TEST EXCAVATIONS AT THE GREEN SITE, 34GV202

A Plains Village Component along the Washita River in South Central Oklahoma

by
Robert Bartlett and John D. Hartley

Emergency Excavations Conducted for
Project ERIY-0035(105)075 Borrow Area
along Interstate Highway 35, Garvin County, Oklahoma

Oklahoma Department of Transportation
Environmental Studies Branch, Planning Division
200 NE 21st Street
Oklahoma City, Oklahoma

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Acknowledgements

The investigations at 34GV202 and this report could not have been completed without the assistance of numerous individuals and institutions.

If not for the concern of Mr. Billy Hartley of Pauls Valley, who initially observed the borrow pit excavations on 34GV202 and immediately reported this activity to the Oklahoma Department of Transportation (ODOT) Department Archaeologist, it is very likely that the features described in this report would have been completely destroyed and undocumented. Once aware of the site, ODOT's Purcell Residency was extremely cooperative in ensuring that additional borrow activities by the contractor were relocated off the archaeological site. Other assistance within ODOT was provided by Mr. Roger Saunders and Mr. Terry McFall of the Planning Division and Mr. Ken Corder of the Department's photographic services branch.

Field operations were directed by Mr. John Hartley, ODOT Department Archaeologist, assisted by Mr. Robert Bartlett, Highway Archaeologist at the Oklahoma Archaeological Survey. The small field crew consisted of Mr. Frank Ford and Mr. Chris Cook, graduate students in anthropology at the University of Oklahoma. Dr. Robert Brooks, State Archaeologist, Dr. Don Wyckoff, and Dr. Richard Drass of the Oklahoma Archaeological Survey provided assistance on several occasions. Dr. Drass, in particular, contributed a great deal of very useful advice and information regarding Plains Village material culture, cultural dynamics, and adaptations in the study area.

Mr. Bartlett performed all laboratory analysis and authored the archaeological and environmental background sections, artifact descriptions, faunal and floral analysis, and site interpretation. Other sections were principally written by Mr. Hartley, who also prepared all the graphic work in this report.

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I. INTRODUCTION

On June 27, 1994, the Oklahoma Department of Transportation was informed by Mr. Billy Hartley, an avocational archaeologist from Pauls Valley, that borrowing activity for Project ERIY-0035(105)075, rip-rapping on the I-35 Washita River Bridge, had exposed ceramics, lithic debitage, and other cultural material from an archaeological site along a terrace north of the Washita River.

Review of the site files at the Oklahoma Archaeological Survey revealed that the borrow pit had been located within site 34GV202, a large Washita River phase site that was officially recorded by the Oklahoma Archaeological Survey in late 1992, although it had been known to local collectors for years. Also known as the Green site, 34GV202 is only one of many large and significant Plains Village sites located along the terraces overlooking the Washita River in the general project area, several of which have recently been subjected to excavation by the University of Oklahoma (Brooks 1987; Drass 1995).

Project ERIY-0035(105)075 was an emergency bank stabilization project beneath the existing I-35 bridge within the existing disturbed right-of-way and river bed. Because of the limited scope of the project, and the minimal potential for intact cultural resources within the direct construction zone, it was not subjected to extensive preconstruction evaluation by the Planning Division. A file search done in August of 1992 for this project indicated no cultural resources within the surrounding area, as 34GV202 and several nearby sites had not yet been formally recorded by the Oklahoma Archaeological Survey.

The project was subsequently approved, and stabilization work began in 1994. During this time the project contractor requested use of a borrow pit outside of the project area for additional soil to reinforce the stream bank in the project area. Such areas are usually subjected to a file check at the Oklahoma Archaeological Survey, but due to an oversight by the ODOT field division, this was not done in this instance. Had a search been done, the presence of 34GV202 would have been noted and the location of the proposed pit shifted to avoid the site.

