Subarea A, and two trenches were recommended for Subarea B. (Trierweiler 1994:A1508-A1510).

5.53.1.3 New Work

On 28 October 1994 we conducted formal testing of Subarea B. Three trenches were excavated on the alluvial terrace of Turkey Run Creek to examine site stratigraphy and prospect for buried cultural material. No cultural material observed and no further work was undertaken in Subarea B. At the same time, we reexamined the burned rock mound (F 1) in Subarea A. Maximum feature dimensions were 10 x 5 m. A profile was cut and cleaned along the bank of the tank trail which had removed a substantial portion of this mound. This profile revealed a 60 cm thick, intact feature that contains dense burned rocks. It was discovered that the 1992 shovel test A had been excavated about 3 m east of the feature's eastern margin. As a result, further manual testing of the feature was deemed appropriate, and on 8 November 1994, a one meter square test pit (TP 1) was manually excavated in F 1. This unit was on the highest, most intact part of the mound and was aligned with the tank trail (Figure 5.209). Unit sizes and depths are presented in Table 5.100.

5.53.2 Results

All three backhoe trenches excavated in Subarea B exhibited similar profiles developed in recent gravelly alluvium. Each trench consisted of 1 to 1.5 m of very dark grayish brown (10YR 3/2) gravelly clay loam that graded from granular to massive with depth and overlay a basal zone of coarse limestone gravel in a dark grayish brown (10YR 4/2) loamy matrix. Overall, all three trenches exhibited an A-C profile, interpreted as recent alluvium (e.g., the Ford fill of Nordt 1992). The upper part of the fill appears to be of historic age, based on the recovery of metal fragments from the upper 40 cm of BT 2. No prehistoric cultural material was recovered from any of the trenches.

In TP 1, Feature 1 was from the surface to 55 cmbs. The uppermost 10 to 15 cm of fill (a dark brown silty clay loam) appeared disturbed by blading of the tank trail and was interpreted as spoil. Extremely high densities of burned rock were noted in levels 2 through 5, with a very dramatic decrease in level 6. Most burned rocks were tabular and averaged 5 to 10 cm in size, with some as large as 25 to 30 cm long and 5 to 10 cm thick. No internal patterning was apparent; the burned rocks were densely packed within a black silty clay loam. Few pieces of lithic debitage, and a Scallorn arrow point were in level 2. Below this burned rock feature, from 55 to a maximum depth of 78 cmbs, a few flakes were recovered (Table 5.101). Matrix was a dark brown clay loam that contains decayed, unburned limestone. Bedrock, sloping east to west, was encountered 60 to 78 cmbs.

A suite of eight *Rabdotus* shells from TP 1, level 5 were submitted for amino acid epimerization analysis. The resulting A/I ratios ranged from 0.0913 to 0.133, with six of the specimens forming a loose cluster between 0.0913 and 0.108 (Appendix C). These six shells equate to a mean

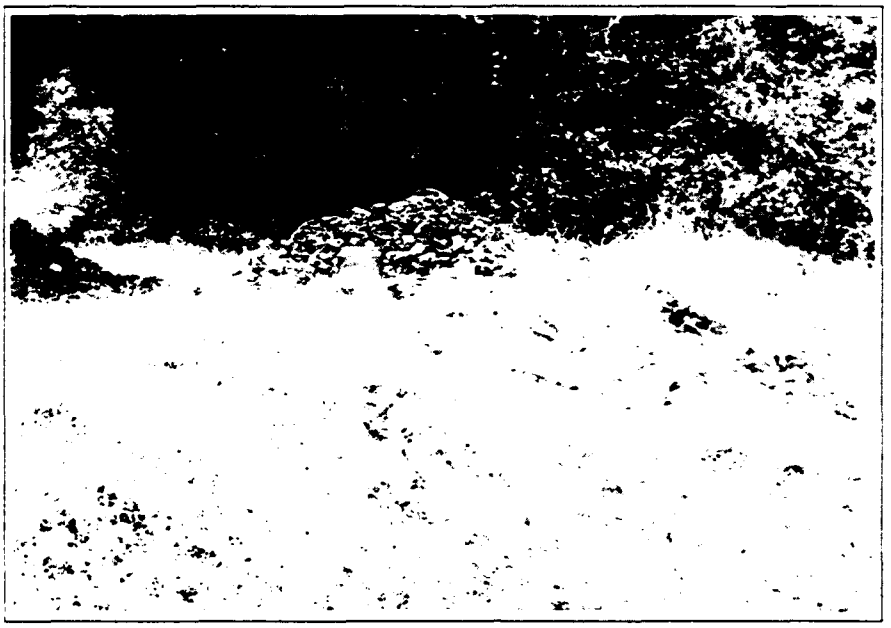


Figure 5.209 Test Pit 1 in Burned Rock Midden Feature 1, 41CV1378.

radiocarbon-equivalent age of approximately 3300 BP using the equation of Ellis et al. (1995) and 4275 BP using the equation of Abbott et al. (1995). These ages fall into the middle Archaic stage of Prewitt (1981; 1985). The fact that six of the eight shells cluster, and that none of the shells exhibit extreme values, suggests that the assemblage does not represent shells that were heated to any significant degree, and that initial mound construction probably occurred during the Middle Archaic or earlier.

5.53.3 Analysis and Interpretations

5.53.3.1 Definition of Analytical Units

The single test pit through mound F 1 yielded 14 pieces of lithic debitage, a Scallorn arrow point, a tool fragment, 3,164 burned rocks, and many snail shells. Charcoal was absent. These materials were assigned to a single time period - the Middle Archaic and two other two groups - a mixed group from 0 to 20 cmbs and an unknown group from 50 to 70 cmbs. The assignment of Middle Archaic is based on the amino acid epimerization from six *Rabdotus* snails from 40 to 50 cmbs at the bottom of F 1 and one AMS assay of 2960 BP from one of these same *Rabdotus* shells. The lack of charcoal and/or bones for absolute dating prevented verification of the age of this burned rock mound. Each of these groups is presented below.

5.53.3.2 Middle Archaic Materials

These materials include seven pieces of lithic debitage, 1,893 burned rocks that weighed 348.2 kg, and many snails shells. The seven specimens of lithic debitage all represent indeterminate chert

Table 5.100 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	10	0.8	1.3	T0 terrace
BT 2	7	0.8	1.5	T0 terrace
BT 3	7	0.8	1.4	T0 terrace
TP 1	1.00	1.00	0.78	colluvial

Table 5.101 Artifact Recovery by Test Pit, 41CV1378.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	382	38.0	0	0	0	0	1	0	0	-	mixed
	2	F1	880	82.0	0	0	0	0	4	1	1	Scallorn	mixed
	3	F1	564	119.0	0	0	0	0	1	0	0	-	LA
	4	F1	507	115.0	0	0	0	0	6	0	0	-	LA
	5	F1	822	114.2	0	0	0	0	0	0	0	-	LA
	6	F1	9	4.0	0	0	0	0	1	0	0	-	unspec.
	7	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		3164	472.2	0	0	0	0	14	1	1		

(Tables H-380 and H-381). The small sample size and lack of identifiable cherts preclude any conclusions from being drawn.

The burned rock was definitely part of the mound and constitutes the base of F 1. The A/I ratios on eight *Rabdotus* snails from 40 to 50 cmbs provide an approximation of the initial period of construction that places it about 3425 to 4275 BP. The AMS assays of 2960 BP (Beta-88355) from a snail (CD-315) with an A/I ratio of 0.102 calculated to ca. 2976 BP support this period assignment. It is unclear if the use of this feature continued into the Late Prehistoric I period as suggested by the presence of the Scallorn, point at 10 to 20 cmbs or this latter period is just reflected by this one point mixed in the top part of a Middle Archaic feature.

5.53.3.3 Mixed Materials

These materials include five pieces of lithic debitage, a projectile point, a broken stone tool, and 1,262 burned rocks, and snail shells. The five specimens of lithic debitage represent two indeterminate chert types (Tables H-382 and H-383). The small sample size and lack of identifiable cherts preclude any conclusions from being drawn.

The proximal point is a Scallorn made of Owl Creek Black chert. This material type is not reflected by the debitage present and probably came in as a finished tool. This point may reflect this particular time period without actual indicating F 1 use at this period, since it is so close to the surface. The other tool includes a medial section of a finished biface made of indeterminate light brown chert. This material type is similar to the recovered lithic debitage material.

The 1,262 burned rocks weighed 120 kg and were part of the top of the mound, just in disturbed context. No charcoal or bones were recovered.

5.53.3.4 Temporally Unspecified Materials

These materials include two pieces of lithic debitage of indeterminate cherts, one of light gray and the other of dark gray. These are similar to the chert types from above. It may be these pieces have work their way to this lower position through

one type of turbation or another as these came from below the base of the mound. The same may be true of the nine burned rocks recovered.

5.53.4 Conclusions

Within Subarea B, alluvial deposits consist of gravelly clay loam deposited relatively recently by Turkey Run Creek. These sediments support a very weak A-C soil profile and contain historic metal to a depth of 40 cm. No prehistoric cultural material was detected in the deep backhoe trenches and the area is considered to have very poor archeological potential.

Although F 1, the burned rock mound, did not yield high frequencies of artifacts and has been laterally truncated by construction of an improved tank trail, the remaining part in Subarea A is apparently in relatively good condition. Although chronometric control on this feature is limited, a suite of eight epimerization values calculated to ca. 3297 BP from recovered *Rabdotus* snails and an AMS date of 2960 BP on one *Rabdotus* snail from near the bottom provides evidence that this feature dates to the Middle Archaic. The low rate of artifact return is typical of burned rock mounds at Fort Hood (Abbott et al. in preparation), and therefore does not reflect negatively on the information potential of the feature relative to other similar features on the facility. Moreover, while the majority of burned rock mounds at Fort Hood tend to be on the high Manning upland surface, this feature is on the intermediate Killeen surface adjacent to a stream, and may indicate exploitation of a different set of resources. Feature 1 appears to have potential to provide data related to the study of subsistence-related burned rock technologies on Fort Hood (per Ellis et al. 1994). Thus, this site has good potential to address research issues outlined in the research design for Fort Hood (Ellis et al. 1994).

On the basis of the foregoing, we judge 41CV1378 to be significant and eligible for inclusion in the NRHP. Accordingly, the site should be preserved and protected from adverse impacts. Because the feature is shallowly buried and situated adjacent to an improved tank trail, it is highly vulnerable to impact from vehicles and road maintenance equipment such as graders. Furthermore, because the feature is exposed in section in the roadcut of the heavily traveled tank trail, and situated less than 25 m from the heavily traveled Tank Destroyer Boulevard to the south, it is highly vulnerable to vandalism. Protection efforts should include measures to minimize the impact of road maintenance on the tank trail; minimize the impact of traffic by heavy tracked and wheeled vehicles; prevent subsurface disturbance by vandalism; and prevent mechanical or manual excavations by military personnel.

5.54 SITE 41CV1403

In September 1994 we conducted formal test excavations at prehistoric archeological site 41CV1403. Testing was designed to evaluate eligibility for inclusion to the NRHP. Four backhoe trenches were mechanically excavated and two test pits (0.8 m^3) were hand dug. The test excavations demonstrate the presence of intact, buried cultural components, one dating to the Middle Archaic period. These deposits have potential to inform on key research questions including prehistoric technological and economic systems as well as paleoclimate and paleolandscape processes. As a result, this site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.54.1 Introduction

5.54.1.1 Site Location and Description

Site 41CV1403 is toward the southwestern sector of Fort Hood in Training Area 32. This is a prehistoric open camp on a colluvial slope and floodplain on the west side of an unnamed tributary of House Creek. Many tank trails criss-cross the site (Figure 5.210). The site size as defined in 1993, measured 433 x 215 m with a northeast-southwest long axis, and covers 9 hectares (22.2 acres). For purposes of analysis, the

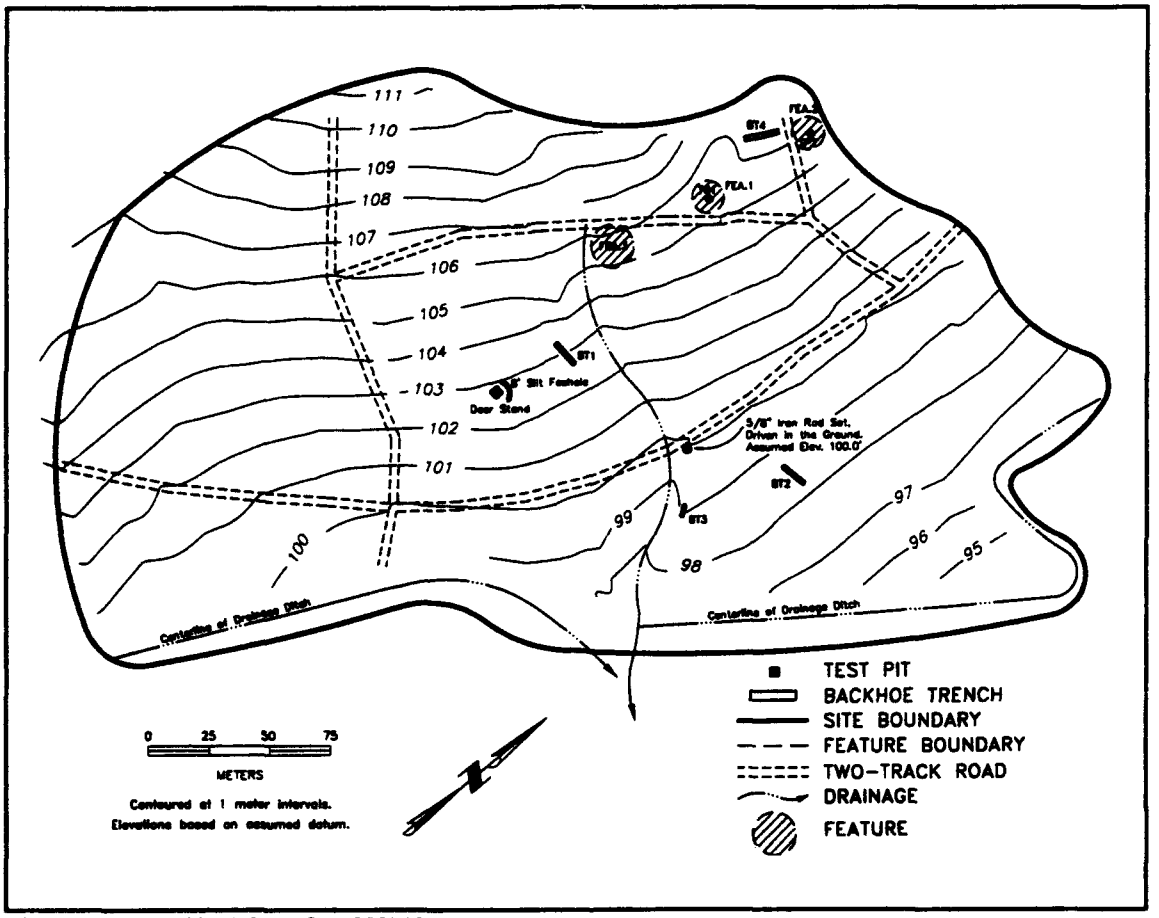


Figure 5.210 Site Map of 41CV1403.

site is considered a member of the Turkey Run site group.

5.54.1.2 Previous Work

The site was initially recorded by Rotunno on 22 January 1987 as an area containing several burned rock mounds with associated burned rock and lithic scatters (Mueller-Wille and Carlson 1990b). Observed artifacts included bifaces, debitage, and a mano and metate. A Pedernales dart was collected from the surface. The site was estimated to be 52% impacted by military maneuvers, vehicular traffic, and erosion.

On 14 February 1992, Abbott and Oglesby reassessed the site based on geomorphic and archeological observations but did not subdivide it into subareas even though there is colluvial and terrace deposits. Three burned rock mounds (Fs 1, 2, and 3) were on the colluvial slope and scattered burned rocks and lithics were observed throughout the site. Because potentially intact cultural deposits were present in both geomorphic areas, 31 shovel tests were excavated, 16 on the terrace and 15 on the colluvial slope. The shovel tests on the terrace yielded recent military debris from 0 to 10 cmbs and burned rocks from 20 to 35 cmbs. On the colluvial slope, a shovel test was placed in each of the three burned rock mounds. Recovered material from these three tests included 442 burned

rocks and two lithics that accounted for 93% of all recovered material. Burned rocks were to a depth of 60 cmbs in F 1. A few other burned rocks were in randomly shovel tests on the colluvial slope. Based on these results, formal testing was recommended to determine the presence of deeper cultural deposits on the terrace, and of intact deposits in the burned rock F 1. The recommended testing included one trench and four to six square meters of manually excavated test pits (Trierweiler 1994:A1527-A1529).

Table 5.102 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	13	0.8	1.5	slope
BT 2	9	0.8	0.7	T1 terrace
BT 3	6	0.8	0.9	T1 terrace
BT 4	11	0.8	0.5	slope
TP 1	1.00	1.00	0.50	midslope bench
TP 2	1.00	1.00	0.30	midslope bench

5.54.1.3 New Work

Formal testing was conducted in September 1994. The three previously identified burned rock features were reclassified, described on feature forms, and sketched. Two test pits were excavated in two burned rock mounds (Fs 1 and 2 respectively) and four backhoe trenches were dug to examine the stratigraphy and prospect for buried cultural material. Unit sizes and depths are presented in Table 5.102.

5.54.2 Results

At the initiation of formal testing, 41CV1403 was interpreted as being wholly or partially underlain by an outcrop of the Paluxy Sandstone. This interpretation was based on the widespread presence of a surficial cap of fine-grained colluvial sands. However, field inspection failed to identify an outcrop that could be equated with the Paluxy on site. Rather, thin lenses of sandstone were observed interfingering with thin, shaley limestones and marls that represent the uppermost Glen Rose limestone. The most likely explanation of this discrepancy is that the site is just outside the southern boundary where the Paluxy Sandstone can be recognized as a distinct unit. As the siliceous clastics of the Paluxy become spread southward across the Comanche shelf, there is some point where they "feather out," merging laterally with the uppermost Glen Rose Limestone. In general, Fort Hood is roughly at this transition, explaining why the Paluxy Sandstone, over 30 m thick farther north, is only about a meter thick at Fort Hood and interfingers with limestone beds at most places. At 41CV1403, this interfingering is so pronounced that no clear beds that can be equated with the Paluxy are present, yet sufficient fine-grained sands have been incorporated into the limestones and marls of the upper Glen Rose that weathering of the surface produces results in a cover of loamy fine sands similar to that observed on the outcrop of the Paluxy.

5.54.2.1 Excavations in the Colluvial Slope

Two trenches (BTs 1 and 4) were excavated on the stepped slopes. Trench 1 was on the first bench above the stream terrace and revealed a deposit exhibiting an A-2Btk profile. The A horizon consisted of a thin sheet of massive, dark yellowish brown (10YR 4/4) fine sandy slopewash roughly 25 cm thick (Figure 5.211). The Btk horizon was composed of strong brown (7.5YR 4/6), weakly blocky sandy loam tentatively interpreted as a Pleistocene-age alluvial fill. It contained weak, discontinuous argillans and relatively large, common carbonate masses and nodules, suggesting that it has been in place for a considerable period of time. No cultural material was detected in this trench.

Trench 4 was on the higher part of the colluvial slope, approximately 10 m southwest of F 2. This trench exhibited an A-2Bw-3K profile developed in sandy slopewash overlying a sandy marl (Figure 5.212). The A horizon was roughly 30 cm thick

and consisted of massive, hard dark grayish brown (10YR 4/2) sandy loam. A few scattered burned rocks were observed in this A horizon, which appears to represent relatively recent slopewash. The 2Bw horizon occurred as isolated pockets of massive, brown (7.5YR 5/5) loamy fine sand that occurred in depressions in the underlying K horizon. It appears to represent a previous generation of slopewash that was largely truncated. The K horizon is separated from the overlying zones by an abrupt, wavy to irregular erosional boundary. It is composed largely of marl, but contains large amounts of carbonate that appear to have been dissolved and re-precipitated in the vadose zone. No cultural material was observed in zones 2 through 3.

Feature 1 is a 15 m diameter burned rock mound that exhibits 30 to 40 cm of relief above the ground surface. A 1 m diameter x 30 cm deep depression lies near the center of the mound. This mound is on a bench on the upper part of the colluvial slope. A frequently utilized vehicle trail just clips the feature's eastern edge and the western half is covered by trees and brush, however, the current mound is relatively undisturbed. Test pit 1 was placed on the top of F 1, about 1 m north of the central depression, and excavated to the base of the feature which rested on bedrock at 50 cmbs. About 800 burned rocks were recovered from the upper four levels (0 to 40 cmbs) and just over 50 were recovered from level 5 (Table 5.103). Few chert artifacts were found overall, although at least two were in each level. A total of 36 flakes were recovered, with frequencies per level that ranged from a high of 12 (10 to 20 cmbs) to a low of two (40 to 50 cmbs). The only intrusive item discovered was a metal washer found just below the surface.

Feature 2 is a 10 m diameter x 20 to 30 cm high burned rock mound with no apparent central depression (Figure 5.213). This mound is about 40 m north of F 1, at the front edge of the bench on the upper part of the slope. A frequently used tank trail has disturbed the southern one-third of this mound and 70% of the northern part is covered by

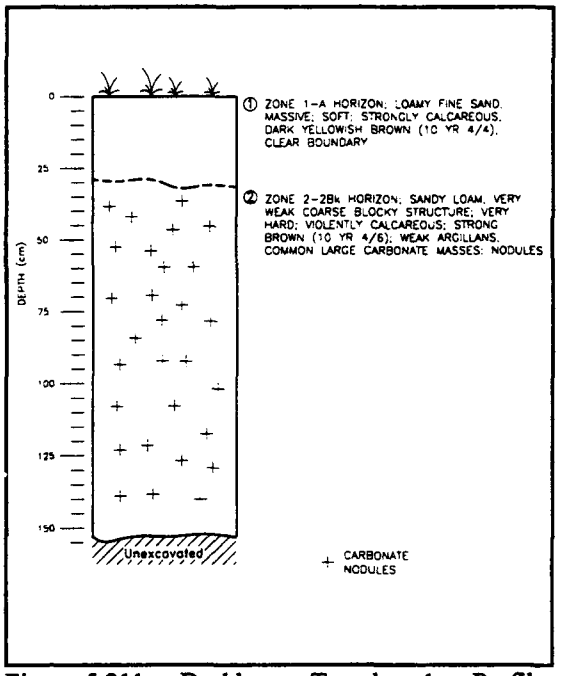


Figure 5.211 Backhoe Trench 1 Profile, 41CV1403.