Prior to excavation of the borrow pit, the terrace containing 34GV202 supported an extremely dense growth of Bermuda grass. As a result, it is unlikely any archaeological materials associated with the site would have been visible on the surface during standard ODOT field inspection of the pit area.

Upon hearing of the disturbance to 34GV202, the Department Archaeologist visited the site on June 28, 1994. The borrow pit was found to cover an area of approximately . Exposed in the pit were several dark-stained areas believed to be possible houses, middens, or trash pits (Figure 1). The Contractor, who had temporarily suspended excavation due to equipment problems, was notified that no further use of the pit would be allowed until consultation was completed with the State Archaeologist.

On June 29, 1994, a meeting was held on the site including ODOT Department Archaeologist John Hartley, Oklahoma Archaeological Survey Highway Archaeologist Robert Bartlett, State Archaeologist Robert Brooks, ODOT Division III Resident Engineer George Raymond, and personnel from the Contractor. It was determined that borrowing activity had removed between 12 inches and several feet of the original terrace, with some areas of the site possibly impacted only to the depth of the old plow zone. Therefore, although some archaeological deposits had almost certainly been destroyed, other locations within the borrow pit appeared to retain considerable integrity.

It was agreed that, due to the probable National Register (NRHP) significance of the site and the possibility for remaining intact deposits, no further fill removal would be allowed from this pit. An alternate borrow area was chosen, just south of 34GV202 in lower alluvial deposits. Previous work along the Washita River had suggested that such a setting would probably not contain significant archaeological material associated with 34GV202.

It was also agreed that ODOT would perform limited test excavations within the original borrow pit to determine the nature of the exposed cultural features

and assess their degree of preservation. Once this work was completed, the pit would be closed and topsoil replaced over the exposed surfaces. These excavations were completed on an intermittent basis between June 30 and July 14, 1994 and this report summarizes the result of this investigation.

II. PROJECT BACKGROUND

Environmental Setting

The project area is located along the Washita River valley in south-central Oklahoma. The river flows generally east to southeast through this region with a floodplain varying from about 2 to 5 km wide. Several distinct terraces of different ages are present through the valley which is bounded by gently rolling uplands (Strain 1937). The valley contains very fertile soils which historically supported lowland forest. A mixture of scrub oak forest and tall grass prairie occur on the surrounding uplands (Duck and Fletcher 1943).

The basic geology consists of red Permian sandstones and shales, outcrops of which are visible throughout the surrounding uplands. Gravel occurs on high terraces, uplands and valley slopes (Strain 1937). The gravels contain cobbles and pebbles of quartzite, chert, petrified wood and jasper (Brooks et al. 1985:132) and is likely derived from Ogallala outwash.

Through central Oklahoma, the Washita River crosses an ecotone between the southeastern woodlands and the western prairies. This particular region, known as the Cross Timbers, contains a variety of floral and faunal resources, common both to the prairie/plains and woodlands. The Cross Timbers is part of the larger Osage Savanna biotic district extending through central and portions of eastern Oklahoma and characterized by a mixture of post and black jack oak and tall grass prairie habitat (Blair and Hubbell 1938). Additional aquatic resources occur on the river and its many oxbows in the area.

Although probably established some 4000 to 5000 years ago (Wyckoff 1984:19), the Cross Timbers' sensitivity to climatic fluctuations results in movement of the ecotone east or west as well as increasing or decreasing in areal extent. An increase in regional moisture results in expansion of the mixed oak timber through the area while a decline facilitates the spread of prairie grasses. The changes in habitat certainly affect adaptations of people residing in or exploiting the region.