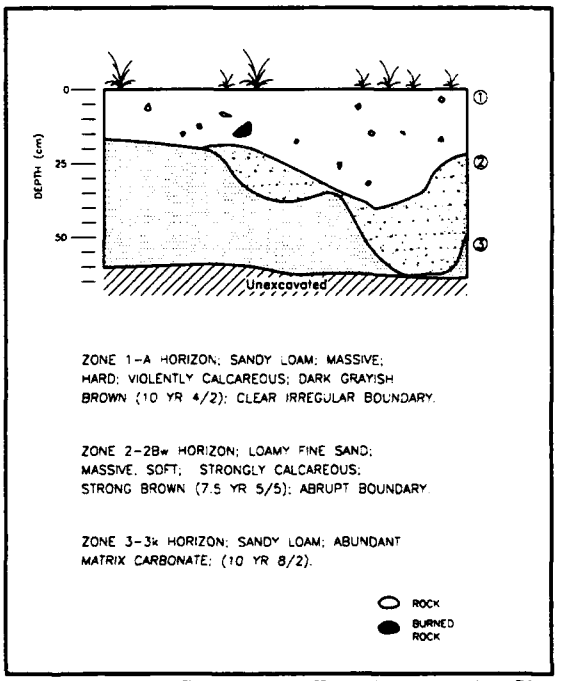


Figure 5.212 Backhoe Trench 4 Profile, 41CV1403.

Table 5.103 Artifact Recovery by Test Pit, 41CV1403.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	F1	210	71.0	0	0	0	0	8	0	0	-	MA
	2	F1	234	113.5	0	0	0	0	11	0	1	-	MA
	3	F1	196	95.5	1	0	0	0	10	0	0	-	MA
	4	F1	150	80.0	0	0	0	0	3	0	0	-	MA
	5	F1	53	27.0	0	0	0	0	4	0	0	-	MA
	Total		843	387.0	1	0	0	0	36	0	1		
2	1	F2	326	56.0	0	0	0	0	33	1	2	Nolan	MA
	2	F2	243	51.0	0	0	0	0	19	0	0	-	MA
	3	F2	81	17.0	0	0	0	0	2	0	1	-	MA
	Total		650	124.0	0	0	0	0	54	1	3		



Figure 5.213 Feature 2 Exposed in Road 41CV1403.

trees and brush. A few centimeters of leaf litter cover the burned rocks. Test pit 2 was at the edge of the brush on the eastern part of the mound and excavated to the base of the feature which also rested on bedrock between 25 to 30 cmbs. As with F 1, hundreds of burned rocks were in each of the upper two levels (n=569) and slightly fewer than 100 were recovered from the basal level just above the bedrock. Feature 2 contained slightly more flakes than F 1 with a total of 54. Debitage frequency ranged from 37 flakes in level 1 (0 to 10 cmbs) to three flakes in level 3 (20 to 30 cmbs). In addition, a complete Nolan projectile was in the upper 10 cm along with a biface. The upper level also contained dense root growth, however, this part of the mound appeared relatively undisturbed. No bone or mussel shells were recovered.

Feature 3 is a burned rock concentration about 25 m south of F 1 at the intersection of several tank trails. Currently, the feature is about 10 m in diameter and is restricted to the surface. Whether or not it was originally an incipient burned rock mound is unknown, but it clearly has been heavily disturbed and deflated by vehicular traffic and subsequent erosion. No intact deposits appear to remain.

5.54.2.2 Excavations in the Alluvial Terrace

Two trenches (BTs 2 and 3) were excavated on the low alluvial terrace at the base of the slope. Trench 2 was excavated through recent alluvial sediments to a depth of 75 cm, where a pavement of large limestone clasts was discovered. Overall, the trench exhibited an A-Bw-C profile (Figure 5.214). The A horizon was composed of dark brown (7.5YR 3/2) massive sandy loam up to 30 cm thick. The Bw was also a massive sandy loam, but was a dark brown color (roughly 9YR 4/4), and graded down into a clast-supported gravel in a similar matrix (the C horizon). Although no prehistoric cultural material was recovered, a sealed, screw-top glass bottle was recovered from 30 to 35 cmbs, suggesting that the entire trench is composed of modern sediments.

Backhoe trench 3 was also on the floodplain, about 50 m south of BT 2. This trench was excavated into highly rubified sediments that are clearly reworked from farther upslope, and initially appear much older than they actually are. The trench was excavated to a depth of about 95 cm, and exhibited an A-Bw-BC-2R profile (Figure 5.215). The A horizon was 35 cm thick and consisted of dark reddish brown (5YR 3/2) massive sandy loam. It graded into a 15 cm thick dark reddish brown (5YR 3/3) Bw exhibiting weak blocky structure, which in turn graded into a massive loamy gravel BC horizon 20 cm thick. This latter horizon consists of a lag of coarse limestone clasts into which a fine matrix, similar to the overlying horizons, was subsequently washed. The substrate of the fill consisted of fissile limestone at 70 cmbs. No cultural material was detected in the trench.

5.54.3 Analysis and Interpretations

The four backhoe trenches exposed two principal but shallow deposits. The bulk of the site exhibits a discontinuous sandy slopewash while fine alluvial deposits are restricted in a low shallow terrace.

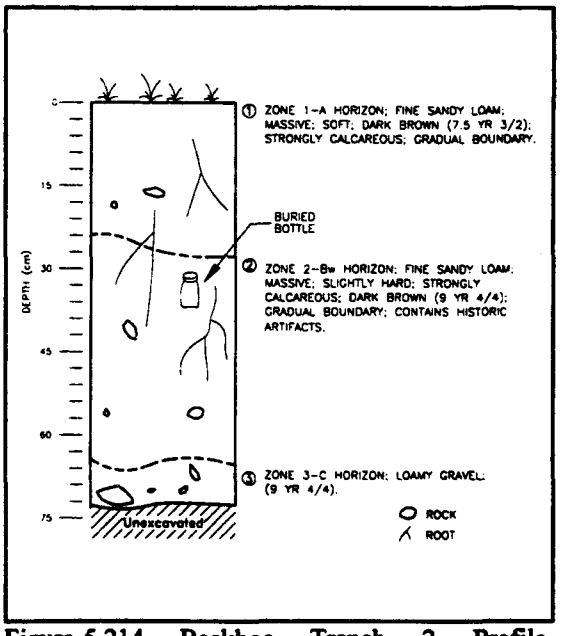


Figure 5.214 Backhoe Trench 2 Profile, 41CV1403.

The two test pits in mound Fs 1 and 2 on the colluvial slope yielded a total of 1493 burned rocks that weighed 511 kg, 90 pieces of lithic debitage, four stone tools, one complete Nolan point, and one Unionacea mussel shell. These features appear relatively intact but limited quantities of cultural material besides the burned rocks are present.

5.54.3.1 Definition of Analytical Units

Cultural material from two test pits, one in each feature, lacked organic material for dating. Consequently, material remains from F 1 were temporally unclassified to a general time period. Based on one complete Nolan point from the top level of F 2, this entire mound is identified as belonging to the Middle Archaic period. Radiocarbon-equivalent ages calculated from A/I ratios obtained on *Rabdotus* snails recovered from the two test pits also indicate that both features are relatively old, and probably date to the Middle Archaic or earlier.

5.54.3.2 Middle Archaic Period Materials

A single 1 m unit through Feature 2, a 10 m diameter 30 cm tall burned rock mound, yielded a total of 650 burned rocks that weighed 124 kg, 54 pieces of lithic debitage, two flake tools, a middle stage biface, the Nolan point and snail shells. The entire F 2 is projected to contain over 2,000 pieces of burned rock and about 170 lithic artifacts per m^3. No carbon or bone was recovered to attempt verification of the age of the matrix. The feature appears relatively intact with some disruption of the top 10 cm due to root activity.

Fifty-four specimens of lithic debitage from one identified and six unidentified chert types was recovered (Table H-384). Three indeterminate types are three-quarters of the entire assemblage (light brown, light gray and white) and as such the indeterminates are overrepresented in the sample (Table H-385). Over 80% of debitage is less than 1.8 cm in size and concentrated in the 0.9 to 1.8 cm size range. Only 5% of the debitage has any cortex (Table H-386).

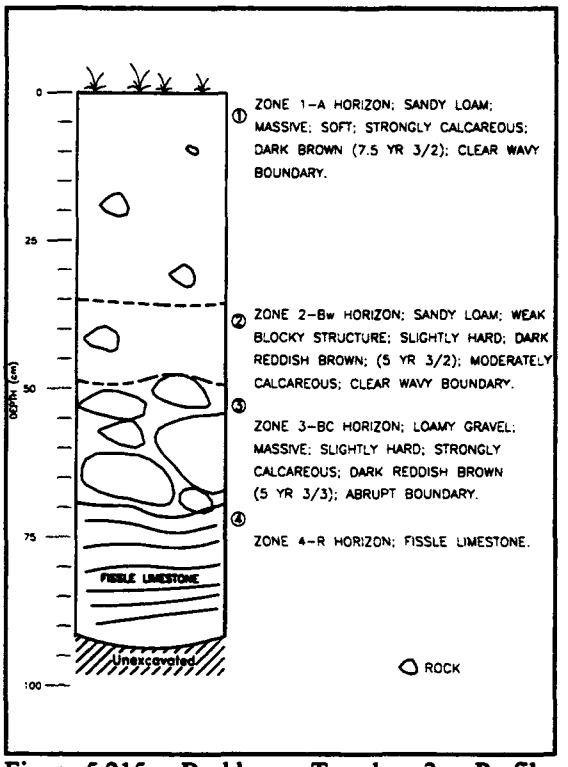


Figure 5.215 Backhoe Trench 3 Profile, 41CV1403.

As mentioned above one complete Nolan point of Anderson Mountain Gray was recovered. Additionally, four tools consisting of one edge modified, two utilized specimens, and a middle stage biface make up the non-projectile point tool assemblage (Table H-387).

5.54.3.3 Temporally Unspecified Component

Feature 1 is a 15 m diameter and 40 cm tall burned rock mound, with a 30 deep and 100 cm wide central depression near the middle. A 1 m unit through the mound yielded no dateable organic material and no diagnostics to enable an age determination. Excavations yielded only 36 pieces of lithic debitage, 843 burned rocks that weighed 387 kg, a utilized flake, and one mussel shell. At 50 cm deep, F 1 is projected to contain over 1,600 pieces of burned rock and about 60 lithic artifacts per cubic meter. All materials were

unassignable to a temporal time period, but the features appears to be relatively intact and could contain valuable information.

Thirty-six specimens of lithic debitage represent two identified and seven unidentified chert types with only 6% of the materials identifiable (Table H-388). The high numbers of indeterminate chert types are chiefly dark gray and light brown cherts. As would be expected the binomial distribution shows an overrepresentation of the indeterminates and an expected amount of identified materials when excluded (Table H-389). Sixty-three percent of the debitage is concentrated in the 0.9 to 1.8 cm size range. Only two types of cherts: light brown and mottled have any cortex remaining while 83% of the total assemblage is tertiary (Table H-390).

5.54.3.4 Chronometric Implications of Amino Acid Epimerization Analysis of *Rabdotus* Snails

Eight *Rabdotus* snail shells each were submitted from TP 1, level 5, and TP 2, level 3, for amino acid epimerization analysis. The results of the individual assays are presented in Appendix C. The results of these analyses support the interpretation that F 2 is at least of Middle Archaic age, and suggest that F 1 may also date to this period. The assays from F 1 ranged from 0.0922 to 0.455, which equate to approximate radiocarbon-equivalent ages between 2950 BP and 16,000 BP. The "youngest" (i.e., lowest ratio) two of these shells do not overlap at ±5%, and the single lowest value is tentatively interpreted as the representing the timing of feature construction. This value equates to a radiocarbon-equivalent age of roughly 2950 BP using the method of Ellis et al. (1995), and to approximately 3850 BP using the method of Abbott et al. (1995). Both of these tentative ages place feature construction squarely in the Middle Archaic stage as defined by Prewitt (1981; 1985). However, three of the "older" shells from F 1 cluster at ±5% around a mean radiocarbon-equivalent value of 4260 BP (per Ellis et al. 1995) to 5500 BP (per Abbott et al. 1995), suggesting that F 1 may actually date to the early Middle Archaic or latter Early Archaic.

The eight snails from F 2 yielded values ranging from 0.136 to 0.819. The three lowest values overlap at ± 5%, and yield an approximate radiocarbon-equivalent age of 4820 BP using the method of Ellis et al. (1995) and 6200 BP using the method of Abbott et al. (1995). Both of these ages fall into the Early Archaic as defined by Prewitt (1981; 1985). However, it must be remembered that these values are calculated on shells recovered from thermal features, and that heating can have a significant impact on the apparent ages of the shells. Therefore, while the A/I results support the proposition that both features are of at least Middle Archaic age, and may in fact represent initial construction during the latter Early Archaic, they cannot be cited as proof of that assertion.

Just received, are two AMS assays on Rabdotus shells that had A/I rations for F 1. Two *Rabdotus* shells (CD-332 and CD-328) yielded δ13C adjusted AMS assays of 3290 ± 50 (Beta-88357) and 3890 ± 50 BP (Beta-88356) which document the Middle Archaic age for F 1.

5.54.4 Conclusions

Site 41CV1403 consists of a stepped slope discontinuously mantled with a thin drape of sandy slopewash and a low alluvial terrace underlain by typically less than 1 m of fine-grained sediment. No prehistoric cultural material was recovered from the alluvium, but a historic glass jar recovered from a depth of roughly 30 to 35 cmbs suggests that most, if not all, of the fill is of very recent origin. The vast majority of matrix observed in these trenches appeared to be slopewash/colluvium. The only cultural material in the trenches consisted of a glass bottle in BT 2 and a single burned rock in BT 3 at 30 cmbs.

The stepped slope is covered with a number of large burned rock features in varying states of preservation/destruction. Several have been dispersed and deflated to the point where it is difficult to determine how many features may have originally been present. Currently, only two

burned rock mounds (Fs 1 and 2) retain any integrity. Although burial by sandy slopewash has been an episodic and localized process on the slope, where slopewash sands are preserved some potential exists for additional, shallowly buried features. However, if present, these are considered likely to be disturbed as well.

The two manually excavated test pits were placed in similar burned rock mound feature contexts. Both features are low burned rock mounds, constructed on bedrock, and exposed on the ground surface, and have been clipped by tank trails. Both have abundant burned rock, with limited quantities of lithics, bones, and tools. Although both mounds are low, contain limited frequencies of cultural material, and have been partially impacted by tanks, they reveal significant areas of intact deposits. The presence of a Nolan point from burned rock mound F 2 and the two AMS assays on Rabdotus shells from F 1, ca. 3290 to 3890 BP indicate Middle Archaic occupations. Epimerization analyses lend some support to this proposition. The mound chronology work by Quigg and Ellis (1994:203-274) indicate that mounds can and do date to the Middle Archaic, but they are less frequent than Late Archaic and Late Prehistoric features.

On the basis of the above, we judge both Fs 1 and 2 of site 41CV1403 to be significant and eligible for NRHP inclusion by virtue of containing data that can contribute to the current state of development of prehistory for Central Texas in general and the Fort Hood area in particular. We, therefore, recommend that the site be avoided and protected to prevent the loss of significant scientific information. Because significant deposits occur in shallowly buried contexts, portions of the site require measures to protect them against traffic by tracked and wheeled vehicles. Protection efforts therefore should include measures to minimize the impact of further vehicular traffic, prevent mechanical or manual excavations by military personnel, and prevent subsurface disturbance by vandalism.

5.55 SITE 41CV1471

During October and November 1994, we conducted formal test excavations at prehistoric archeological site 41CV1471. Formal testing was designed to evaluate eligibility for inclusion to the NRHP. Six trenches were mechanically excavated and three test pits (6.1 m^3) were excavated by hand. Formal test excavations demonstrate the presence of multiple intact, buried, and stratified Late Archaic components. These components have potential to inform on key research questions including prehistoric technological and economic systems. As a result, the site is evaluated as eligible for inclusion to the NRHP and should be preserved and protected.

5.55.1 Introduction

5.55.1.1 Site Location and Description

Site 41CV1471 is in northwestern Fort Hood, Training Area 54. The site is on a terrace (T_1) overlooking Turnover Creek to the north, with a northwest to southeast trending road bisecting the site. Maximum dimensions, as previously defined in 1990, measure 10 m east-west and 7 m north-south, and cover an area of only 70 m^2 (less than 0.1 acre). For purposes of analysis, the site is considered a member of the Shoal/Turnover Mountain site group.

5.55.1.2 Previous Work

The site was originally identified on the basis of a well-preserved basin hearth exposed in a 5 m high natural cutbank of Turnover Creek (Figure 5.216). It was recorded on 25 January 1990 by Sanchez, Kleinbach, Cargill, and Sandefor (Carlson et al. 1994). The hearth, measuring 120 cm long x 30 cm thick, was buried about 120 cmbs and consisted of tightly clustered burned rocks, with shell fragments and a flake noted in the feature fill. The hearth was drawn in profile, and soil and charcoal samples were taken. No other cultural material was noted in the cutbank or on the surface. A "probable" site boundary of 10 x 7 m was



Figure 5.216 Feature 1 in Cutbank at 41CV1471.

delineated on the site map. The feature was considered to be in extreme danger of erosion and was estimated to be 65% impacted by previous flooding episodes. Testing was recommended to determine nature and extent of the site and to assess NRHP eligibility (Carlson, et al. 1994:70).

5.55.1.3 New Work

Formal testing was completed in November 1994 through manual excavation of three test pits and six backhoe trenches to define stratigraphy and to prospect for site boundaries (Figure 5.217). Two of the test pits (TPs 2 and 3) were offset from BTs 1 and 3, with the third test (TP 1) above the previously recorded hearth Feature 1 exposed in the cutbank of Turnover Creek. Unit sizes and depths are presented in Table 5.104.

5.55.2 Results

The site stratigraphy is remarkably well-exposed in the Turnover Creek cutbank and at least four graded units are represented in the exposed deposits. The geometry of exposed bounding surfaces and internal bedding suggests that the sediments represent a combination of vertical aggradation and downstream progradation of a Turnover Creek point bar. The uppermost deposit consists of a thin (30 to 35 cm) drape of historic-age sand and loamy sand that exhibits a very weak A-C profile. It is underlain by a thick sequence of Late Holocene (upper West Range) loamy to gravelly point bar alluvium. In the upstream part of the site, this fill is about 1.5 m thick and rests on older alluvium. Downstream, the fill thickens to about 2.5 to 3 m and consists of thick loamy alluvium on top of a series of dipping point bar foresets. Beneath this unit, a thinner (about 50 to 75 cm) but texturally similar early-to-middle Holocene unit caps a truncated Late Pleistocene deposit.

The Feature 1 hearth is at the contact between the gravelly and loamy facies of the Late Holocene unit. Test pit 1 was placed above the exposed hearth so as to bisect the feature. The upper 35 cm of deposit consisted of a recent flood deposit

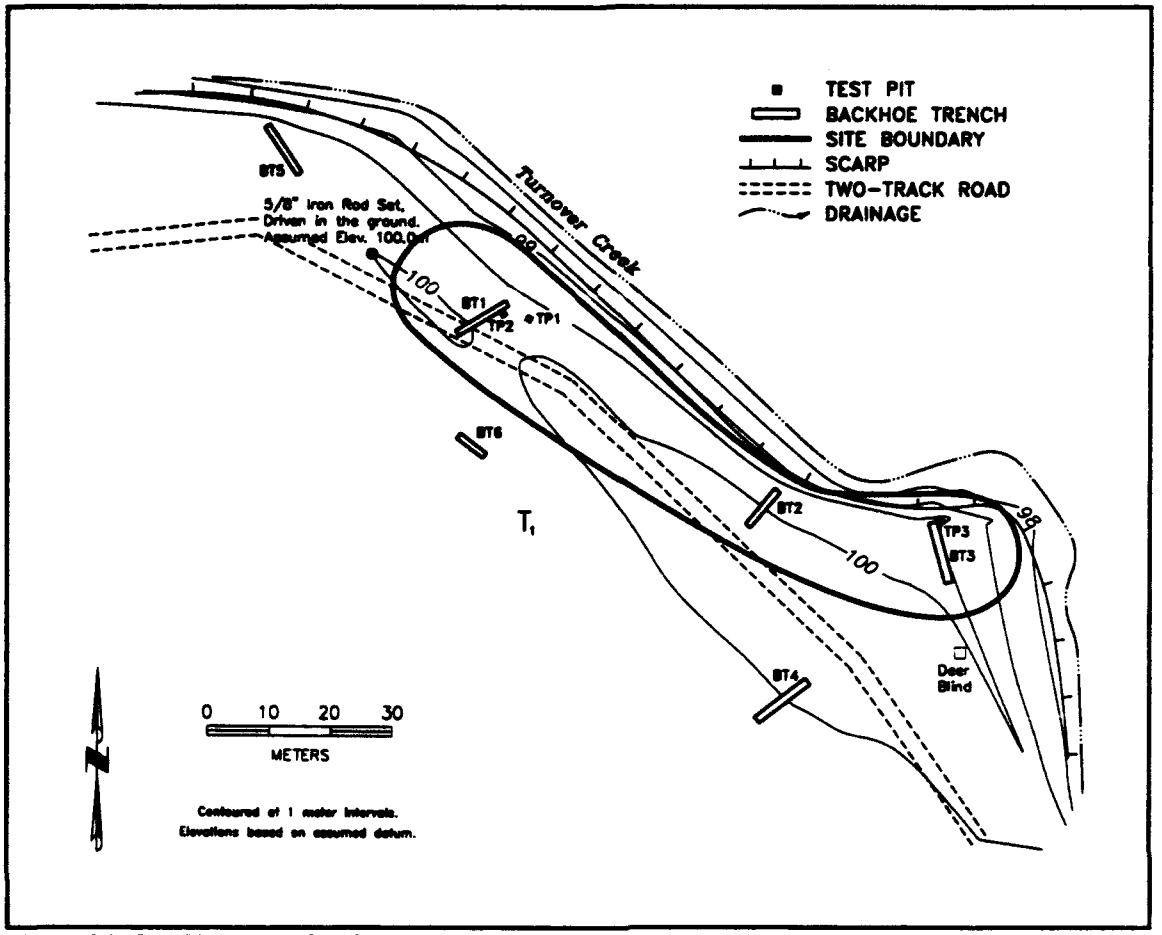


Figure 5.217 Site Map of 41CV1471.

and was consequently removed unscreened. The original 1990 site datum (a wooden stake) was found buried in this alluvium. No cultural material was recovered from 35 to 70 cmbs. Artifact recovery, from 70 to 100 cmbs, consisted of three flakes, with 10 items (flakes and burned rocks) between 100 to 120 cmbs (Table 5.105). A dramatic increase in lithics and burned rocks occurred in level 12, with the top of the hearth encountered at 117 cmbs in the northwest quadrant of the unit. The feature proved to be a basin shaped and rock filled hearth between 117 and 146 cmbs. Figure 5.218 shows the hearth feature at successive depths. Excavated feature dimensions were 60 x 50 cm. Based on the

Table 5.104 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	11	0.8	2.4	T1 terrace
BT 2	7	0.8	2.4	T1 terrace
BT 3	8	0.8	2.5	T1 terrace
BT 4	10	0.8	1.8	T1 terrace
BT 5	9	0.8	2.6	T1 terrace
BT 6	5	0.8	2.0	T1 terrace
TP 1	1.00	1.00	1.60	T1 terrace
TP 2	1.00	1.00	2.27	T1 terrace
TP 3	1.00	1.00	2.20	T1 terrace

Table 5.105 Artifact Recovery by Test Pit, 41CV1471.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	8	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	11	-	6	0.5	0	0	0	0	4	0	0	-	unspec.
	12	F1	38	7.0	1	0	0	0	26	0	0	-	LA
	13	F2	70	14.0	3	0	0	0	2	0	1	-	LA
	14	F1	68	17.3	1	0	0	0	3	0	0	1360±40	LA
	15	-	0	0.0	0	0	0	0	13	0	0	-	LA
	16	-	0	0.0	0	0	0	0	0	0	0	-	LA
	Total		182	38.8	5	0	0	0	51	0	1		
2	1-9	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	10	-	0	0.0	0	0	0	0	4	0	0	-	unspec.
	11	-	1	0.5	0	0	0	0	1	0	0	-	unspec.
	12	-	14	1.5	0	0	0	0	11	0	3	-	LA
	13	-	5	1.3	1	0	0	0	3	0	0	-	LA
	14	-	0	0.0	0	0	0	0	0	0	0	-	LA
	15	-	0	0.0	0	0	0	0	2	0	0	-	LA
	16	-	0	0.0	0	0	0	0	3	0	0	-	LA
	17	-	0	0.0	0	0	0	0	0	0	0	-	LA
	18	-	0	0.0	0	0	0	0	3	0	1	-	LA
	19	-	0	0.0	0	0	0	0	2	0	0	-	LA
	20-23	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		20	3.3	1	0	0	0	29	0	4		
3	1-10	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	11-16	-	0	0.0	0	0	0	0	0	0	0	-	LA
	17	-	0	0.0	0	1	0	0	1	0	0	-	LA
	18-20	-	0	0.0	0	0	0	0	0	0	0	-	LA
	21	-	2	0.3	0	0	0	0	1	0	0	2080±70	LA
	22	-	0	0.0	0	0	0	0	0	0	0	-	LA
	Total		2	0.3	0	1	0	0	2	0	0		

cutbank exposure, subsequent excavation of the hearth, and profile still visible in the west wall of TP 1, the hearth was probably circular and had a maximum diameter of 125 cm. The part excavated in TP 1 contained 92 burned rocks (23 kg) in three to four layers (Figure 5.219). Most rocks were tabular, ranging in breadth from 4 to 15 cm. The rocks sloped in various directions and a few were noted as upright. A few flakes, one umbo, and charcoal flecking were recovered from the feature

fill. The base of the hearth rested on a dense gravel lens. A small (0.5 g) sample of wood charcoal from level 14 provided a $\delta^{13}C$ (-26.3‰) corrected assay of 1360 ± 40 BP (Beta-83356).

A separate, discrete burned rock concentration (F 2) was exposed at 119 cmbs in the southeast quadrant of TP 1. The two features were clearly separated by a northeast-southwest oriented open area containing no burned rock. Feature 2, encountered 119 to 126 cmbs, may reflect a burned rock "dumping episode" away from the hearth. The burned rock concentration was mostly confined to the southeast quadrant (see Figure 5.218). Excavated dimensions were 80 x 40 cm, with the feature visible in the east and south wall profiles. This concentration also consisted of two to three layers of burned rock (n=44, 8 kg). Most rocks were tabular, and ranged in size from 4 to 12 cm. Two mussel shell umbos were recovered from the feature fill. The bottom of Feature 2 did not extend into the gravel lens. Recovery from the rockless area between Fs 1 and 2 included a few flakes and mussel shell fragments. Thirteen pieces of debitage were recovered from 140 to 150 cmbs, but level 16 was culturally sterile and excavation was halted.

Backhoe trench 1 was excavated about 4 m upstream from where F 1 is exposed in the cutbank, and revealed the full sequence of deposits present on the site in a single stacked column. The upper 30 cm consisted of a recent flood drape of brown (10YR 5/3) loamy sand that graded through a strongly turbated contact into the upper part of the Late Holocene (upper West Range) deposits (Figure 5.220). This unit exhibited an Ak-Bk-BCk profile developed in alluvium that graded from gravelly sandy clay loam to loamy gravel with depth. The Ak horizon was composed of 50 cm of fine blocky, very dark gray (10YR 3/1) gravelly sandy clay loam containing common to abundant fine carbonate filaments. It graded into a texturally similar, very dark grayish brown (10YR 3/2) Bk horizon about 35 cm thick. Roughly the lower 20 cm of this deposit contained a sparse scatter of burned rock, and the deposit became

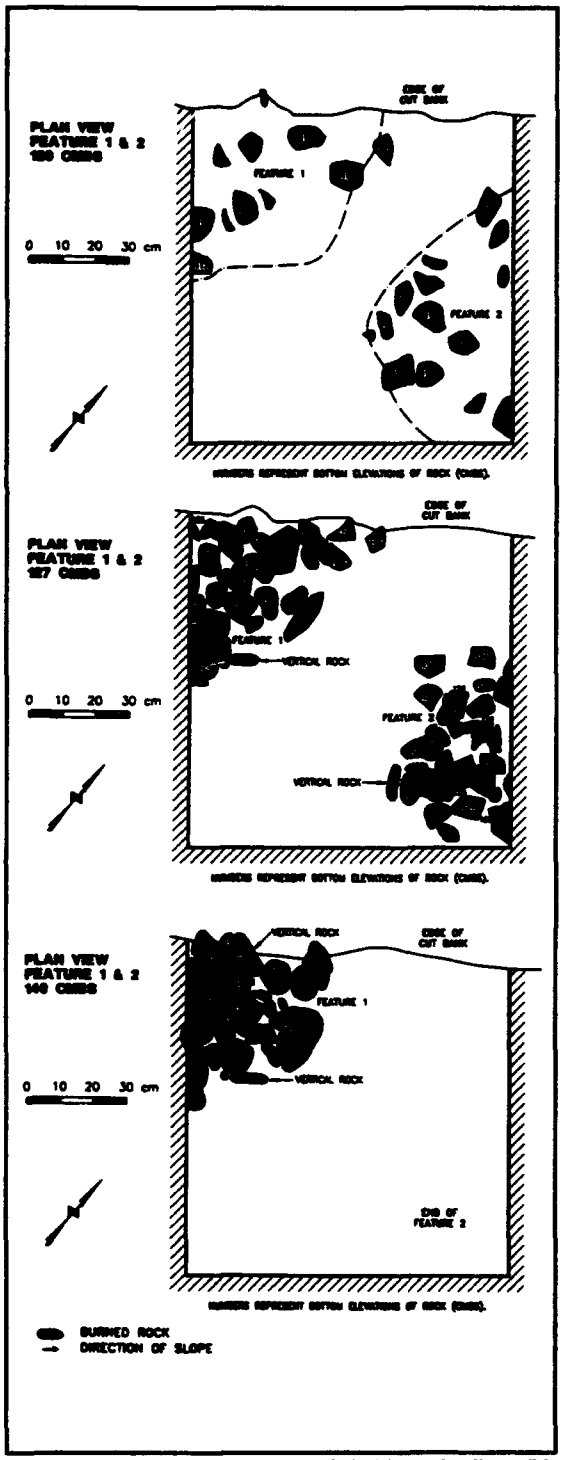


Figure 5.218 Feature 1 and 2 Plans in Test Pit 1, 41CV1471.

noticeably grayer at the base (although still in the 10YR 3/2 range), possibly indicating some organic enrichment. This possible cultural horizon is coincident with the surface that the basin hearth (F 1) was excavated into, and is believed to represent an associated occupation surface.

Below the culturally modified base of the Bk horizon, the deposit abruptly shifted to a gravelly facies of the same fill. This gravel, which was about 45 cm thick, contained a number of small, incorporated burned rocks in secondary context and was the unit that F 1 was excavated into. It rested on a wavy truncated surface cut into the Early-Middle Holocene (probably Fort Hood) alluvial fill. The sediments of this lower Holocene fill were also strongly graded, with an abrupt transition between a dominantly fine-grained (albeit very gravelly) upper Bk horizon and an underlying loamy gravel Ck horizon. The Bk horizon consisted of fine blocky, grayish brown (10YR 5/2) gravelly clay loam containing abundant films and filaments of carbonate and a few faint, reddish redox mottles. The Ck horizon was composed of massive to crudely bedded, clast-supported gravels infilled with a clay loam matrix that contained common carbonate films and filaments. Although a few flecks of probable burned limestone were noted dispersed throughout the fill, no clear cultural material was identified.

The gravel at the base of the Early-Middle Holocene unit was in turn erosionally inset into a Late Pleistocene-age alluvial fill. This unit was noticeably redder than the Holocene deposits (7.5YR 5/5) and consisted of a massive sandy loam Bk horizon containing very large (>1 cm) carbonate nodules and rhizoliths. No cultural material was detected, and none should be expected to occur.

Test pit 2 was offset from the south wall of BT 1, above a few burned rocks exposed in the trench sidewall at about the same depth as F 1. As with TP 1, the upper 35 cm of deposit was a recent flood drape and was removed unscreened. No cultural material was recovered from 35 to 90

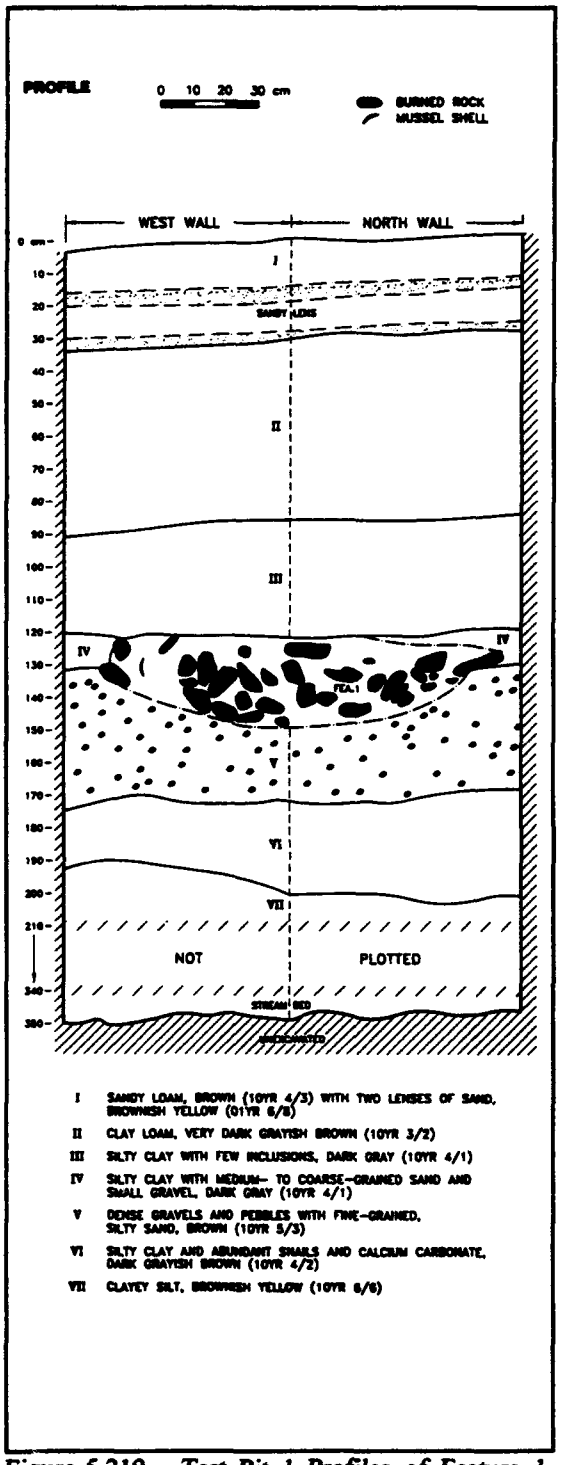


Figure 5.219 Test Pit 1 Profiles of Feature 1, 41CV1471.

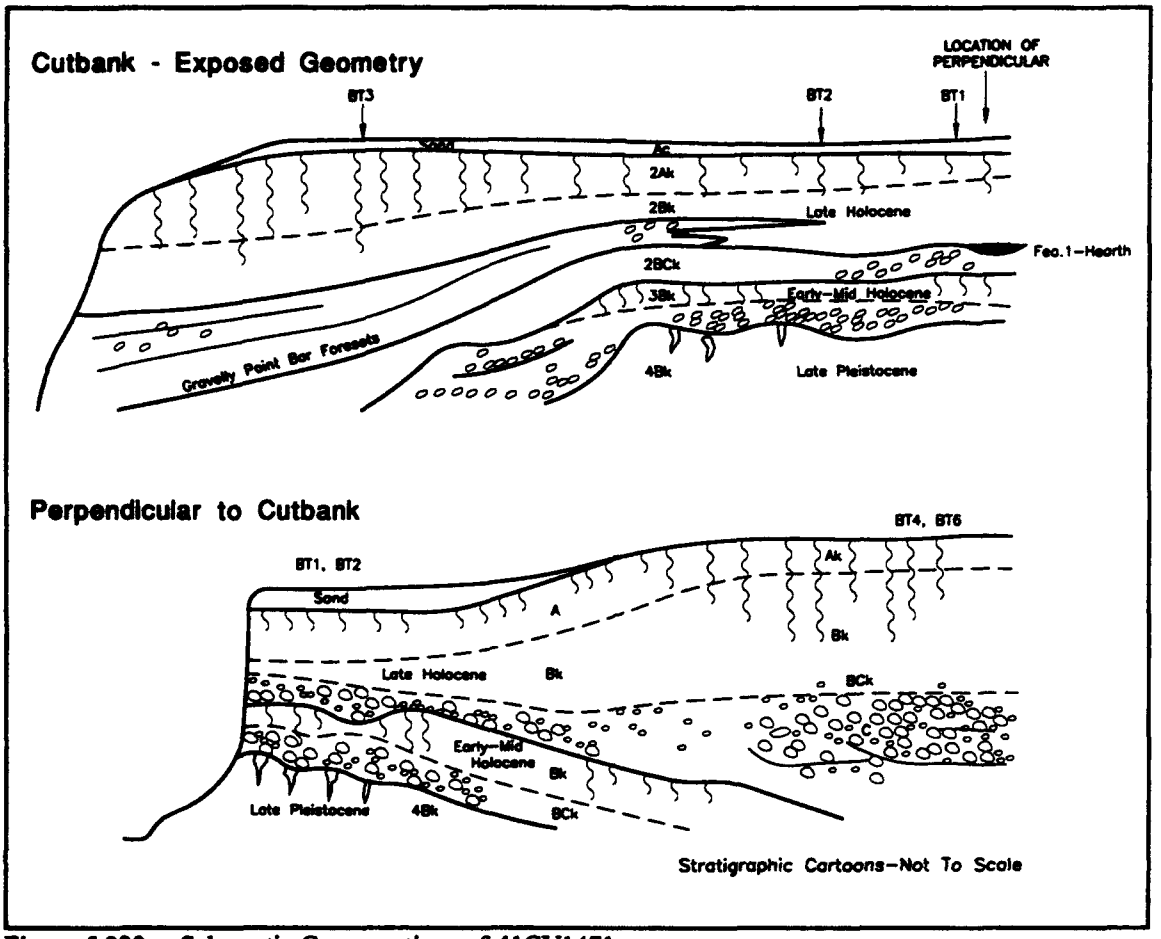


Figure 5.220 Schematic Cross-sections of 41CV1471.

cmbs but a five flakes were found in levels 10 and 11, with an apparent increase in artifact recovery of 11 lithics and 14 scattered burned rocks from 110 to 120 cmbs. This finding was consistent with the results obtained in TP 1 and appears associated with the same occupation containing Fs 1 and 2. Artifact counts decreased in level 13, with no cultural material found in level 14. Five flakes were found in levels 15 and 16, in addition to a dense gravels. Level 17 was culturally sterile but level 18 yielded three flakes and gravels noted from 170 to 190 cmbs. Levels 20 through 23 were culturally sterile and excavation was terminated.

Backhoe trench 2 was excavated about 40 m east (downstream) of BT 1, and was also cut back from the modern cutbank. It exhibited essentially the same sequence as BT 1, but contained no discernible cultural strata.

Backhoe trench 3 was 35 m farther downstream, and revealed only Late Holocene (West Range) point bar deposits under a thin veneer of recent sands. Overall, the trench exhibited an AC-2Ak-2Bk-2BCk profile developed in about 2.4 m of dark grayish brown to dark gray (10YR 4/2 to 10YR 4/1) gravelly sandy clay loam over gravelly point bar foresets. One possible cultural level was observed at a depth of 2 m, where several large,

unburned limestone slabs were observed in association with dispersed charcoal flecking. Test pit 3 was offset from the east wall of BT 3 above the limestone slabs. Levels 1 through 10 contained no cultural material, with a single bone fragment recovered from level 11. No artifacts were found 110 to 160 cmbs, but one flake and one bone fragment were recovered 160 to 170 cmbs. Levels 18 through 20 were culturally sterile, with the top of an unburned slab exposed in level 20. Recovery from level 21 included two small burned rocks, three unburned rocks, and one flake. A 7.5 g sample of wood charcoal from this level was identified as Live Oak and provided a $\delta^{13}C$ (-27.8 ‰) corrected assay of 2080 ± 70 BP (TX-8423). No cultural material was found in level 22 and excavation was halted at 220 cmbs.

Backhoe trench 5 was excavated on the upstream end of the point bar and exhibited a C-2A-2Bk-2C profile, with the soil developed in blocky, very dark gray to dark grayish brown (10YR 3/1 to 10YR 4/2) sandy clay loam overlain by a thin veneer of recent grayish-brown sand, and underlain by clast-supported gravels exhibiting faint redox mottling and no carbonate development. Whereas the body of the fill was relatively gravel-free, several distinct, upstream-dipping gravel stringers were apparent in the profile. This deposit is interpreted as the same late Holocene fill (probably the West Range fill of Nordt 1992) exposed downstream, and the gravel stringers are interpreted as gravels ramped up onto the upstream end of the point bar during periods of high-magnitude flow. No cultural material was detected in the profile.

In addition to the trenches described above, which were all excavated very close to the modern cutbank, BTs 4 and 6 were excavated away from the stream on a slightly higher surface that was initially assumed to represent an older fill. Trench 4 was 30 to 40 m south of BT 2 whereas BT 6 was 25 to 30 m south of F 1. No cultural material was observed in either trench. Surprisingly, the higher surface proved to be underlain exclusively by the Late Holocene fill; the older fills apparent in the cutbank dipped down away from the modern stream, indicating a late Holocene meander cut-off event. The fill exposed in these two trenches was extremely similar, and only BT 4 was recorded. It consisted of graded alluvium that exhibited an A-Bk-BCk-C profile. The A horizon was 45 cm thick and consisted of very dark gray (10YR 3/1), blocky sandy clay loam. Although no carbonate filaments were noted, the sediment was wet and may have obscured their visibility. The A horizon gradually merged into a 60 cm thick, very dark grayish brown (10YR 3/2) blocky Bk that contained common carbonate filaments and then into a 40 cm thick, dark grayish brown (10YR 4/2) massive BCk horizon. Below 145 cm, the fill consisted of massive, clast-supported channel gravels.

5.55.3 Analysis and Interpretations

5.55.3.1 Definition of Analytical Units

Test pits 1, 2, and 3, yielded two burned rock features, and perhaps a third, 82 pieces of lithic debitage, five stone tools, one bone fragment, six mussel shell umbos, and 204 burned rocks. These materials were assigned to one general time period, the Late Archaic, based on two charcoal dates of 2076 and 1360 BP between 100 and 220 cmbs which undoubtedly represent multiple events. Very limited pieces of cultural materials from just above the Late Archaic zone were unclassifiable as to a time period. These latter pieces may represent very limited activity events later in time or turbated materials from the Late Archaic zone.

5.55.3.2 Late Archaic Materials

The multiple Late Archaic events include 70 pieces of lithic debitage, five stone tools, one animal bone, six mussel shell umbos, 197 burned rocks (41.4 kg), sparse charcoal and abundant snail shells. Unfortunately no diagnostic points were recovered.

The 70 specimens of lithic debitage represent four identified (all from North Fort province) and eight

unidentified chert types with 30% of the total assemblage identified (Table H-391). Indeterminate light brown flakes are 40% of the total assemblage and 59% of the indeterminate types. No other chert type comes close to this quantity. Combined indeterminates occur in higher than expected amounts and Fort Hood Yellow occur in expected amounts with all others at less than expected amounts (Table H-392). Exclusion of the indeterminates results in Fort Hood Yellow occurring in higher than expected frequencies, Fort Hood Gray and Gray/Brown/Green occurring in expected quantities, and Owl Creek Black still falling short of expected amounts.

The modal peak for size occurs in the 1.2 to 1.8 cm category with 76% of the debitage smaller than 2.6 cm in size. Cortex data is almost evenly split between those specimens with cortex and those without (Table H-393). However, since the flakes are skewed to the larger end of the spectrum, the proportion of cortex-bearing debitage is not surprising and probably indicates a dominance of core reduction over biface. However, it could also indicate on-site reduction from nodules or large primary flakes.

The five stone tools include four utilized flakes and one graver (Table H-394). These were manufactured from four different colors of indeterminate cherts with one Fort Hood Yellow chert represented.