Paleoenvironmental studies indicate that between 2000 and 1000 years ago the general climate became increasingly moist (Albert 1981; Ferring 1982; Lintz and Hall 1983). After A. D. 1000 an apparent onset of increasingly dryer conditions resulted in expanded grassland habitat in central Oklahoma after A. D. 1300 (Hall 1988:208-209). It is during this time frame that more sedentary adaptations occurred in the central Washita River basin (Brooks *et al* 1985; Drass 1995). One of the more significant factors accompanying the spread of grassland, particularly concerning southern Plains Village adaptations, is the probable rise in regional bison populations (Baugh 1986; Drass and Flynn 1990; Huebner 1991; Lynott 1979).

Plains Village Adaptations in South Central Oklahoma

Recorded in 1992, site 34GV202 is one of a series of Plains Village sites situated on a terrace just north of the Washita River in south central Oklahoma. The recorded site area conforms to the terrace contour for about 700 m east/west and extends at least 225 m north from the terrace edge.

To the northwest and situated on the same terrace, are five Plains Village sites within 1.5 km of 34GV202. Two of the sites have been investigated and much of the work on these sites has contributed to defining the Paoli phase, A. D. 900-1250, (Brooks and Drass 1996; Drass 1990, 1995), an early Plains village manifestation contemporaneous with the Custer phase in western Oklahoma.

The Washita River Basin in this portion of Oklahoma apparently was intensely occupied throughout the Plains Village period and many sites have been investigated (Brooks 1987:34-35; Brooks et al 1985; Drass 1995). The information gleaned from previous research in the area is used in the following discussion to provide a brief overview of the Plains Village tradition in south-central Oklahoma.

Paoli Phase

For some time, early Plains Village sites in central Oklahoma had been subsumed under the Custer phase

(Hofman 1978, 1984). More recent research has distinguished variation in artifact assemblages as well as settlement and subsistence patterns in Plains Village sites along the Washita River in western and central Oklahoma (Brooks and Drass 1996; Drass 1995; Drass and Flynn 1990). In recognition of these regional differences, the Custer phase has been redefined to refer to early Plains Village sites in western Oklahoma The Paoli phase now subsumes contemporaneous sites in central Oklahoma.

The Paoli phase, as defined by Drass (1990; 1995) occurred from A. D. 900-1250 in the central Oklahoma prairie/woodland ecotone or Cross Timbers. This complex is thought to have developed from local Woodland adaptations (Drass 1995). The better-studied sites occur in the Washita River basin in Garvin County . However, Paoli phase assemblages are thought to extend from the Arbuckle Mountains of south central Oklahoma, north to the Canadian River Valley and westward to the mixed grass prairie of western Caddo county.

Artifact assemblages recovered from Paoli phase sites consist of corner and side-notched arrow points, as well some dart points and unnotched arrow points. Other stone tools include bifacial knives, drills and scrapers as well as modified or utilized flakes. Lithic material is predominately chert and quartzite obtained from local gravel deposits. Manos and grinding basins are common as are U-shaped groove sandstone abraders. Celts are also present but rare. Tubular bone beads and shell disk beads are often found. Bone tools associated with horticulture such as bison tibia digging stick tips and bison scapula hoes are present but not particularly abundant. However, bone awls and shaft wrenches manufactured from deer bone are common. Ceramics are dominated by stone tempered, cordmarked and smoothed over cordmarked pottery. Stone tempered smooth surface pottery is also common and predominates on some sites (Drass 1995:210). Vessel shapes include conical, round and a few flat bottomed jars with direct to slightly everted rims.

Houses appear to be mainly rectangular structures with four center posts and an extended doorway. Interior hearths are present , however, interior pits are absent. Exterior pits are abundant and include cylindrical, bell, round-oval and basin shaped pits. Large "megapits" pits possibly used in roasting have also been identified (Dennis 1990; Drass 1993, 1995:174).

Subsistence practices included growing corn, beans and possibly marshelder as well as gathering wild plants such as nuts, cheno-ams, little barley and dropseed. Deer and rabbit predominate the faunal assemblages and aquatic resources such as fish and mussels were extensively utilized.