The single bone, from TP 3 160 to 170 cmbs, was a metapodial fragment of a medium to large mammal, deer size. It was spirally fractured and unburned (Table H-395). The six umbos were unburned and identified as *Cyrtonaias* sp. (n=1) and *Amblema plicata* (n=1) with four unidentifiable. The umbos were predominately (83%) from TP 1, 110 to 140 cmbs and associated with burned rock Fs 1 and 2.

The 197 burned rocks were mostly (88%) from the two features in TP 1. Feature 1 yielded 130 burned rocks that weighed 30 kg whereas F 2 yielded another 44 burned rocks that weighed 8 kg. The large slabs and associated charcoal flecking in TP 3, 190 to 200 cmbs may also indicate another burned rock feature nearby.

Only about 2.15 g of charcoal were recovered. One 0.5 g sample from Feature 1 in TP 1, level 14, of indeterminate wood provided a $\delta^{13}C$ (-26.3‰) corrected assay of 1360 ± 40 BP (Beta-83356). In association with this charcoal was charred wood identified as willow. A float sample from Feature 1 yielded no carbonized plant remains. A 7.5 g sample from TP 3, 210 cmbs, was identified as Live Oak wood and provided a $\delta^{13}C$ (-27.8 ‰) corrected assay of 2080 ± 70 BP (TX-8423). In direct association with the latter charcoal was a carbonized pecan nut (*Carya illinoiensis*). Since this nut is not directly in a feature it is unclear if it was part of the human food resource or an accidental burning. It does indicate that a potential human food resource was available.

This time frame from 2100 to 1300 BP spans nearly the entire Late Archaic period and encompasses Prewitt's (1981; 1985) Uvalde, Twin Sisters, and Driftwood phases of the Central Texas sequence. The deeply buried material with intact features implies good context and could be informative if a larger area was open up. Preservation is questionable with the lack of bone material from most levels. Although the carbonized pecan nut at 210 cmbs is encouraging.

5.55.3.3 Temporally Unspecified Materials

The sparse unclassifiable materials were just above the Late Archaic materials and may represent disturbed items from those latest occupations. The cultural specimens include 12 pieces of lithic debitage and seven burned rocks (1.0 kg). The latter being in the level directly above the levels containing the Late Archaic material.

The 12 specimens of lithic debitage are from six different unidentifiable chert types with only indeterminate light brown and miscellaneous having more than one piece (Table H-396). The

modal peak for size is 1.2 to 1.8 cm; the tertiary flakes represent only 25% of the total assemblage (Table H-397). This small sample size precludes any meaningful statements from being made.

5.55.4 Conclusions

A minimum of four distinct alluvial units, tentatively correlated with the Ford, West Range, Fort Hood, and Jackson alluvial fills (Nordt 1992) were identified on site. The recent Ford Alluvium is represented by a thin veneer of recent sands. Whereas extensively exposed in the cutbank, the older Fort Hood and Jackson fills dip down abruptly away from the modern stream, suggesting that the channel has cut off and cannibalized the majority of the point bar. The most extensive deposit appears to be a graded Late Holocene fill representing the West Range fill of Nordt (1992). This deposit contains the only cultural materials with any apparent integrity, including Fs 1 and 2 at 120 cmbs (TP 1) as well as the slabs at about 200 to 210 cmbs (in TP 3).

The horizontal extent of the occupation extends at least 80 m along Turnover Creek (between F 1 and TP 3). While no additional features were discovered during trenching, it is considered probable that additional deeply buried hearths or other features exist at the depth of the cultural occupation. Because cultural material was recovered from TP 3, site boundaries should be expanded to include that test pit. New site dimensions should be about 15 m x 75 m, with an axis paralleling Turnover Creek, and cover an area of about 0.1 hectare (0.3 acres).

The cultural materials span nearly the entire Late Archaic period from 2100 to 1300 BP and encompass the Uvalde, Twin Sisters, and Driftwood phases of Prewitt's (1981; 1985) Central Texas sequence. These occupations contain at least two features of one event and possibly a third feature of an earlier event, in association with sparse cultural material. Good stratified, well buried Late Archaic events are not well represented in the archeological literature of Central Texas and therefore this intact deposit could make a significant contribution.

On the basis of the above, site 41CV1471 is evaluated as containing intact archeological deposits with significant potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Accordingly, the site is judged eligible for inclusion to the NRHP and should be preserved and protected from adverse impacts. Although the eligible components are fairly deeply buried, they are exposed in a high vertical cutbank, and as a consequence are actively threatened with adverse impacts from erosion and bank slump. Protection efforts should include measures to minimize the impact of traffic on the alluvial surface, and to prevent mechanical or manual excavations by military personnel.

5.56 SITE 41CV1472

From October through November 1994 we conducted formal test excavations at prehistoric archeological site 41CV1472. Testing was designed to evaluate eligibility for inclusion to the NRHP. Three trenches were dug by backhoe and three test pits totaling 3.6 m^3 were manually excavated. The test excavations demonstrate that significant intact cultural deposits are not present. As a result, the site is evaluated as ineligible for inclusion to the NRHP and no further management is recommended.

5.56.1 Introduction

5.56.1.1 Site Location and Description

Site 41CV1472 is in Fort Hood Training Area 54. This vandalized site is situated on a terrace (T_2) of the Leon River. The site area is heavily vegetated (Figure 5.221), however, a road cut generally parallels the western site boundary (Figure 5.222). Maximum site dimensions, as defined in 1990, measured 104 m east-west and 95 m north-south, and cover an area of about 1.0 hectare (2.4 acres). For purposes of analysis, the site is considered a member of the Shoal/Turnover site group.



Figure 5.221 View Southwest Across 41CV1472.

5.56.1.2 Previous Work

On 25 January 1990, Sandefor, Cargill, Kleinbach, and Sanchez recorded the site as a prehistoric camps that had been impacted an estimated 40% by vandalism and erosion (Carlson et al. 1994). Debitage, burned rocks, mussel shell, a graver, scrapers, and a one-sided metate (collected) were exposed in and around potholes. Some of the burned rocks were large (10 x 10 cm) tabular pieces, possibly from disturbed hearths. One shovel test was excavated near the western edge of a heavily vandalized area. A total of six flakes and two burned rocks were recovered from 0 to 45 cmbs. Testing was recommended to determine nature and extent of the site and NRHP eligibility (Carlson et al. 1994:71).

5.56.1.3 New Work

Formal testing was completed in November 1994. Three backhoe trenches were excavated to examine site stratigraphy and prospect for buried cultural material and three isolated test pits were excavated to recover representative artifacts and samples. Unit sizes and depths are presented in Table 5.106.

5.56.2 Results

Trenches 1 and 2 were dug in the vicinity of potholes in the northeastern corner and on the beveled margin of the high Leon River terrace. These revealed very similar profiles developed in sandy slopewash shed off the terrace surface. Trench 1 as oriented north-south between two potholes. Trench 2 was oriented east-west and perpendicular to a large pothole about 5 m south of BT 1. Only BT 1 was recorded and it revealed an O-A-Bw-Ck-2Bk profile about 170 cm thick. The O horizon was about 2 cm thick and consisted of partially decomposed deciduous leaf litter. The A horizon was about 35 cm thick and consisted of massive, very dark brown (10YR 2/2) loamy fine sand. It graded into a 35 cm thick Bw horizon composed of massive, brown (10YR 4/3) loamy fine sand that contained a light smattering of burned rock and lithic debitage, as well as evidence of fairly intensive rodent bioturbation.

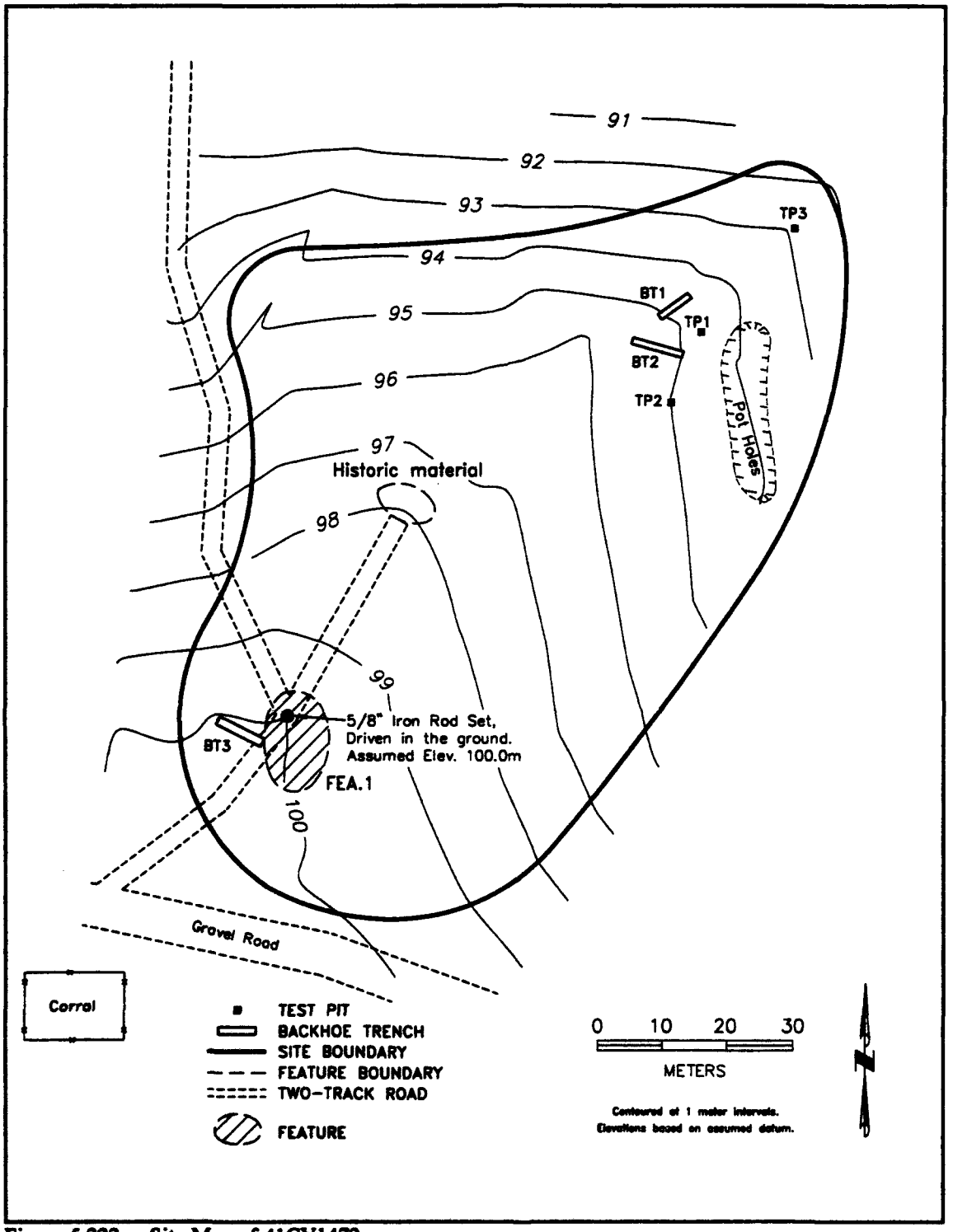


Figure 5.222 Site Map of 41CV1472.

The Ck horizon extended to 145 cmbs, and consisted of massive, brownish yellow (10YR 6/5) loamy fine sand cut with abundant brown to black mottles representing krotovina fills of a bewildering range of shapes and sizes and large, haphazardly-arranged carbonate nodules that appear to have been introduced as clasts eroded from upslope. This horizon contained a few fine carbonate filaments, probably indicating initial dissolution and reprecipitation of reworked carbonate nodules. At 145 cm, an abrupt unconformity marked the truncated Pleistocene terrace, which was composed of weak blocky, very pale brown (10YR 8/3) sandy loam containing abundant primary carbonate films and filaments.

Trench 3 was excavated upslope at the southwestern site margin and into a heavily deflated burned rock concentration (F 1). The feature was exposed in and along a road cut and measured 10 x 8 m, with lithic debitage noted in association. The trench revealed that the sparse feature remains rest directly on a highly rubified Pleistocene Bt horizon that is buried by less than 10 cm of relatively recent slopewash. Because of the lack of remaining context, no test pits were manually excavated in this feature.

Test pit 1 was a free-standing unit excavated equidistant between BTs 1 and 2. Abundant lithic debitage (n=577, bone fragments (burned and unburned; n=64), mussel shells (n=51), burned rock 145 (mostly less than 3 cm in diameter; 20.5 kg), stone tools (n=6), a core, and projectile points (n=5) were recovered from surface to 130 cmbs (Table 5.107). Levels 2 through 5 contained the highest artifact frequencies, with a untyped medial section of a dart point from 10 to 20 cmbs, a complete Bulverde from 20 to 30 cmbs, two edge modified flakes, a chopper (Type A), a chert core, a side scraper, a finished and early stage biface. However, at 19 cmbs and extending to 24 cmbs, a cluster of unspent M-16 blanks were found in a 25 x 25 cm area, centrally located along the east wall of TP 1. These recent military artifacts appeared to have been thrown into a small hole, possible animal burrow, which was subsequently filled.

Table 5.106 List of Treatment Units.

Treatment Unit	Length (m)	Width (m)	Depth (m)	Landscape Context
BT 1	5	0.8	1.6	T2 terrace
BT 2	6	0.8	1.5	T2 terrace
BT 3	5	0.8	0.4	T2 terrace
TP 1	1.00	1.00	1.40	T2 terrace
TP 2	1.00	1.00	1.50	T2 terrace
TP 3	1.00	1.00	0.70	T2 terrace

Whereas no other recent military artifacts were found elsewhere in the unit, this disturbance was considered isolated. In general, from 50 to 130 cmbs, prehistoric artifact counts tended to decrease with depth, with three dart points; including a proximal Ellis point, an untyped blade and stem, and a proximal Edgewood recovered from levels 6 and 8 respectively. A rodent burrow noted at 80 cmbs extended to 120 cmbs. No cultural material was found 130 to 140 cmbs and excavation was terminated.

Test pit 2, excavated to 150 cmbs, was 15 m southeast of TP 1. Again, cultural material was plentiful and occurred from the surface to 150 cmbs. Lithic debitage (n=331) dominated with burned rock (n=146; 22.1 kg), mussel shell (n=41), bone fragments (n=14), stone tools (n=12), and a core were all present. The highest artifact counts were again from 10 to 50 cmbs and below that artifact frequency generally decreased with depth. Scattered charcoal flecks were recovered from 40 to 70 cmbs with tiny samples (totaling 6.7 g) collected from levels 5 through 7. From 40 to 80 cmbs the deposit, particularly along the eastern third of the unit, was disturbed by large root intrusion.

Test pit 3 was near the base of the terrace at the northeastern site margin. A low density of cultural material was from surface to 40 cmbs and included 16 pieces of debitage, two mussel shells, 20 burned rocks (2.7 kg), and a fragmentary late stage biface.

Table 5.107 Artifact Recovery by Test Pit, 41CV1472.

			Burned Rock		Collected Artifacts								
TP	Level	Feature	number	weight (kg)	Bivalve	Bone	Ground Stone	Lithic Core	Lithic Debitage	Lithic Point	Lithic Tool	radiocarbon date; projectile point	AU
1	1	-	0	0.0	1	0	0	0	13	0	0	-	unspec.
	2	-	8	0.9	2	11	0	0	172	1	3	?dart	unspec.
	3	-	38	3.5	5	14	0	1	135	1	2	Bulverde	unspec.
	4	-	23	4.5	8	8	0	0	86	0	1	-	unspec.
	5	-	29	3.0	9	9	0	0	77	0	0	-	unspec.
	6	-	11	1.5	5	0	0	0	29	2	0	Ellis, ?dart	unspec.
	7	-	3	0.9	4	6	0	0	19	0	0	-	unspec.
	8	-	10	1.5	2	3	0	0	16	1	0	Edgewood	unspec.
	9	-	8	2.5	7	1	0	0	9	0	0	-	unspec.
	10	-	7	1.5	6	8	0	0	8	0	0	-	unspec.
	11	-	4	0.7	2	1	0	0	5	0	0	-	unspec.
	12	-	3	0.2	0	3	0	0	6	0	0	-	unspec.
	13	-	1	0.2	0	0	0	0	2	0	0	-	unspec.
	14	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		145	20.9	51	64	0	1	577	5	6		
2	1	-	0	0.0	0	0	0	0	5	0	0	-	unspec.
	2	-	6	0.9	1	0	0	0	55	0	4	-	unspec.
	3	-	21	2.0	1	0	0	0	37	0	1	-	unspec.
	4	-	33	3.0	4	2	0	1	31	0	3	-	unspec.
	5	-	23	5.0	3	0	0	0	36	0	1	-	unspec.
	6	-	11	2.2	2	0	0	0	36	0	1	-	unspec.
	7	-	12	2.2	4	8	0	0	50	0	0	-	unspec.
	8	-	14	2.2	4	0	0	0	25	0	0	-	unspec.
	9	-	10	1.0	8	2	0	0	13	0	0	-	unspec.
	10	-	1	0.9	2	1	0	0	18	0	0	-	unspec.
	11	-	7	0.5	2	1	0	0	13	0	1	-	unspec.
	12	-	1	0.4	2	0	0	0	5	0	1	-	unspec.
	13	-	4	0.9	3	0	0	0	2	0	0	-	unspec.
	14	-	3	0.9	5	0	0	0	4	0	0	-	unspec.
	15	-	0	0.0	0	0	0	0	1	0	0	-	unspec.
	Total		146	22.1	41	14	0	1	331	0	12		
3	1	-	3	0.2	0	0	0	0	3	0	0	-	unspec.
	2	-	7	0.5	2	0	0	0	10	0	0	-	unspec.
	3	-	10	2.0	0	0	0	0	1	0	1	-	unspec.
	4	-	0	0.0	0	0	0	0	2	0	0	-	unspec.
	5-7	-	0	0.0	0	0	0	0	0	0	0	-	unspec.
	Total		20	2.7	2	0	0	0	16	0	1		

No artifacts were from 50 to 70 cmbs, at which point excavation was terminated.

5.56.3 Analysis and Interpretations

Because of overall gross similarity in context, the apparent mixing of chronological markers, and the lack of absolute chronometric assays, all excavation proveniences are grouped together as a single temporally unclassified analytical unit. The backhoe trenches did not yield any cultural material. The three test pits yielded 924 pieces of lithic debitage, 311 burned rocks (45.7 kg), 94 mussel shells hinges, 78 bone fragments, nine tools, two cores, two projectile points, and two recent historic glass fragments. Collected samples include; three radiocarbon (6.7 g) from TP 2, 25 snail, six microdebitage (2.2 g) from TP 2, and nine flotation (light fractions = 23.2 g). The cultural material was prominent from 20 to 50 cmbs but materials continued to roughly 130 cmbs. With the presence of apparently different aged projectiles in the upper part of these units, it is unclear which and/or how many events are represented.

The 924 debitage specimens represent six identified and nine unidentified chert types with 57% of the materials identifiable (Table H-398). The dominate identified chert type is Fort Hood Yellow (69%), while light brown (38%) is the prevailing indeterminate chert type. The overwhelming presence of North Fort chert materials (94%, four types) is expected given the site's location in the Shoal/Turnover site group which lies in the heart of the North Fort chert province. The combined indeterminates and Fort Hood Yellow occur in higher than expected frequencies, whereas every others occur in less than expected frequencies (Table H-399). The exclusion of the indeterminates results in all of the North Fort materials occurring in more than expected frequencies, Heiner Lake Blue occurring in expected frequencies and Heiner Lake Tan occurring in less than expected frequencies. It would seem that not only is the proximity of the North Fort chert province having an influence on the chert types recovered, but that additional human factors are resulting in even high use than anticipated.

The entire spectrum of sizes are present with a peak in the 1.2 to 1.8 cm size category with a slight drop off to either side. Over three-quarters of the debitage is classified as tertiary (Table H-400) and coupled with the size data indicates all ranges of tool manufacture were produced including staged biface reduction. The presence of primary debitage is probably a function of a larger and more representative sample.

Five projectile points consisting of one complete Bulverde, proximal fragments of an Edgewood and an Ellis, a medial fragment of an untyped dart point as well as a blade and stem fragment of an untyped dart point (Table H-401) were recovered. Nineteen other tools consisting of mostly edge modified and utilized specimens also came from this site (Table H-402). The material types observed in the 19 stone tools are dominated by Heiner Lake Tan (n=6) from the Southeast chert province followed by Fort Hood Yellow (n=4) from the North Fort chert province. Many (n=6) unidentifiable cherts are also represented. The unidentifiable chert types and Fort Hood Yellow frequencies are similar to the recovered lithic debitage frequencies. The two cores were of Fort Hood Yellow and Heiner Lake Tan. These material types indicate the North Fort and Southeast Range chert provinces were the main source of raw material.

The faunal material includes small to large mammals (n=74; 24 burned) and turtles (n=4; all burned) (Table H-403). Of the mammals only *Leporidae* sp. (n=1) and *Canis* sp. (n=1) were identified with most pieces broken beyond precise identification.

The 94 mussel shells were identified and represent at least nine taxon but Unionace dominates (n=60; 64%) in all three units with low numbers of all other species. None of the shells are burned or reveal other cultural modifications.

5.56.4 Conclusions

The site is developed in sandy colluvium/slopewash shed off a high terrace of the Leon River. The horizontally and vertically dispersed character of the moderate artifact content reveals much of this material is probably colluvially reworked, possibly originating from the burned rock accumulation upslope. This feature is heavily deflated and has no remaining integrity. Although significant numbers of artifacts were recovered from two of the three test pits, the excavations do not suggest a intact midden deposit and this cultural material is not considered to be in primary context. Furthermore, extensive areas of the site surface have been vandalized as evidenced in numerous potholes and accompanying backdirt piles. As a result, it is unlikely that significant data sets could be recovered from this site. On the basis of the above information, we conclude that site 41CV1472 contains no significant archeological materials in stratified context. As a result, the site has very low archeological potential to address issues outlined in the research design for Fort Hood (Ellis et al. 1994). Given the apparently limited archeological potential, we judge this site to be not eligible for inclusion to the NRHP and recommend no further management.

6.0 SUMMARY CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

W. Nicholas Trierweiler

In this chapter we broadly summarize the results of the 1994-1995 testing program. First we summarize our overall level of field effort on each of the 56 sites in terms of numbers of test pits and backhoe trenches, and total excavated volume. The numbers and varieties of artifacts and samples are briefly reviewed, as well as their ubiquity and density. The results of laboratory assays are summarized. These data are first presented on an intra-site level. Next, these data are viewed through a inter-site temporal perspective, discussing the volume sampled, and artifact and feature diversity by Analytic Unit. Finally, these results are synthesized for each site into summary evaluations of research potential. Based on research potential, we assess the eligibility of each site for inclusion to the NRHP and develop management recommendations.

Our primary objective in this program has been to evaluate each of the 56 prehistoric sites with regards to eligibility for inclusion to the NRHP under criterion "d." As has been discussed above in Chapter 4.0, we consciously did *not* try to collect data with which to actually *test* any of the hypotheses proposed in the research design. Under Section 106 and its implementing regulations, that would be the purpose of a *data recovery* effort, not a *testing* effort. Rather, our efforts have been explicitly aimed at demonstrating the *presence or absence* of key data sets, as defined by the research design, together with integrity of deposits. It is on these bases which we have made our evaluations of research potential and NR eligibility.

Each of the 56 sites had been previously shovel tested and had been found to *potentially* have intact cultural deposits of *unknown significance* (Trierweiler 1994). However, because the shovel tests had been limited in size (30-40 cm diameter), depth (40-80 cm), and frequency (one per 900 square meters), they could not clearly define cultural features, could not clearly assess the integrity of some deposits, and could not investigate the possibility of deeply buried deposits. For these reasons, the shovel testing tactics could not fully assess NRHP eligibility for these sites, necessitating further testing. A secondary goal of our testing was to obtain sufficient information about the sites to allow preliminary planning for data recovery (should such become necessary). Accordingly, on each site we attempted to discover *what* kinds of deposits and cultural remains are present, *where* these are located (both vertically and horizontally), to *when* the deposits date, and *how* the deposits may have been transformed.

6.1 LEVEL OF EFFORT

We used two major field tactics during the current work to collect the information necessary with which to assess site eligibility and to plan data recovery. As has been discussed in some detail in Chapter 4.0, we used backhoe trenches to prospect quickly for deeply buried deposits and also to assess the depth and horizontal extent of cultural deposits. We then used controlled manual excavations to recover a quantified sample of representative artifacts and specimens and to obtain detailed information about cultural features noted in profile in the trenches.

The 56 prehistoric sites were tested using 158 manually excavated test pits and 187 backhoe trenches. Every site received one or more test pits. Nineteen sites received test pits only (Table 6.1), and the remaining 37 sites received both test pits and trenches. On average, 2.8 test pits were excavated per site, with a maximum of seven test pits each on sites 41BL844 and 41CV240. The manual excavations on all sites totaled 185.1 cubic meters and ranged from a minimum of 0.2 cubic meters on 41CV901 to a maximum of 11.35 cubic meters on site 41CV317. The 158 test pits individually ranged from a minimum of 10 cm

Table 6.1 Level of Effort, by Site.

Site	Number of TPs	Max. TP depth (cmbs)	Average TP depth (cmbs)	Measured TP volume (m^3)	Number of BTs	Max. BT depth (cmbs)	Average BT depth (cmbs)	Estimated BT volume (m^3)
41BL431	2	80	70	1.40	none	-	-	0
41BL504	1	68	-	0.68	none	-	-	0
41BL531	2	76	53	1.06	none	-	-	0
41BL560	5	91	71	3.60	none	-	-	0
41BL773	5	96	43	2.60	none	-	-	0
41BL844	7	126	75	4.97	none	-	-	0
41BL850	2	140	125	2.50	4	170	100	18
41CV44	3	120	77	2.30	2	220	210	63
41CV45	2	140	120	2.40	11	250	150	67
41CV46	4	130	61	4.40	6	400	230	126
41CV47	2	108	89	1.78	none	-	-	0
41CV48	3	200	140	4.20	7	320	240	237
41CV71	1	30	-	0.30	none	-	-	0
41CV88	2	190	175	3.50	4	310	220	84
41CV90	4	230	193	7.70	10	340	220	213
41CV98	2	170	145	2.90	2	290	290	0
41CV99	2	190	160	3.20	none	-	-	0
41CV115	2	102	66	1.30	none	-	-	0
41CV117	4	90	83	3.30	16	370	240	360
41CV125	2	60	35	0.70	none	-	-	0
41CV184	2	310	270	5.40	1	350	350	150
41CV201	2	100	100	2.00	6	170	100	24
41CV240	7	110	79	5.50	5	220	160	102
41CV271	1	200	-	2.00	2	170	210	35
41CV317	6	230	170	11.35	6	330	260	130
41CV332	3	110	100	3.00	2	300	240	30
41CV378	4	180	110	5.40	16	340	220	241
41CV379	4	100	88	3.50	2	280	260	37
41CV380	1	53	-	0.53	1	130	130	8
41CV389	2	270	245	4.90	5	340	310	210
41CV397	4	200	158	6.30	4	310	190	37
41CV403	3	147	122	3.70	8	250	140	107
41CV478	4	110	68	2.70	none	-	-	0
41CV481	4	360	175	6.40	3	400	260	128
41CV484	2	140	125	2.50	5	350	200	69
41CV493	2	70	50	1.00	1	120	120	11
41CV495	5	170	116	5.80	7	240	160	96
41CV582	2	350	325	6.50	3	320	320	134
41CV849	2	130	125	2.50	2	170	160	13
41CV900	4	200	138	5.50	9	300	210	184
41CV901	1	17	-	0.20	none	-	-	0
41CV905	5	228	129	6.55	none	-	-	0
41CV913	2	150	125	2.50	2	230	215	26
41CV918	2	230	225	4.50	2	310	300	51
41CV927	1	200	-	2.00	3	205	200	89
41CV935	2	25	18	0.35	none	-	-	0
41CV936	2	50	45	0.90	none	-	-	0
41CV1033	4	190	530	5.40	6	280	220	82
41CV1080	1	90	-	0.90	none	-	-	0
41CV1129	5	200	150	7.50	8	400	240	168
41CV1165	2	85	63	1.25	none	-	-	0
41CV1166	1	40	-	0.40	none	-	-	0
41CV1378	1	78	-	0.78	3	150	140	25
41CV1403	2	50	40	0.80	4	150	90	28
41CV1471	3	227	203	6.10	6	260	230	80
41CV1472	3	150	120	3.60	3	155	120	13
Total	198	-	-	185.85	187	-	-	3,476
average	2.8	-	117	3.30	5.1	-	205	94

deep in two shallow rockshelters (41CV125 TP 1, 41CV935 TP 1) to a maximum of 360 cm below the modern surface (41CV481 TP 1). Average depth was 117 cm with 15 units (9%) shallower than 50 cm and 23 units (15%) 200 cm or deeper. In general, the shallower units encountered bedrock or human remains; either case effectively terminated excavation.

The 37 trenched sites received a mean of 5.1 trenches per site with a maximum of 16 trenches on sites 41CV117 and 41CV378. Three sites (41CV184, 41CV380, and 41CV493) received a single trench. While the shallowest trench was only 40 cm deep (41CV1472 BT 3), the deepest three trenches were excavated to 400 cm below modern surface (41CV46 BT 1, 41CV481 BT 2, and 41CV1129 BT 1). Average depth of all 187 trenches was 205 cm. The single largest trench (41CV48 BT 5) was 35 m in length, and 161 cubic meters in volume,[1] while the smallest (41CV137 BT 7) was only 4 m long and 1.5 cubic meters in volume. Mean trench dimensions were 9.4 m long and 18.8 cubic meters. Total trenched volume ranged from a minimum of 8 cubic meters on site 42CV380 (one trench) to a maximum of 360 cubic meters on site 41CV117 (16 trenches), with an average of 94 cubic meters per trenched site. Total volume of all trenches is roughly estimated at 3,476 cubic meters, about 20 times the volume of the manual excavations.

6.2 SUMMARY OF RECOVERED ARTIFACTS AND SAMPLES

Testing fieldwork recovered more than 81,000 artifacts, samples and burned rocks from the 56 sites, including 54,829 prehistoric and 99 historic artifacts from the 1/4-inch mesh screens, 2,361 samples, and 827 fine-screened artifacts recovered from the flotation heavy fractions, and 23,523 burned rocks[2] (Table 6.2). As described in detail above (see Chapter 4.0), the heavy fraction flotation samples were sieved prior to analysis; artifacts larger than 1/4-inch were included in the full artifact analysis while the "microdebitage" was tabulated and not further analyzed. The 827 items recovered from the flotation heavy fraction included 329 lithic microdebitage, 291 macrobotanical specimens, and 207 bone microdebitage. Most of the 2,361 samples were landsnails (n=1,540) which had been hand picked from the 1/4-inch field screens and from the 1/8-inch screen flotation heavy fractions, but an additional 334 charcoal samples and 447 flotation samples were collected, largely from feature contexts. In addition, 40 other types of samples were collected, including burned earth, tufa, and ocher.

Net artifact recovery from the 1/4-inch screens ranged from a single artifact on two different sites (41CV493 and 41CV913) to a maximum of more than 12,000 artifacts on site 41CV48. Of the 55 sites with recovered artifacts,[3] average recovery was 998 artifacts per site, although this distribution is skewed sharply towards the sparse sites, with a median of only 228 artifacts per site. Only 15 sites (27%) produced collections larger than the mean, and 11 sites (20%) had 30 or fewer artifacts apiece. Overall, the most frequent artifact class was lithic debitage, comprising 87% of the total assemblage. This was followed distantly by bone debitage (10%), bivalve umbos (2%), and lithic tools (2%). The remaining artifact classes together comprised less than 1% of the total. In general, frequency of burned rock is strongly correlated with frequency of lithics.

[1] To compensate for the generally sub-rectangular profiles of most trenches, we roughly estimate trench volume as (L x W x D) - (D^2W/2).

[2] Burned rocks were counted and weighed in the field but were not collected.

[3] Although numerous artifacts were present in the single test pit dug on 41CV901, none were collected because an intact human burial was encountered (see Chapter 4.0 for methods of treating human remains and possible associations).

Table 6.2 Frequency of Artifacts and Samples, by Site.

Site	Burned Rock [1]	Lithic Debitage	Lithic Core	Lithic Tool	Lithic Point	Ochre/Hematite stone	Bone Tool	Bone Debitage	Ceramic	Bivalve Shell Undiff.	Modified Shell	Prehistoric Subtotal	Historic [2]	Charcoal	Landsnails [3]	Other [4]	Flotation	Sample Subtotal	Microbot Sample	Lithic microdebitage	Bone microdebitage	Flot Screen Subtotal	Total
	Artifacts (1/4" screen)													Samples									
	Prehistoric																		Heavy Flotation [5]				
41BL431	183	289	2	16	1	-	-	1	-	17	-	326	-	1	7	-	3	11	-	3	1	4	524
41BL504	16	474	2	10	5	-	-	11	-	3	-	505	-	3	10	-	7	20	2	6	1	9	550
41BL531	9	88	-	2	-	-	-	105	-	1	-	196	1	5	24	-	8	37	36	3	8	47	280
41BL560	2	268	1	7	-	-	-	55	-	1	-	332	1	11	49	-	29	89	11	24	9	44	468
41BL773	48	462	-	6	6	-	-	49	-	-	-	523	-	12	29	-	13	54	40	6	3	49	671
41BL844	179	4,845	3	52	20	-	-	709	-	15	-	5,644	-	27	82	-	35	144	6	28	19	53	6,020
41BL850	-	19	-	6	-	-	-	-	-	-	-	25	-	-	1	1	-	2	-	-	-	-	27
41CV44	382	2,053	2	31	10	-	-	230	-	4	-	2,330	-	1	30	-	12	43	-	10	7	17	2,742
41CV45	19	175	-	-	-	-	-	-	-	-	-	175	-	-	21	-	-	21	-	-	-	-	215
41CV46	486	2,359	5	47	17	-	-	106	-	6	-	2,540	2	9	51	-	9	69	8	11	7	26	3,133
41CV47	581	1,159	2	10	6	-	-	94	-	7	-	1,278	-	7	38	-	13	58	-	11	5	16	1,933
41CV48	1,137	11,608	4	304	30	-	-	199	9	4	1	12,159	13	20	53	1	20	94	1	18	14	33	13,436
41CV71	-	3	-	1	-	-	-	50	-	-	-	54	2	-	-	-	-	-	-	-	-	-	56
41CV88	771	547	-	9	3	-	-	191	-	126	-	876	-	14	75	-	12	101	73	9	9	91	1,839
41CV90	79	68	-	2	1	-	-	2	-	38	-	111	-	7	56	-	-	63	3	-	-	3	256
41CV98	481	24	-	2	-	-	-	14	-	42	-	82	-	10	18	3	5	36	1	3	1	5	554
41CV99	3,222	684	-	17	6	-	-	700	-	169	-	1,576	-	5	33	-	13	51	8	9	12	29	4,778
41CV115	388	3,495	2	21	7	1	1	490	-	18	-	4,035	7	19	33	1	12	65	7	15	12	34	4,441
41CV117	2,190	657	1	17	5	-	-	47	-	6	-	733	1	7	50	-	16	73	1	16	10	27	3,024
41CV125	44	481	-	9	1	-	-	87	-	3	-	581	-	7	7	1	6	21	-	5	4	9	686
41CV184	1,416	703	2	13	7	-	-	47	-	57	-	829	-	11	48	2	13	74	-	10	5	15	2,334
41CV201	-	3	-	-	-	-	-	-	-	-	-	3	-	1	17	-	-	18	-	-	-	-	21
41CV240	1	73	-	3	1	-	-	1	-	-	-	78	-	-	6	-	-	6	-	-	-	-	85
41CV271	2	39	-	1	-	-	-	-	-	-	-	40	-	1	1	1	-	3	-	-	-	-	45
41CV317	418	1,904	5	37	12	-	-	536	-	193	-	2,687	68	44	114	-	15	173	6	14	14	34	3,380
41CV332	-	57	-	1	1	-	-	-	-	-	-	59	-	2	13	-	-	15	-	-	-	-	74
41CV378	57	106	-	5	-	-	-	-	-	1	-	112	-	2	35	-	5	42	-	3	1	4	215
41CV379	280	1,250	-	52	3	-	-	-	-	3	-	1,308	-	2	14	1	5	22	3	6	-	9	1,688
41CV380	481	1,838	-	11	6	-	-	12	-	2	-	1,849	-	1	10	-	5	16	11	4	2	17	2,333
41CV389	1,137	1,557	1	28	9	-	1	267	-	95	-	1,958	-	21	57	1	15	94	21	12	13	46	3,236
41CV397	-	36	-	-	-	-	-	74	-	-	-	110	-	1	27	-	-	28	-	-	-	-	138
41CV403	1,880	4,299	4	39	16	-	-	301	-	2	-	4,661	1	6	39	-	19	64	4	16	13	33	6,889
41CV478	138	39	-	4	-	-	-	16	-	-	-	59	-	-	11	-	4	15	-	-	-	-	212
41CV481	1,804	784	-	24	7	-	-	123	-	2	-	940	-	6	46	-	20	72	-	12	6	18	2,834
41CV484	1	1	-	2	-	-	-	-	-	-	-	3	-	-	8	-	-	8	-	-	-	-	12
41CV488	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	2
41CV495	47	101	-	4	1	-	-	-	-	-	-	106	-	2	19	1	2	24	-	-	-	-	197
41CV502	9	24	-	1	-	-	-	-	-	5	-	39	-	-	53	-	-	53	-	-	-	-	92
41CV849	4	4	-	-	-	-	-	-	-	-	-	4	-	-	5	-	-	5	-	-	-	-	13
41CV900	3	49	-	2	-	-	-	-	-	-	-	51	-	-	-	-	-	-	-	-	-	-	54
41CV901	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
41CV905	44	702	2	15	3	1	-	11	-	2	-	796	-	5	66	24	57	152	35	37	13	85	1,077
41CV913	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	2
41CV918	23	33	-	-	-	-	-	15	-	-	-	48	-	3	12	-	8	23	1	-	1	2	96
41CV927	1	4	-	-	-	-	-	-	-	-	-	4	-	-	5	-	-	5	-	-	-	-	10
41CV935	20	1,304	-	15	8	-	-	203	-	2	2	1,534	-	4	7	-	2	13	2	2	2	6	1,573
41CV936	40	374	-	9	4	-	-	-	-	5	-	392	-	1	7	-	1	9	-	1	-	1	471
41CV1083	221	19	-	1	1	-	-	-	-	-	-	21	-	5	29	-	5	39	-	1	-	1	282
41CV1080	10	718	-	7	8	-	-	325	-	2	-	1,060	-	11	19	1	9	40	2	9	7	18	1,126
41CV1129	340	208	-	9	1	-	-	55	-	15	-	288	-	16	79	1	12	108	-	2	3	5	741
41CV1165	10	20	-	-	-	-	-	-	-	-	-	30	-	10	8	-	6	24	1	4	1	6	80
41CV1166	34	340	-	2	3	-	-	1	-	2	-	348	-	1	12	-	4	17	7	2	1	10	409
41CV1378	3,164	14	-	1	1	-	-	-	-	-	-	16	-	-	12	-	6	18	-	4	-	4	3,202
41CV1469	1,488	90	-	4	1	-	-	-	-	1	-	96	1	-	23	1	7	31	-	3	-	3	1,624
41CV1471	284	82	-	5	-	-	-	1	-	6	-	94	-	10	44	-	5	59	1	4	1	6	363
41CV1472	311	934	2	19	5	-	-	78	-	94	-	1,122	2	3	25	-	9	37	-	6	2	8	1,488
Total	23,020	47,519	40	983	216	2	2	5,206	9	949	3	54,829	99	334	1,540	40	447	2,361	291	329	207	827	81,639

[1] Burned rock was counted but not collected

[2] Historic material was not consistently collected

[3] Some of these snails were recovered from flotation heavy fraction

[4] Includes ochre, burned earth, soil chemistry, pollen

[5] Flotation heavy fractions were dried, sieved, sorted, and tabulated.

Frequencies of burned rock also varied widely by site, ranging from more than 3,000 burned rocks on two sites (41CV99 and 41CV1378) to seven sites with no burned rock at all. Of the 49 sites with burned rock, average frequency was 461 rocks per site, but, as was the case for the 1/4-inch artifacts, this distribution is strongly skewed towards the sparse sites. Only 12 sites (21%) have more rocks than the population mean, while 15 sites (27%) have less than 25 rocks each. In general, the frequency of burned rock is positively correlated with that of lithics, although a few sites are characterized by high frequencies of burned rock and few lithics (41CV1378 and 41CV1403), or the reverse (41BL844, 41CV48, and 41CV935). This relationship is explored further in our discussion of burned rock features in Section 8.3, below.

6.2.1 Assays

We submitted 77 of our 334 charcoal samples for radiocarbon assay. Of these, 65 had sufficient carbon remaining after pre-treatment to yield radiocarbon dates. These were supplemented with eight radiocarbon assays on landsnails and one assay on bone. The bone, snails, and 39 of the 65 charcoal dates were AMS assayed, while the remaining 26 charcoal dates were assayed radiometrically. These assays produced 74 dates on 35 sites, ranging from six dates on one site (41CV481) to single dates on each of 15 sites. Calibrated calendar dates ranged from 5321 B.C. (41CV184) to A.D.1645 (41CV389), plus one modern date (41BL531).

With the exception of the Paleoindian Period, all temporal periods are represented. Nine dates are placed in the Early Archaic, 13 in the Middle Archaic, 29 in the Late Archaic, 20 in the Late Prehistoric, and two dates are placed in the Historic Period. Nonetheless, two broad clusters of dates are apparent (Figure 6.1). Most dates are clustered in the Late Prehistoric and latter portion of the Late Archaic, or in the early portion of the Middle Archaic and latter portion of the Early Archaic; by contrast, dates are sparse in the late Middle Archaic and early Late Archaic. The 2,000 year duration between A.D. 1600 and 400 B.C. is represented by 46 dates (2.3 dates/century), while the similar duration between 400 and 2400 B.C. is represented by only 7 dates (0.4 dates/century). This gap is also in contrast to the 1,600 year period between 2400 and 4000 B.C., represented by 17 dates (1.1 dates/century). While we recognize that the samples for dating were not drawn randomly and therefore the dates do not fairly represent an overall target population (e.g., intensity or frequency of occupations), the pattern remains when controlling for excavated volume.[4] Whereas the Late Prehistoric and Late Archaic AUs are represented by nearly identical values of 2.02 and 1.99 dates per cubic meter respectively, this value falls to 1.05 dates per cubic meter for the Middle Archaic and then rises again to 2.43 dates per cubic meter for the Early Archaic. Primary radiocarbon data are presented in Appendix F and chronological interpretations are developed in Chapter 8.0.

Of the 1,540 snail samples, 149 individual snails from 12 sites were submitted for amino acid epimerization assay. These included three suites of column samples from sites 41CV115 (n=30), 41CV184 (n=28), and 41CV481 (n=36), plus supplementary samples ranging from one to 13 snails each from nine other sites. A/I ratios ranged from 0.021 to 0.947 (both on 41CV115). Results are discussed and interpreted in Chapter 7.0.

Of all collected macrobotanical samples, we selected 60 from 25 sites for plant taxon identification. Most of the identified samples were taken from light fraction flotation residues from feature contexts, with a few supplemented by carbonized seeds and wood from the heavy flotation residue. Eleven of the 25 sites were represented with a single sample each; only three

[4] A total of 43.2 cubic meters was classified to a temporal Analytic Unit (see discussion in Section 6.4.1).

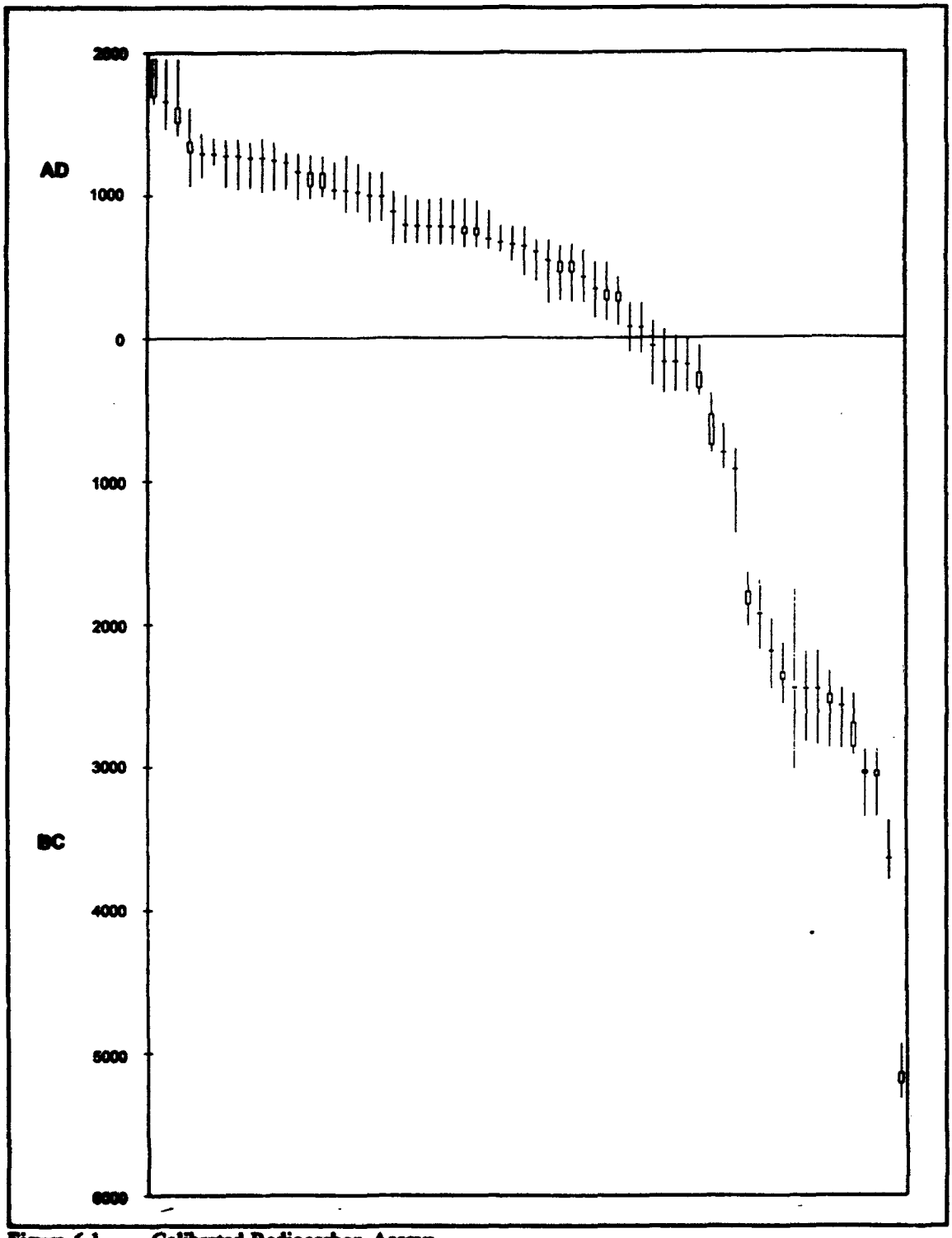


Figure 6.1 Calibrated Radiocarbon Assays.

sites had five or more samples, with nine samples selected from 41CV481. In addition, we submitted 77 charcoal samples from 33 sites for wood identification prior to their radiocarbon assay.[5] Within these samples, 11 plant families and an indeterminate classification are represented (Table 6.3), including ten types of wood, six types of inflorescence, and a bulb. Not surprisingly, seeds were the plant part most frequently represented, although two pecan nuts and a lily bulb were also identified. The seeds were overwhelmingly Hackberry (n=217), followed by Juniper (n=18), a legume (n=2), and Oak (n=2) single specimen of Goosefoot. Most of the Hackberry seeds from flotation samples are not carbonized and may not be cultural; in fact, 53% are from the upper 30 cm of deposit, suggesting recent mixing. Of the woods, Oak is by far most common (n=38), followed by Juniper (n=6), Elm (n=5), Willow (n=3), Hackberry (n=3), "leguminous wood" (n=2), and single specimens each of Maple, Pecan, Rose, and Walnut.

The low rate of return from the macrobotanical samples is problematic. Although we purposely selected flotation samples only from features for macrobotanical identification, our samples yielded disappointingly few carbonized seeds and other edible plant parts. Because of the care we took in processing the flotation samples (Chapter 4.0), we believe this low return is not methodological. Rather, it may be due to poor preservation of organic material in general. This is supported by the fact that even wood charcoal was sparse in most features - of the 65 radiocarbon dates we obtained on charcoal, we were forced to submit 39 (60%) as the more expensive AMS assays because of their extremely small sample sizes. Interpretations of these data are presented in Chapter 8.0.

Net artifact recovery from the 1/4-inch screens ranged from a single artifact on two different sites (41CV493 and 41CV913) to a maximum of more than 12,000 artifacts on site 41CV48. Of the 55 sites with artifacts, average recovery was 997 artifacts per site. While 15 sites (27%) produced sizable collections of more than 1,000 artifacts each, fully 13 sites (23%) had fewer than 50 artifacts apiece. Excluding burned rock, the most frequent artifact class was lithic debitage, comprising 87% of the total assemblage. This was followed distantly by bone debitage (10%), bivalve umbos (2%), and lithic tools (2%). The remaining artifact classes together comprised less than 1% of the total.

6.2.2 Lithic Artifacts

The lithic assemblage includes nearly 49,000 specimens. Each of these was classified to material type. Under our conservative approach to classification (Chapter 4.0), most of the assemblage (65%) was classified into nine indeterminate types of chert. However, 17,171 specimens were reliably classified into 27 named varieties of Edwards chert. By far, most of these (84%) were one of four named varieties - Gray-Brown-Green (31.1%), Fort Hood Yellow (25.8%), Owl Creek Black (16.0%), and Heiner Lake Tan (11.6%). Distantly following these are Fort Hood Gray (3.2%), Heiner Lake Translucent Brown (2.8%), Heiner Lake Blue (2.4%), Cowhouse Mottled (1.2%), Cowhouse Mottled/Flecked (1.0%), and Cowhouse Dark Gray (1.0%). The remaining 17 named varieties are truly minor, together constituting only 3.0% of the entire identified assemblage (Figure 6.2). Nine of these minor varieties are represented by fewer than ten specimens each. Also present in the complete assemblage are 13 lithics manufactured of

[5] Of the 77 charcoal samples we submitted for wood identification and subsequent radiocarbon dating, 12 samples had insufficient carbon after pretreating. These samples were not dated, resulting in 65 radiocarbon assays on wood charcoal.

limestone, quartz, and quartzite. No obsidian or other non-local lithic materials were recognized.

Not unexpectedly, an overwhelming majority (97.7%) of all lithics are debitage, followed distantly by tools (1.8%), projectile points (0.4%), and cores (0.1%). Of the 37 sites with an adequate sample of recovered lithics (n=50), the proportion of lithic debitage to the total lithic assemblage varied from 100% on 41CV45 (n=175) to a low of 93.8% on 41BL431 (n=308). Characteristics of the debitage assemblage are further explored in Chapter 7.0.

The 883 lithic tools were recovered from 46 sites, with a median of nine tools per site. Recovery ranged from a high of 304 tools on site 41CV48 to six sites with a single tool each and 10 sites with no tools. Twenty different tool types are represented in the assemblage. More than half of all tools were utilized flakes (50.4%), followed distantly by late stage bifaces (12.7%), edge modified flakes (11.5%), finished bifaces (7.7%), middle stage bifaces (4.4%), gravers (2.6%), spokeshaves (2.6%), early stage bifaces (2.5%), and side scrapers (2.4%). The remaining 11 tool types together comprise less than 9% of the assemblage, and include chopper types A and B, crushing/abrading tools, drills, hammerstones, end scrapers, complex scrapers, Clear Fork tools type B, a denticulate, an awl, and an "other tool."

Of special interest are the 216 projectile points we recovered from 34 sites. While 22 of the sites did ot yield a single point, the 34 sites with points averaged 6.4 points each, and six sites had ten or more points with site 41CV48 yielding fully 30 points (Table 6.4). The middens along Owl Creek proved to be exceptionally rich in projectile points, with four of these five sites yielding a total of 63 points (on average, 16 points/site and 5.0 points per cubic meter). While these four sites represent only 12% of the sites with points, together they yielded nearly 30% of all points; the other 30 sites with points yielded only 153 points in total (on average, 5 points/site and 1.4 points per cubic meter). Though not previously quantified so

Table 6.3 Frequency of Macrobotanical Specimens, by Taxon and Structure.

	Plant Part					
Taxon	Bulb	Nut	Seed	Wood	Indeterminate	Total
Elm	-	-	-	5	-	5
Goosefoot	-	-	1	-	-	1
Hackberry	-	-	217	3	-	220
Juniper	-	-	18	6	-	24
Legume	-	-	2	2	-	4
Lily	1	-	-	-	-	1
Maple	-	-	-	1	-	1
Oak	-	-	2	38	-	40
Pecan	-	2	-	1	-	3
Rose	-	-	-	1	-	1
Walnut	-	-	-	1	-	1
Willow	-	-	-	3	-	3
Indeterminate	-	-	26	28	268	322
Total	1	2	266	89	268	626

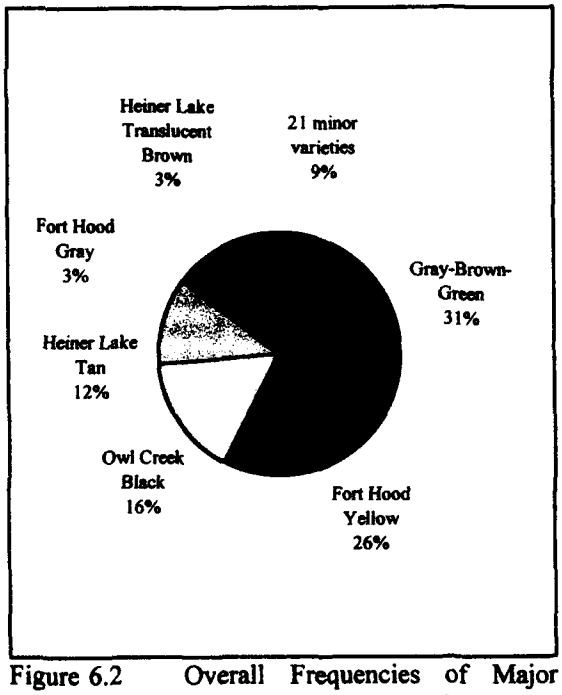


Figure 6.2 Overall Frequencies of Major Varieties of Edwards Chert.

Table 6.4 Frequency of Projectile Points, by Site and Type.

Site	Almagre	Andice	Bastrop	Bonham	Bulverde	Castroville	Clifton	Darl	Edgewood	Ellis	Ensor	Fairland	Fresno	Frio	Gower	Kent	Lange	Langtry	Marcos	Marshall	Martindale	Morrill	Nolan	Palmillas	Pedernales	Perdiz	Scallorn	Starr	Travis	Uvalde	Wells	Young	Other Arrow	Other Dart	Indeterminate	Total
BL0431																									1											1
BL0504													1														3							1		5
BL0773				1				2																		1	1						3			6
BL0844				1					2						1												8						8			20
CV0044										2	3						1			2					1											10
CV0046						1					1								1		2					1						1		2	3		17
CV0047							1																				1						1			6
CV0048	1	2					1										1						1		14		2		1				2	4		30
CV0088				1					1																								1			3
CV0090																																				1
CV0099					1						1																						4			6
CV0115																											1						2			7
CV0117					1										2										1											5
CV0125								3																									3			7
CV0184																	1				1															1
CV0240																																	2			4
CV0317						1							1																							12
CV0332																																				1
CV0379					1									1																						3
CV0380								1									1										1									6
CV0389						2		1		1																							2			9
CV0403						5			1																3		1						4			16
CV0481																							1										2			7
CV0495																			1																	1
CV0905					1			1																									1			3
CV0935																											3						2			8
CV0956				1																							1						1			4
CV1033												1																								1
CV1080								3					2														4						2			8
CV1129																																				1
CV1166									1																								2			3
CV1378																											1									1
CV1403																							1													1
CV1472						1			1	1																							2			5
Total	1	2	1	7	1	9	2	8	3	4	5	1	4	1	1	2	4	1	2	4	1	6	2	2	21	2	27	1	1	1	1	1	35	43	3	216

Projectile Point Type

precisely, this high "economic rate of return" along Owl Creek is apparently well known by local collectors and vandals who have done considerable damage to these sites in search of "valuable" artifacts.

The projectile points include 34 named types (n=135), plus "other arrow" (n=35), "other dart" (n=43) and "indeterminate" (n=3). The most common named types are Scallorn (n=27) and Pedernales (n=21), followed distantly by Castroville (n=9), Darl (n=8), Bonham (n=7), Montell (n=6), Bulverde and Ensor (n=5), and Ellis, Fresno, Lange, and Marshall (n=4). Twenty-two other types are represented by three or fewer specimens each. Of special note is the low number of Perdiz specimens (n=2). Projectile points are discussed further in Chapter 7.0.

Lithic cores are surprisingly uncommon (n=40) for such an extensive testing effort, until one notes that no testing was done in any of the large and ubiquitous quarry ("Lithic Resource Procurement") areas so characteristic of the Edwards outcrops across the post. One obvious conclusion is that the lithic resources were so cheaply available (i.e., local) that nearly all primary reduction occurred at the nearby quarries rather than at the campsites and rockshelters which we tested. Supporting this idea is the observation that 81% of all lithics had no cortex at all, and only 0.2% of lithics were flakes with full cortex on their dorsal surface (i.e., "core flakes").

Groundstone is exceedingly rare (n=2), although not inconsistent with our earlier testing phase (Abbott and Trierweiler 1994:669). Several interpretations are possible for this phenomenon. It is possible that plant foods requiring grinding (e.g., seeds) were not an important part of the diet. Seeds are fairly rare in our macrobotanical samples and their rarity may not simply be due to poor preservation. This interpretation is supported by the inferred importance of bulbs/tubers in the diet as is reflected in presumed baking function of the ubiquitous burned rock mounds. Alternatively, if seeds were being collected, they may have been processed using wooden implements. There is no locally available volcanic or metamorphic rock to fashion into metates. Because the local limestone is relatively soft, it would tend to contaminate any flour with abrasive dust, and wooden grinding surfaces may have served the function better. Even if quartzite cobbles (available in the Cowhouse Creek bedload) were used as manos/pestles, wooden metate would leave little or no grinding wear on the mano/pestle for it to be archeologically interpreted as such.

6.2.3 Non-Lithic Artifacts

Ceramics are rare. We recovered only nine sherds from a single site (41CV48) - all undecorated body sherds. The vessel form of eight sherds was indeterminate, but the ninth was from a jar or olla. Because the sherds were recovered from successive levels of the same test pit, it is likely they are all from the same vessel.

The overall faunal collection is composed of 5,414 specimens (Table 6.5). While 19 sites had no bone at all (at least, none was preserved), the 37 sites with bone averaged 146 specimens per site; 11 sites had 200 or more specimens and large collections of more than 700 specimens each were recovered from two sites (41BL844 and 41CV99). However, three sites had a single bone each, and seven sites had ten or fewer specimens. We discovered that high frequencies of bone are closely related to the presence of burned rock middens - as opposed to mounds. This relationship is explored further in Chapter 7.0.

Because of the fragmentary nature of most bone specimens, the overwhelming majority could not be identified to taxon. Only 593 specimens (11%) were identified to genus and/or species, with another 275 specimens (5%) identified to family. The remaining specimens could be identified only to order or class, (70%) or were completely unidentifiable (14%). Where we could determine class/order but not species/genus, we further subdivided the taxon by size (e.g., small, medium, or large mammal) based in bone size and

Table 6.5 Frequency of Vertebrate Faunal Specimens, by Site and Taxonomic Grouping.

	Identified to genus or species																	Identified to family						Identified to order or class									
Site	armadillo	beaver	black bear	Bison/Bos	bobcat	cotton rat	cottontail	deer/pronghorn	jackrabbit	opossum	pocket gopher	porcupine	raccoon	skunk	softshell turtle	whitetail deer	wooden	Cricetidae	Cricetidae	Emydidae	Leporidae	Muridae	Suidae	amphibian	bird	carnivore	fish	mammal	rodent	snake	turtle	ungulate	vertebrate	Total
BL0431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	2
BL0504	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	4	12
BL0531	1	-	-	-	-	-	7	-	-	2	-	-	-	3	-	1	-	-	-	-	1	-	1	1	-	1	1	61	-	4	-	-	26	110
BL0540	1	-	-	1	1	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	1	1	2	-	3	-	-	37	-	1	-	-	15	66
BL0773	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	44	-	-	-	1	3	53
BL0844	-	-	1	2	-	-	7	3	1	2	-	2	3	-	-	35	1	-	-	-	2	-	-	-	1	-	1	487	8	2	-	34	130	722
CV0844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	6	-	-	209	-	1	-	6	12	243
CV0846	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	84	-	-	-	17	9	113
CV0847	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	77	-	-	-	5	13	99
CV0848	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	1	-	171	-	-	-	14	18	213
CV0871	-	-	-	-	-	-	9	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	23	2	5	-	-	5	50
CV0888	-	3	-	-	-	-	3	-	-	-	1	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	2	144	-	1	9	13	15	200
CV0890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	2
CV0898	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	5	15
CV0899	-	-	-	-	-	-	58	3	184	-	-	1	-	1	-	10	-	-	-	1	227	-	-	-	-	-	-	183	-	-	4	2	38	712
CV0115	-	-	-	-	-	-	2	3	1	-	-	-	-	-	-	4	-	-	-	-	3	1	-	-	-	-	1	331	-	-	3	16	130	495
CV0117	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	41	-	-	-	2	13	65
CV0125	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	1	-	2	-	-	-	-	1	-	74	-	-	-	3	5	91
CV0184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	42	-	-	-	1	5	52
CV0240	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
CV0317	-	-	-	108	-	-	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	1	-	262	-	1	19	22	121	548
CV0378	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	1	3
CV0380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	2	14
CV0389	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	5	-	-	1	-	1	-	-	-	-	-	-	216	2	-	2	19	32	279
CV0397	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	69	-	-	-	5	-	76
CV0403	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	256	-	-	2	13	37	314
CV0478	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	16
CV0481	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	107	-	-	4	3	13	129
CV0905	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	14	24
CV0918	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	2	3	16
CV0935	-	-	-	-	-	-	-	-	1	4	1	-	-	-	-	4	-	1	12	-	2	-	-	-	-	1	-	145	3	-	-	6	21	201
CV1080	7	-	-	1	-	1	6	-	-	10	-	2	-	1	-	-	1	-	-	1	10	-	-	-	4	1	-	232	7	3	3	5	39	334
CV1129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	47	-	-	1	3	7	59
CV1165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
CV1166	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	2
CV1471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CV1472	-	-	-	-	-	-	-	1	-	-	-	1	-	-	3	-	-	-	-	-	1	-	-	-	1	-	54	-	-	1	2	16	80
Total	11	3	1	116	1	1	97	14	189	18	2	7	3	5	3	120	2	1	14	3	252	2	3	1	28	8	6	3463	22	18	48	196	786	5414

robusticity. Of the most precisely identified specimens, 17 different genus/species are represented, dominated by blacktailed jackrabbit (n=189), whitetail deer (n=120), bison/bos (n=116), and cottontail (n=97). Other species of possible economic interest include black bear (n=1), beaver (n=3), pronghorn (n=7), raccoon (n=3), softshell turtle (n=3), and opossum (n=18). Also present are skunk (n=5), dog/coyote (n=14), bobcat (n=1), pocket gopher (n=2), armadillo (n=11), wood rat (n=2), and cotton rat (n=1), although these last four may indicate intrusive burrowing. Among the specimens identified to family only, Leoporids dominate (n=252) but are supplemented by Cricetine rodents (n=14), Suids (n=3), Mustelids (n=2), Emydid (box) turtles (n=3), and Colubrid snakes (n=1). Also present are 28 bird, six fish, 18 snake, 48 turtle, one amphibian, and 3,689 mammalian specimens. Rounding out the collection are 756 indeterminate and/or unidentifiable fragmentary specimens classed as vertebrate.

The 949 bivalve specimens - all umbos - are distributed among 34 sites, for an average of 28 umbos per site. However, this distribution is strongly skewed towards the sparse sites. Only five sites have sizable assemblages: 41CV88 (n=126), 41CV99 (n=169), 41CV317 (n=193), 41CV389 (n=95), and 41CV1472 (n=94). In sharp contrast, 22 sites have fewer than ten umbos, and four sites have a single bivalve umbo each (Table 6.6). The assemblage is nearly equally divided among three taxa, generalized freshwater mussel (Unionacea; n=317), Three-ridge (Ambleminae; n=300), and Fatmucket/Sandshell (Lampsilinae; n=239). The remaining specimens include Pistolgrip (*Tritigonia verrucosa;* n=27), Pearlyshell (*Cyrtonaias* sp.; n=9), Washboard (*Megalonaias nervosa;* n=6), and Bleufer (*Potamilus purpuratus;* n=5), with eight indeterminate specimens.

6.3 ARTIFACT UBIQUITY

For each site, we used artifact ubiquity, measured as the proportion of non-sterile levels to all excavated levels, as an indication of the "patchiness" of deposits. Excluding burned rock, of the 1,847 excavated levels on all 56 sites, 980 levels yielded some artifacts or samples for an overall ubiquity measure of 53%. However, ubiquity varied widely between sites with no clear central tendency. Eight sites (41CV47, 41CV71, 41CV115, 41CV380, 41CV901, 41CV935, 41CV1166, and 41CV1403) produced artifacts from every excavated level (100% ubiquity) while five sites (41CV397, 41CV484, 41CV493, 41CV913, and 41CV927) each had 15% or less ubiquity (Table 6.7).

Similarly, we used artifact density, measured as the average number of artifacts per cubic meter, as a measure of the "richness" of deposits. Controlling for excavated volume and again excluding burned rock, overall gross artifact density was 297 specimens per cubic meter ranging from a maximum density of 5,117 artifacts per cubic meter on site 41CV935 (0.3 m^3) to minimum of less than one artifact per cubic meter on site 41CV913 (2.5 m^3). *Net* artifact density, or the frequency of artifacts per *positive* level, was 555 items per cubic meter, again ranging from a maximum of 5,117 artifacts per cubic meter on site 41CV935 (all levels were positive) to minimum of 10 artifact per cubic meter on sites 41CV201 (2.0 m^3), 41CV493 (1.0 m^3), 41CV849 (2.5 m^3), and 41CV913 (2.5 m^3). The relationship between artifact ubiquity and net artifact density is plotted logarithmically in Figure 6.3, and while roughly linear, demonstrates that the two are not completely dependent. Sparse sites are generally very patchy and rich sites are generally ubiquitous. But, several sites are rich and patchy, and others are sparse and ubiquitous. Of course, this effect is to some degree an artifact of our field methods. On sites with sparse deposits, we tended to keep digging until we either encountered a "red flag" data set or reached the recommended level of effort for the site. Alternatively, on sites where the first several test pits were "rich," we were usually able to demonstrate NRHP eligibility early, and thus did not excavate further in any sparse deposits which may have been present. In Figure 6.3, NHRP eligible sites are plotted as solid

Table 6.6 Frequency of Freshwater Mussel Specimens, by Site and Taxonomic Grouping.

	Family Common Name[1]										
Site	Three-ridge	Pearlyshell	Fatmucket/Sandshell	Washboard	Bleufer	Mapleleaf/Pimpleback	Lilliput	Pistolgrip	general freshwater	indeterminate	Total
41BL431	7	-	1	-	-	2	-	2	4	1	17
41BL504	-	-	-	-	-	-	2	-	1	-	3
41BL531	-	-	-	-	-	-	-	-	1	-	1
41BL560	-	-	-	-	-	-	-	-	1	-	1
41BL844	-	2	2	-	-	-	-	-	11	-	15
41CV44	1	-	-	-	-	-	-	-	3	-	4
41CV46	1	-	-	-	-	1	-	1	-	3	6
41CV47	4	-	-	-	-	-	-	1	2	-	7
41CV48	1	-	1	-	-	-	-	-	2	-	4
41CV88	68	1	26	-	-	1	-	3	27	-	126
41CV90	11	1	-	-	-	1	-	-	25	-	38
41CV98	-	1	39	-	-	-	-	-	2	-	42
41CV99	107	1	12	2	1	5	3	2	36	-	169
41CV115	5	-	5	-	-	-	-	1	7	-	18
41CV117	3	-	-	-	-	-	-	-	3	-	6
41CV125	-	-	-	-	-	-	1	-	2	-	3
41CV184	16	2	1	-	-	6	-	3	29	-	57
41CV317	14	-	133	-	-	-	-	4	41	1	193
41CV378	-	-	-	-	-	-	-	-	1	-	1
41CV379	1	-	-	-	2	-	-	-	-	-	3
41CV380	-	-	-	-	-	-	-	-	2	-	2
41CV389	39	-	9	-	-	2	-	1	44	-	95
41CV403	-	-	-	1	-	-	-		1	-	2
41CV481	1	-	-	-	-	-	-	1	-	-	2
41CV582	2	-	-	-	-	-	-	-	2	1	5
41CV905	-	-	1	-	-	-	-	1	-	-	2
41CV935	-	-	1	-	-	-	-	-	1	-	2
41CV936	-	-	-	-	-	-	4	-	1	-	5
41CV1080	2	-	-	-	-	-	-	-	-	-	2
41CV1129	6	-	4	-	1	-	1	1	2	-	15
41CV1166	-	-	-	-	-	-	-	1	1	-	2
41CV1403	-	-	-	-	-	-	-	-	1	-	1
41CV1471	1	1	-	-	-	-	-	-	4	-	6
41CV1472	10	-	4	3	1	8	1	5	60	2	94
Total	**308**	**9**	**239**	**6**	**5**	**26**	**12**	**27**	**317**	**8**	**949**

[1] As identified in Abbott and Trierweiler (1995:68)

Table 6.7 Ubiquity and Density of Artifacts (1/4-inch and larger), by Site.

Site	Test Pits	Total Levels	Positive Levels [1]	Net Ubiquity [2]	Total Artifacts [3]	Volume Dug (m^3)	Gross Density [4]	Net Density [5]
41BL431	2	14	9	64%	326	1.4	233	362
41BL504	1	7	5	71%	505	0.7	721	1,010
41BL531	2	11	8	73%	196	1.1	178	245
41BL560	5	36	30	83%	334	3.6	93	111
41BL773	5	30	21	70%	523	3.0	174	249
41BL844	7	54	40	74%	5,651	5.4	1,046	1,413
41BL850	2	25	8	32%	25	2.5	10	31
41CV1053	4	54	9	17%	21	5.4	4	23
41CV1080	1	9	8	89%	1,062	0.9	1,180	1,328
41CV1129	5	75	36	48%	288	7.5	38	80
41CV115	2	13	13	100%	4,035	1.3	3,104	3,104
41CV1165	2	12	5	42%	20	1.2	17	40
41CV1166	1	3	3	100%	348	0.3	1,160	1,160
41CV117	4	33	28	85%	736	3.3	223	263
41CV125	2	7	6	86%	583	0.7	833	972
41CV1378	1	8	6	75%	16	0.8	20	27
41CV1403	2	8	8	100%	96	0.8	120	120
41CV1471	3	58	17	29%	94	5.8	16	55
41CV1472	3	36	32	89%	1,122	3.6	312	351
41CV184	2	53	37	70%	833	5.3	157	225
41CV201	2	20	3	15%	3	2.0	2	10
41CV240	7	55	31	56%	78	5.5	14	25
41CV271	1	20	9	45%	40	2.0	20	44
41CV317	6	102	54	53%	2,687	10.2	263	498
41CV332	3	30	10	33%	59	3.0	20	59
41CV378	4	54	28	52%	112	5.4	21	40
41CV379	4	35	31	89%	1,308	3.5	374	422
41CV380	1	5	5	100%	1,869	0.5	3,738	3,738
41CV389	2	49	41	84%	1,958	4.9	400	478
41CV397	4	63	7	11%	110	6.3	17	157
41CV403	3	37	27	73%	4,663	3.7	1,260	1,727
41CV44	3	23	18	78%	2,330	2.3	1,013	1,294
41CV45	2	24	23	96%	175	2.4	73	76
41CV46	4	43	27	63%	2,540	4.3	591	941
41CV47	2	17	17	100%	1,279	1.7	752	752
41CV478	4	27	4	15%	59	2.7	22	148
41CV48	3	42	38	90%	12,175	4.2	2,899	3,204
41CV481	4	70	66	94%	943	7.0	135	143
41CV484	2	25	2	8%	3	2.5	1	15
41CV493	2	10	1	10%	1	1.0	1	10
41CV495	5	58	14	24%	106	5.8	18	76
41CV582	2	65	15	23%	30	6.5	5	20
41CV71	1	3	3	100%	54	0.3	180	180
41CV849	2	25	4	16%	4	2.5	2	10
41CV88	2	35	34	97%	876	3.5	250	258
41CV90	4	77	32	42%	111	7.7	14	35
41CV900	4	55	14	25%	51	5.5	9	36
41CV901 [6]	1	2	2	100%	n/a	0.2	n/a	n/a
41CV905	5	67	37	55%	796	6.7	119	215
41CV913	2	25	1	4%	1	2.5	0	10
41CV918	2	45	10	22%	48	4.5	11	48
41CV927	1	20	3	15%	4	2.0	2	13
41CV935	2	3	3	100%	1,535	0.3	5,117	5,117
41CV936	2	9	7	78%	392	0.9	436	560
41CV98	2	29	12	41%	82	2.9	28	68
41CV99	2	32	26	81%	1,578	3.2	493	607
Overall	**196**	**1,889**	**979**	**59%**	**54,548**	**183.3**	**298**	**557**

[1] having artifacts from 1/4 inch screens
[2] positive levels ÷ total levels
[3] from 1/4 inch screens, excluding historic
[4] total artifacts ÷ total volume dug
[5] total artifacts ÷ volume of positive levels
[6] artifacts present, not collected (human burial)

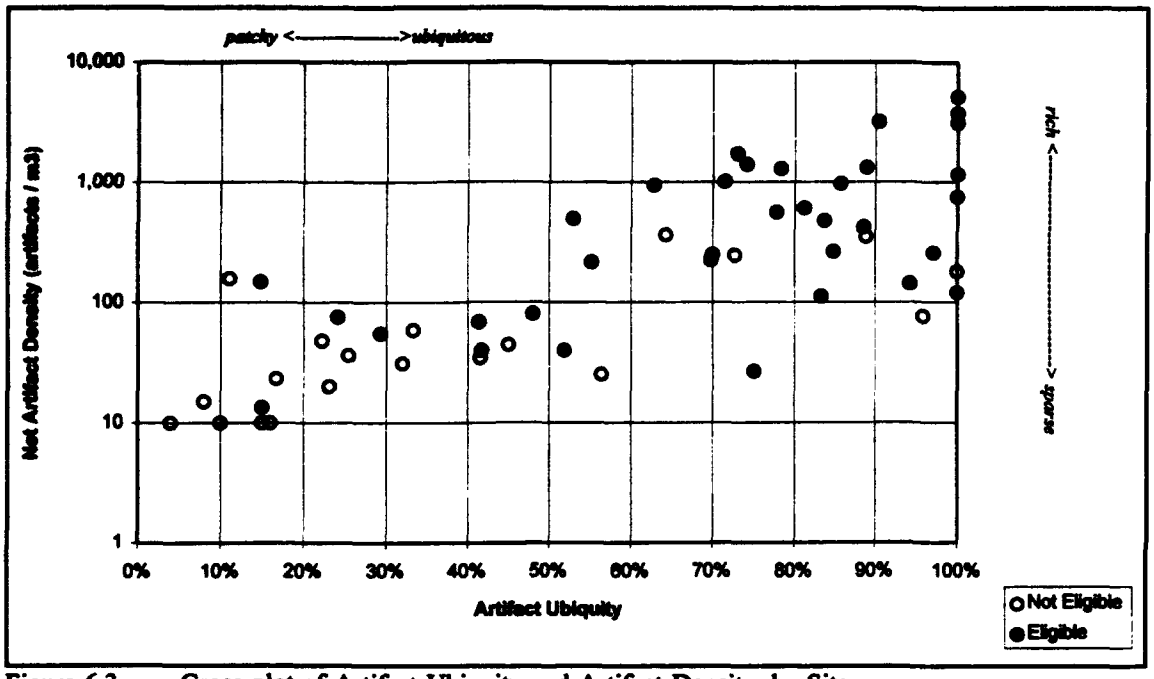


Figure 6.3 Cross-plot of Artifact Ubiquity and Artifact Density, by Site.

symbols and NRHP ineligible sites are plotted as open symbols. While the ineligible sites are *generally* lower in ubiquity and density than eligible sites, this is not always the case.

6.4 DISTURBANCES

For each 10 cm level, we recorded the presence of disturbances caused by roots, rodents, erosion, and vandalism. Of the 56 sites, only site 41CV71 had no levels (n=3) recorded as having any type of disturbance. On every other site, multiple levels were recorded as being disturbed, ranging up to 100% of all levels on 10 sites. Fully 71% of all levels were recorded as having some form of disturbance, but this was almost always (66.6%) by roots. Observed root disturbance was strongly correlated with depth. Although it was noted to 300 cmbs, half of such disturbance was in the upper 50 cm. Rodents were minor agents (2.7%) of disturbance, as was erosion (1.1%). Rodent disturbance was noted to 180 cmbs, while erosion was noted to 210 cmbs. However, all of these three agents are natural processes (of presumably constant intensity) and we presume the decrease in frequency of disturbance with depth to be a function of our perception. The lack of *evidence* of such disturbances is not presumed to indicate the absence of the disturbances themselves.

By contrast, vandalism is presumed to be a recent enough phenomenon to clearly leave its mark in all cases. Somewhat surprisingly then, only 12 of the 56 sites (21%) and only 46 of all excavated levels (2.5%) were noted as being vandalized. One explanation for this is that we purposely tried to *avoid* placing test pits any areas which appeared to be vandalized to begin with. To this extent, any vandalized levels were unanticipated, despite the fact that on many sites areas of clear vandalism were extensive. Sites with more than 10% of excavated levels showing vandalism included 41CV46 (11 of 45 levels), 41CV403 (six of 37 levels), 41CV117 (four of 33 levels), 41CV0088 (four of 38 levels), 41CV1165 (three of 12 levels), and 41BL431 (two of 14 levels). Most of the

vandalized levels (72%) were in the upper 30 cm of deposits, but vandalism was noted to 90 cmbs (41CV46 TP 1). Compared to all other contexts, burned rock middens were heavily vandalized. Fully 57% of all vandalized levels were in midden features, even though only 9% of all the levels we excavated were in middens.

6.5 SUMMARY BY ANALYTIC UNIT

Using the radiocarbon assays, supplemented with temporally diagnostic projectile points, stratigraphic field data, and the results of amino acid A/I assays, we delineated 116 distinct AUs on the 56 sites, for an average of 2.1 AUs per site. While nearly half of the sites have a only single AU, eleven sites have two AUs, 12 have three AUs, six have four AUs and on two sites we defined five AUs. The 117 AUs included 47 dated, 23 mixed, and 47 unclassified AUs. Of those dated, four Early Archaic (9%), 10 Middle Archaic (21%), 17 Late Archaic (36%), 12 Late Prehistoric I (26%), and four Late Prehistoric II (9%) AUs were delineated (Table 6.8). No Paleoindian AU was identified. We previously identified a Paleoindian component on site 41BL154 (see Abbott and Trierweiler 1995) which is included in the chronological analyses in Chapter 8.0. Thirty-three sites (59%) have at least one dated AU, leaving 23 sites with no dated AU. Most of the sites (n=47; 84%) include an unclassified AU, 23 sites (50%) have a mixed AU, and 18 sites (32%) have both unclassified and mixed. The following discussions use these AUs to look at diachronic distributions of artifacts and features, as normalized by the excavated volume of each AU.

6.5.1 Excavated Volume

Of the 185.1 cubic meters manually excavated, only 43.2 cubic meters (23%) were from proveniences we were later able to assign to a temporally distinct Analytic Unit (Table 6.9). The remaining volume was determined to be either unclassifiable (129.1 m^3; 70%) or mixed (12.8 m^3; 7%). Of the 43.2 cubic meters we assigned to a temporal AU, the greatest volume (14.6 m^3) was

Table 6.8 Analytic Units Present, by Site.

	Dated Analytic Units						Undated	
Site	Paleo-indian	Early Archaic	Middle Archaic	Late Archaic	Late Prehistoric I	Late Prehistoric II	mixed	unclassified
41BL431								•
41BL504					•		•	•
41BL531							•	
41BL560				•				•
41BL773						•	•	•
41BL844					•		•	•
41BL850								•
41CV44				•			•	•
41CV45								•
41CV46				•	•		•	•
41CV47					•		•	
41CV48			•				•	
41CV71								•
41CV88				•			•	•
41CV90								•
41CV98				•	•		•	•
41CV99			•				•	•
41CV115					•	•	•	•
41CV117			•	•			•	•
41CV125					•		•	•
41CV184		•		•			•	•
41CV201								•
41CV240								•
41CV271								•
41CV317					•			•
41CV332								•
41CV378								•
41CV379				•			•	•
41CV380				•			•	
41CV389			•	•		•	•	•
41CV397								•
41CV403			•	•			•	•
41CV478		•						•
41CV481		•	•	•			•	•
41CV484								•
41CV493								•
41CV495			•	•				•
41CV582								•
41CV849								•
41CV900								•
41CV901								•
41CV905			•					•
41CV913								•
41CV918						•		•
41CV927								•
41CV935					•			
41CV936					•			
41CV1033								•
41CV1080				•	•			
41CV1129		•		•				•
41CV1165				•			•	
41CV1166					•		•	•
41CV1378			•				•	•
41CV1403			•					
41CV1471				•				•
41CV1472								•
Frequency	0	4	10	17	12	4	23	47

Table 6.9 Summary of Key Data Sets, by Analytic Unit.

		Analytic Unit								
		Paleoindian	Early Archaic	Middle Archaic	Late Archaic	Late Prehistoric I	Late Prehistoric II	mixed	unclassified	Total
Analytic Units		0	4	10	17	12	4	23	47	117
	percent	*0%*	*3%*	*9%*	*15%*	*10%*	*3%*	*20%*	*40%*	*100%*
Excavated Volume (m^3)		0.0	3.7	12.4	14.6	9.9	2.6	12.8	129.1	185.1
	percent	*0%*	*2%*	*7%*	*8%*	*5%*	*1%*	*7%*	*70%*	*100%*
Artifacts	lithic	-	158	7,807	7,560	10,670	1,752	15,753	5,288	48,988
	bone	-	14	937	808	1,613	265	845	935	5,417
	bivalve shell	-	3	246	169	215	1	72	244	950
	ceramic	-	-	-	-	-	-	9	-	9
	ground / pecked stone	-	-	-	-	1	-	-	1	2
	historic	-	-	2	1	-	1	22	73	99
	total	*0*	*175*	*8,992*	*8,538*	*12,499*	*2,019*	*16,701*	*6,541*	*55,465*
	percent	*0%*	*0%*	*16%*	*15%*	*23%*	*4%*	*30%*	*12%*	*100%*
	density (total/m^3)	-	*47*	*725*	*585*	*1,263*	*777*	*1,305*	*51*	*300*
Samples	snail	-	61	220	225	214	35	181	768	1,704
	flotation/soil	-	12	69	81	61	12	62	150	447
	macrobotanical	-	-	17	64	19	53	85	53	291
	charcoal	-	5	28	78	91	16	49	66	333
	other	-	2	15	2	6	-	2	13	40
	total	*0*	*80*	*349*	*450*	*391*	*116*	*379*	*1,050*	*2,815*
	percent	*0%*	*3%*	*12%*	*16%*	*14%*	*4%*	*13%*	*37%*	*100%*
Features	ash lens	-	-	-	2	-	-	-	-	2
	basin hearth, slab lined	-	1	1	-	-	-	-	1	3
	basin hearth with rock	-	-	2	4	5	2	-	1	14
	hearth with angular rock	-	1	-	1	2	-	-	3	7
	burned rock concentration	-	2	1	2	2	-	-	1	8
	burned rock midden	-	-	8	10	2	-	12	12	44
	burned rock mound	-	-	2	-	-	-	1	1	4
	annular burned rock mound	-	-	1	-	-	-	-	-	1
	burial	-	-	-	1	-	-	-	2	3
	occupation zone	-	-	1	-	1	-	-	-	2
	total	*0*	*4*	*16*	*20*	*12*	*2*	*13*	*21*	*88*
	percent	*0%*	*5%*	*18%*	*23%*	*14%*	*2%*	*15%*	*24%*	*100%*
	density (total/m^3)	-	*1.1*	*1.3*	*1.4*	*1.2*	*0.8*	*1.0*	*0.2*	*0.5*
Burned Rock	total weight (kg)	0	271	2,162	714	337	19	557	645	4,704
	percent	*0%*	*6%*	*46%*	*15%*	*7%*	*0%*	*12%*	*14%*	*100%*
	density (kg/m^3)	-	*73*	*174*	*49*	*34*	*7*	*44*	*5*	*25*
	total pieces (n)	0	929	9,949	4,532	1,431	71	4,120	2,491	23,523
	percent	*0%*	*4%*	*42%*	*19%*	*6%*	*0%*	*18%*	*11%*	*100%*
	density (n/m^3)	-	*251*	*802*	*310*	*145*	*27*	*322*	*19*	*127*
Dating Assays	amino acid epimerization	-	30	41	6	23	8	-	56	164
	radiometric/AMS	-	3	15	21	19	2	6	4	70
	total	*0*	*33*	*56*	*27*	*42*	*10*	*6*	*60*	*234*
	percent	*0%*	*14%*	*24%*	*12%*	*18%*	*4%*	*3%*	*26%*	*100%*

classified to the Late Archaic, followed by the Middle Archaic (12.4 m^3), and the Late Prehistoric I (9.9 m^3). Only 3.7 cubic meters were classified as Early Archaic, with the least volume (2.6 m^3) being assigned to the Late Prehistoric II (Figure 6.4). These volumes are used in the volumetric calculations below.

6.5.2 Artifacts and Samples

As reviewed above, we recovered a total of 54,829 artifacts from the 1/4-inch screens. About 42% of these were recovered from mixed or unclassified AUs. Controlling for excavated volume, the mixed AUs had the highest density of cultural material (1,305 artifacts per cubic meter), reflecting the easy pickings of these disturbed deposits for looters. The 3.7 cubic meters of Early Archaic deposits had the lowest artifact densities (47 per cubic meter). Not surprisingly, the unclassified AUs also had extremely low (51 per cubic meter) artifact densities (which in large part is why they could not be classified).

Controlling for volume excavated, frequency of lithics is greatest by far during the Late Prehistoric

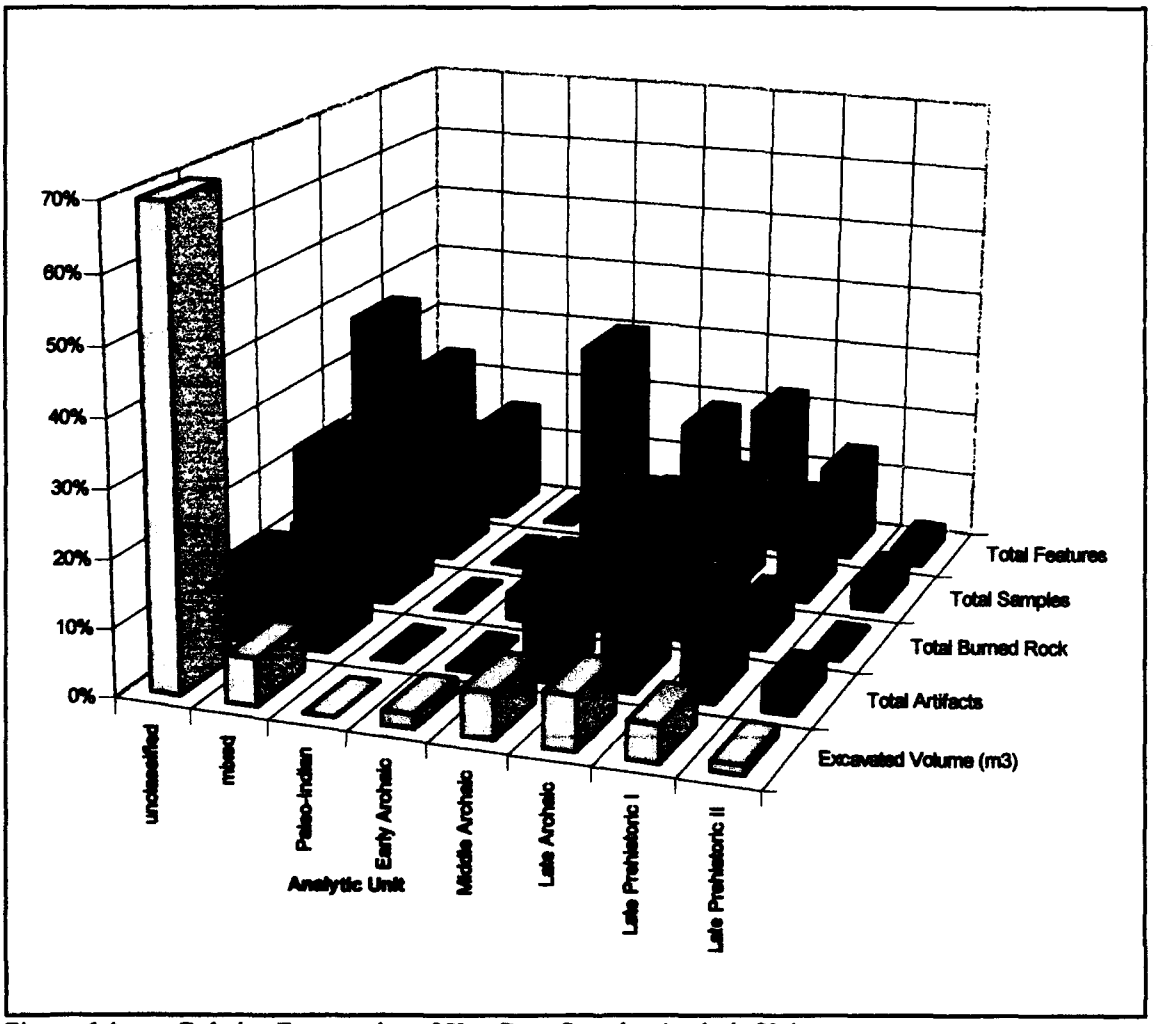


Figure 6.4 Relative Frequencies of Key Data Sets, by Analytic Unit.

I (1,078 lithics per cubic meter), followed by the Late Prehistoric II (674 per cubic meter), the Middle Archaic (630 per cubic meter), the Late Archaic (518 per cubic meter), and distantly by the Early Archaic (43 per cubic meter) (Figure 6.5). Bone shows a nearly identical pattern, with a peak during the Late Prehistoric I (163 fragments per cubic meter), after increasing from the Middle Archaic (76 per cubic meter) and Late Archaic (55 per cubic meter), and then dropping off during the Late Prehistoric II (102 per cubic meter) (Figure 6.6). Bivalve shell shows a similar pattern with the greatest density during the Late Prehistoric I (22 shells per cubic meter), but decreasing to a negligible amount in the Late Prehistoric II (Figure 6.7).

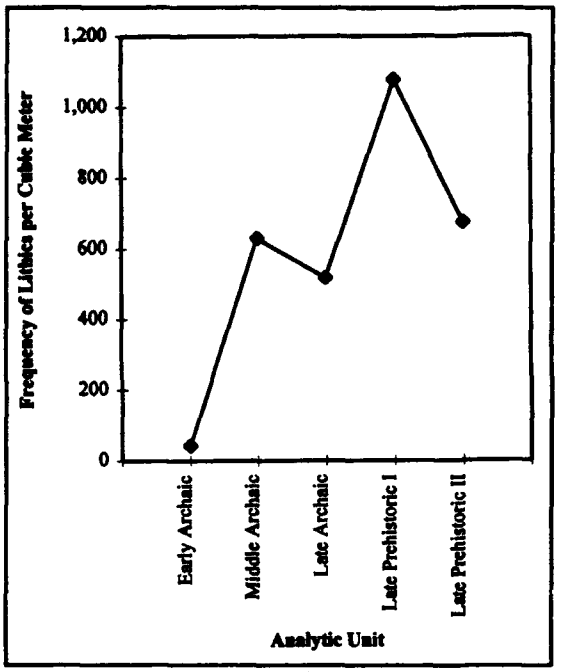


Figure 6.5 Density of Lithics per Cubic Meter, by Analytic Unit.

Of the 2,815 samples we collected, roughly half (49%) were from dated AUs, with more-or-less similar numbers of samples recovered from the Middle and Late Archaic and the Late Prehistoric I. Because samples, by definition, are not 100% recovery of material, they should not be used in volumetric comparisons over time. However, because we tried to recover charcoal whenever possible, these samples are perhaps more representative. Charcoal samples increase steadily in frequency from the Early Archaic (1.4 samples per m^3) through the Late Prehistoric I (9.2 per cubic meter), when they show a decrease (6.2.m^3).

6.5.3 Features

A total of 88 features were recorded, distributed among ten feature types. These include 44 middens, 24 hearths (three types), five burned rock mounds (two types), eight burned rock concentrations, three burials, two ash lens, and two occupation zones. Human burials were encountered in 41CV44 (TP 1), 41CV901 (TP 1), and 41CV1165 (TP 1); although fragmentary human bones or teeth were also found in 41BL844 (TP 6), 41CV125 (TP 1) and 41CV935 (surface), these were not considered to be intact burial features. Features are most abundant during the Late Archaic, both in terms of number (n=20) and frequency (one per 0.73 cubic meters). In contrast, features are least common during the Late Prehistoric II (n=2; one per 1.30 cubic meters).

We manually excavated 4,704 kg (5.8 tons) of burned rock. Although only 23% of the total excavated volume was assigned to a dated AU, more than 74% of the burned rock was from a dated AU. By far, the greatest amount of burned rock was recovered from Middle Archaic AUs, both in terms of overall abundance (n=9,949), total weight (2,162 kg; 2.7 tons), and frequency (802 pieces per cubic meter). The next highest AU, the Late Archaic, has less than half as much burned rock on each of these three measures. Most (not all) of the burned rock was excavated from feature contexts. Controlling for number of features (regardless of type), the Middle Archaic features clearly have far more rock per feature (621 rocks and 135 kg/feature) than any other time period. On average, the Early and Late Archaic features have much less rock (73 kg and 49 kg/feature, respectively), with the Late Prehistoric I and II

being almost rock-less by comparison (34 kg and 7 kg/feature, respectively). This is one of the most striking diachronic trends we have discovered and it is discussed further in Chapters 7.0 and 8.0.

6.6 SITE RESEARCH POTENTIAL AND NRHP ELIGIBILITY

The tactics we used to assess site significance focused on a selected subset of data needs. These included data needs of the chronology, subsistence, and technologies research domains, supplemented as necessary with the red flag criteria (Chapter 3.0) and with information on integrity of deposits. The necessary and sufficient information with which to completely evaluate each site was fully provided by addressing these research domains. Consequently, our testing tactics did *not* systematically collect nor analyze observations that had bearing on any of the data needs in the paleoenvironment research domain (although relevant data was collected and is available for some sites). Similarly, testing did not address the pollen/phytoliths, chemical residues, or coprolites data needs in the subsistence domain, nor the use-wear data need in the technology domain. The curated artifacts and samples may be further analyzed with respect to these data sets.

As a result, we assessed site research potential with respect to nine distinctly observable data sets plus two red flag conditions and the integrity of deposits. The primary data for each site have been presented in the individual site discussions in Chapter 5.0. These are synopsized in Table 6.10, which broadly summarizes for each site whether relevant data is present or absent, and whether the site meets any of the red flag conditions. It must be emphasized that this table is provided as a convenience to the reader and broadly *summarizes the process* by which sites were evaluated. The evaluation of research potential and NRHP eligibility proceeded individually for each site and was *not* driven by a simplified checklist. The reader is encouraged to refer to Chapter 5.0 and to the data appendices for amplifying details of data diversity and abundance, and depositional integrity for each site.

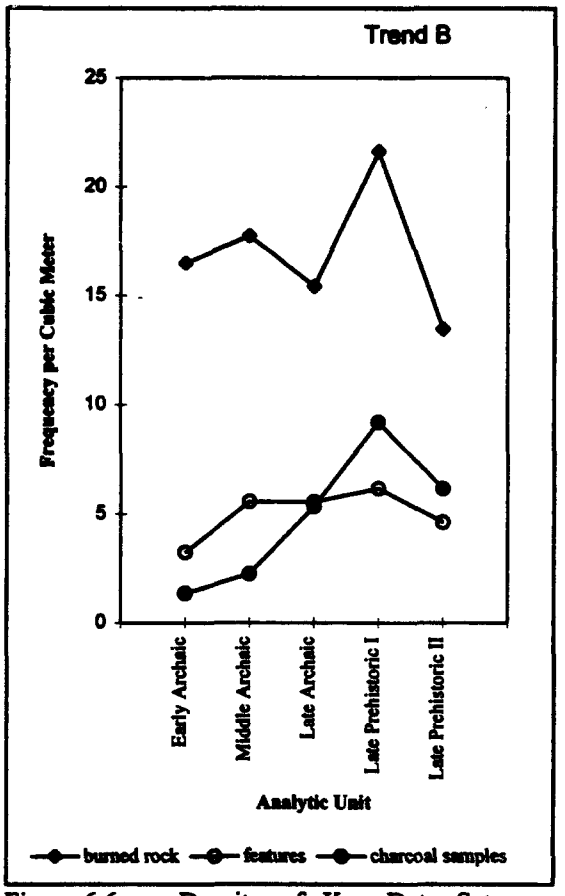


Figure 6.6 Density of Key Data Sets per Cubic Meter, by Analytic Unit.

For each site, these criteria are then consolidated into the five summary columns on the right side of the table. In the *data diversity* column, we summarize the number of different data sets present at each site using a five point ordinal scale. "Very diverse" and "diverse" indicate that the site has many types of data sets -artifact types, features, assayable samples which bear on a variety of research domains. A rank of "moderate" indicates that the site has a several different of data sets, but may not be appropriate for research into one or more key domains. Ranks of "uniform" and "very uniform" indicate that relatively few

data sets are available on the site, in comparison to other sites at Fort Hood.

It is important to point out that data diversity alone does not necessarily suggest high research potential; a given site may rank highly in the data diversity index but still have low overall research potential if the cultural material (artifacts, features, samples) are sparsely distributed and/or are difficult to recover. Accordingly, the *artifact abundance* column reflects the ubiquity and density of artifacts and samples, using a four point ordinal scale. The rank of "abundant" notes sites with greater than 50% ubiquity *and* with a gross density of more than 500 artifacts per cubic meter. The rank of "common" is given to sites with greater than 50% ubiquity *and* with a gross artifact density between 100 and 500 artifacts per cubic meter. These two rankings suggest that artifacts and samples may be recovered in sufficient quantities so as to statistically test the relevant research questions. The rank of "moderate" in this column notes sites with gross densities between 10 and 100 artifacts per cubic meter and with ubiquities between 25% and 50%. Sufficient numbers of artifacts and samples may be recovered from these sites, but a data recovery excavation would likely require a higher level of effort than for the "abundant" or "common" sites. The rank of "sparse" is given to sites with less than 25% ubiquity and with a gross density of fewer than 10 artifacts per cubic meter; artifacts and samples may not be present on these sites in sufficient quantities to meaningfully test any research questions. Again, we wish to emphasize that these rankings are for comparative purposes only and that the research potential of each site was assessed individually. Sites with discrete, well defined, and separable occupations were evaluated as significant even if the cultural deposits were low density and/or low ubiquity.

The *deposit integrity* column uses a nominal ranking to summarize whether past landscape processes have created, in general, a good or a poor probability of preserving in situ cultural material, or whether significant vandalism was

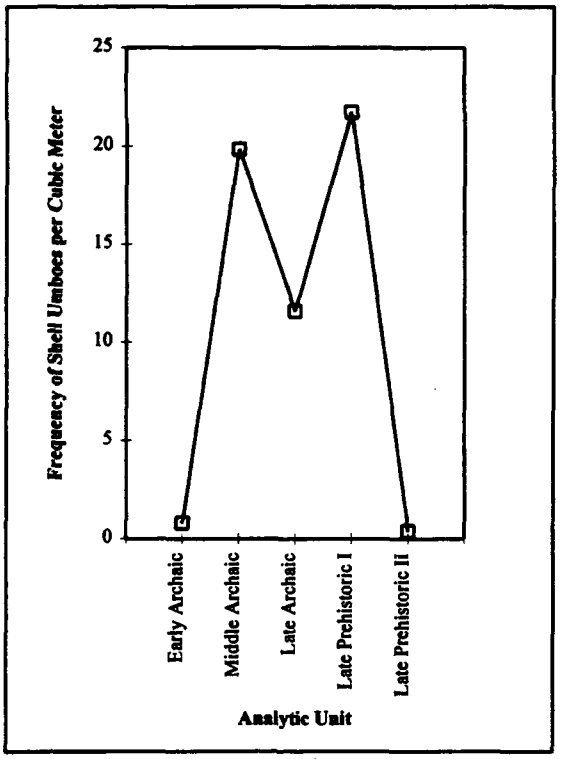


Figure 6.7 Density of Freshwater Shell Umbos per Cubic Meter, by Analytic Unit.

present. A rank of "poor" suggests that all or most of the deposits on the site are either colluvially reworked, shallow, disturbed by plowing, or Pleistocene in age. The rank of "vandalism" notes that our excavations encountered some mixed deposits due to vandalism and is not exclusive of either "good" or "poor" deposits.

The sites listed in Table 6.10 are presented in four groups; within groups the sites are listed in ascending site number order.

- The first group contains ten sites which have a "red flag" field criterion - either human bone or Paleoindian or Early Archaic deposits. Most of these sites also have diverse and/or abundant assemblages, and, with the exception of localized vandalism, all have deposits of good integrity. Several sites are ranked lower on the

Table 6.10 Summary of Research Potential, by Site.

	Research Domains									"Red Flags"		Summary				
	chronology		subsistence			technology										
Site	diagnostics	chronometrics	macrobotanicals	faunal or shell	features	lithic tools	lithic debitage	lithic source IDs	other tools	human bone	Paleo, E. Archaic	data diversity	artifact abundance	deposit integrity	research potential	NRHP eligibility
Sites with Red Flag (High Research Potential) Criteria																
41BL844	●	●	●	●	●	●	●	●	○	■	□	diverse	abundant	vandalism	high	yes
41CV44	●	●	●	●	●	●	●	●	○	■	□	diverse	abundant	good	high	yes
41CV125	●	●	●	●	○	●	●	●	○	■	□	moderate	abundant	good	high	yes
41CV184	●	●	●	●	●	●	●	●	○	□	■	diverse	common	good	high	yes
41CV478	○	●	○	●	●	●	●	●	○	□	■	moderate	moderate	vandalism	high	yes
41CV481	●	●	●	●	●	●	●	●	○	□	■	diverse	common	good	high	yes
41CV901	●	○	○	○	●	●	●	●	○	■	□	moderate[1]	common[1]	vandalism	high	yes
41CV935	●	●	●	●	○	●	●	●	●	■	□	diverse	abundant	good	high	yes
41CV1129	●	●	●	●	●	●	●	●	○	□	■	diverse	moderate	good	high	yes
41CV1165	○	●	●	○	○	○	●	●	○	■	□	uniform	moderate	vandalism	high	yes
Other Sites with Demonstrated High Research Potential																
41CV46	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	vandalism	high	yes
41CV47	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	good	high	yes
41CV48	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	good	high	yes
41CV88	●	●	●	●	●	●	●	●	○	□	□	diverse	common	vandalism	high	yes
41CV99	●	●	●	●	●	●	●	●	○	□	□	diverse	common	vandalism	high	yes
41CV115	●	●	●	●	●	●	●	●	●	□	□	very diverse	abundant	good	high	yes
41CV117	●	●	●	●	●	●	●	●	○	□	□	diverse	common	vandalism	high	yes
41CV317	●	●	●	●	●	●	●	●	○	□	□	diverse	common	good	high	yes
41CV380	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	good	high	yes
41CV389	●	●	●	●	●	●	●	●	●	□	□	very diverse	common	vandalism	high	yes
41CV403	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	vandalism	high	yes
41CV905	●	●	●	●	○	●	●	●	●	□	□	diverse	common	good	high	yes
41CV1166	●	●	●	●	●	●	●	●	○	□	□	diverse	abundant	good	high	yes
Other Sites with Good Research Potential																
41BL504	●	●	●	●	○	●	●	●	○	□	□	moderate	abundant	good	good	yes
41BL560	○	●	●	●	○	●	●	●	○	□	□	moderate	moderate	good	good	yes
41BL773	●	●	●	●	○	●	●	●	○	□	□	moderate	common	vandalism	good	yes
41CV98	○	●	●	●	●	●	●	●	○	□	□	moderate	moderate	good	good	yes
41CV378	○	●	○	○	●	●	●	●	○	□	□	uniform	moderate	good	good	yes
41CV379	●	●	●	○	●	●	●	●	○	□	□	moderate	common	good	good	yes
41CV495	●	●	○	○	○	●	●	●	○	□	□	uniform	moderate	good	good	yes
41CV918	○	●	●	●	●	○	●	●	○	□	□	moderate	moderate	good	good	yes
41CV936	●	●	●	○	●	●	●	●	○	□	□	moderate	common	good	good	yes
41CV1080	●	●	●	●	○	●	●	●	○	□	□	moderate	abundant	good	good	yes
41CV1378	●	●	●	○	●	●	●	●	○	□	□	moderate	moderate	good	good	yes
41CV1403	●	●	○	○	●	●	●	●	○	□	□	moderate	common	good	good	yes
41CV1471	○	●	●	●	●	●	●	●	○	□	□	moderate	moderate	good	good	yes
Sites with Low Research Potential																
41BL431	●	○	○	●	●	●	●	●	○	□	□	moderate	common	poor	low	no
41BL531	○	●	●	●	○	●	●	●	○	□	□	moderate	common	poor	low	no
41BL850	○	○	○	○	○	●	●	●	○	□	□	very uniform	moderate	poor	low	no
41CV45	○	●	○	○	○	○	●	●	○	□	□	very uniform	moderate	poor	low	no
41CV71	○	○	○	●	○	●	○	○	○	□	□	very uniform	common	poor	low	no
41CV90	●	●	○	●	○	●	●	●	○	□	□	uniform	moderate	good	low	no
41CV201	○	○	○	○	○	○	○	○	○	□	□	very uniform	sparse	good	low	no
41CV240	●	○	○	●	○	●	●	●	○	□	□	uniform	moderate	good	low	no
41CV271	○	○	○	○	○	●	●	●	○	□	□	very uniform	moderate	good	low	no
41CV332	●	○	○	○	○	●	●	●	○	□	□	uniform	moderate	good	low	no
41CV397	○	○	○	●	○	○	●	●	○	□	□	very uniform	moderate	poor	low	no
41CV484	○	○	○	○	○	●	○	○	○	□	□	very uniform	sparse	good	low	no
41CV493	○	○	○	○	○	○	○	○	○	□	□	very uniform	sparse	poor	low	no
41CV582	○	○	○	○	○	●	●	●	○	□	□	very uniform	sparse	good	low	no
41CV849	○	○	○	○	○	●	○	○	○	□	□	very uniform	sparse	good	low	no
41CV900	○	○	○	○	○	●	●	●	○	□	□	very uniform	sparse	good	low	no
41CV913	○	○	○	○	○	○	○	○	○	□	□	very uniform	sparse	poor	low	no
41CV927	○	○	○	○	○	○	○	○	○	□	□	very uniform	sparse	poor	low	no
41CV1033	●	○	○	○	○	●	●	●	○	□	□	uniform	sparse	poor	low	no
41CV1472	●	○	○	●	○	●	●	●	○	□	□	uniform	common	poor	low	no

[1] conservative assessment based on field observations only

diversity/abundance indices, but each of these sites also has a red flag which, under our approach, outweighs the lower rankings.

- The second group contains 13 sites with demonstrated very high to high research potential. These sites are all characterized by exceptionally diverse to diverse data sets and abundant to common assemblages. With the exception of some localized vandalism, all have deposits of good integrity.

- The third group also includes 13 sites with good to moderate research potential. These sites typically have moderately diverse assemblages and moderately abundant artifacts, but none of them is distinguished in any way on either the diversity or abundance indices. All sites in this group have deposits with fairly good integrity (again, notwithstanding localized vandalism). In general, a data recovery excavation on any of these sites would need to invest a somewhat greater level of effort to test given research questions.

- The final group includes 20 sites with doubtful to poor research potential. These sites are generally characterized by sparse and uniform data sets. The few sites with moderately diverse assemblages and/or good artifact abundance all have deposits of poor integrity, such that data interpretations would be compromised. Moreover, none of the sites in this group have either diverse data sets *or* abundant artifact assemblages.

These measures are synthesized in the overall *research potential* and *NRHP eligibility* columns. Sites in the first three groupings - those ranked with "high" or "good" research potential - are recommended as eligible for inclusion to the NRHP. Sites in the final grouping - those with "low" research potential - are recommended as not eligible. Again, we remind the reader that the above discussion broadly *summarizes the process* by which sites were individually evaluated, and is not itself the mechanism of evaluation.

6.6.1 NRHP Eligible Sites

The final column in Table 6.10 identifies NRHP eligibility. Of the 56 sites we tested, 36 are determined to have good to high research potential and we recommend these as eligible for inclusion to the NRHP. These sites are: 41BL504, BL560, BL773, BL844, CV44, CV46, CV47, CV48, CV88, CV98, CV99, CV115, CV117, CV125, CV184, CV317, CV378, CV379, CV380, CV389, CV403, CV478, CV481, CV495, CV901, CV905, CV918, CV935, CV936, CV1080, CV1129, CV1165, CV1166, CV1378, CV1403, and CV1471. These sites should be preserved and protected from adverse impacts. Protection efforts should be designed on a site-by-site basis, but in general, should include measures to:

- prevent subsurface disturbance by vandalism;
- prevent unauthorized mechanical or manual excavations; and
- minimize vehicle traffic on the site surface.

If protection is not possible for any site, then ongoing or anticipated adverse impacts should be mitigated. In most cases, mitigation could be accomplished through a carefully designed and implemented program of archeological data recovery that identifies and targets specific key data sets delineated in the research design.

6.6.2 NRHP Ineligible Sites

The remaining 20 sites are determined to have low overall research potential and are recommended as not eligible for inclusion to the NRHP. These sites are: 41BL431, BL531, BL850, CV45, CV71, CV90, CV201, CV240, CV271, CV332, CV397, CV484, CV493, CV582, CV849, CV900, CV913, CV927, CV1033, and CV1472. We recommend no further management for these sites.