Two Paoli Phase sites, Patton (34GV165) and Densmore (34GV167), occur approximately 600 to 1500 m northwest of 34GV202. Radiocarbon dates obtained from several features, including a four center post house, indicate occupation of the Patton site occurred from about A. D. 900 to 1300 (Drass 1995:146-147). The Densmore site is radiocarbon dated to the late Paoli phase A. D. 1270, as well as Washita river phase A. D. 1420 (Drass 1993,1995:147). However, based on the artifact assemblage, it is thought that the more intense occupation of Densmore occurred during the Paoli phase (Drass 1993,1995:447).

Washita River Phase

The Washita River focus, as it was originally defined, included Plains Village sites in the Washita River Valley of central and parts of western Oklahoma dating between A.D. 1150-1350 (Bell 1973). Hofman (1978) proposed the Washita River phase be applied to late Plains Village sites in central and western Oklahoma dating from about A. D. 1100-1450. A more recent compilation and calibration of additional radiocarbon dates has resulted in refinement of the date range to A.D. 1250-1450 (Drass and Swenson 1986). Additional research concerning later Plains Village sites in western and central Oklahoma has noted variation in artifact assemblages and subsistence practices between Plains Village sites in western and central Oklahoma (Brooks and Drass 1996; Drass 1995; Drass and Flynn 1990; Drass and Swenson 1986). Based on these differences the Turkey Creek phase has been proposed for Plains Village sites along the Washita River valley in western Oklahoma circa A. D. 1250-1450 (Brooks and Drass 1996; Drass 1995:46). As a result, the Washita River phase is now usually restricted to roughly the same geographic area as the Paoli phase.

The Washita River phase almost certainly developed out of the Paoli phase and is marked by changes in artifact assemblages, most notably the predominance of side-notched and unnotched triangular arrow points,

and shell tempered smooth surface pottery. Scrapers and biface knives, particularly diamond beveled, become more frequent. The use of bone tools increases substantially over the previous Paoli phase and is exemplified by a large number of horticultural tools manufactured from bison bone, including scapula hoes, horn core hoes or scoops and tibia digging stick tips. Beamers and shaft wrenches manufactured of deer metapodials are often found as well as deer mandible sickles. Although in low numbers, exotic items, mostly lithic materials, but also including trade pottery (Pillaert 1963), increase during the Washita River phase.

Unlike the Paoli phase, houses are usually two center post rectangular structures with interior hearths and storage pits. As in the Paoli phase, exterior pits of various shapes and sizes are also common.

Subsistence changes over those of the Paoli phase include of an apparent intensification of horticulture involving corn, beans and probably squash. However, continued use of wild plants is evidenced. An increased reliance on bison also occurs, with deer and small mammals being taken with less frequency. Use of aquatic resources such as fish also appears to decrease during the Washita River phase.

The Arthur site (34GV32), located about 5 km southwest of 34GV202 is one of the more recently investigated Washita River phase village sites (Brooks 1987). Radiocarbon and archeomagnetic dates indicate the site was likely occupied from about A. D. 1290 - 1375. Seven houses were excavated as well as pits and midden features.

The site is thought to represent a village unit of perhaps 80 individuals (Brooks 1987:125). Based on work at this site, Brooks (1987:151) suggests that Washita River phase villages were likely occupied year round and that the subsistence base of the site's inhabitants consisted primarily of resources within the Washita river valley with secondary emphasis on upland prairie resources.

In summary, Plains Village occupations in the area surrounding 34GV202 are known to begin during the Paoli phase around A. D. 900 and continue through the Washita River phase to about A. D. 1450. Prior to this investigation, 34GV202 was recognized as one of 38 Plains Village sites situated within an 18 km length of the Washita River near Pauls Valley Oklahoma (Drass 1995:141-142). However, it was not known if the site was a Paoli or Washita River phase site. Work by Drass (1995) and Brooks (1987) has demonstrated that sites in the area often retain intact features containing valuable information relating to southern Plains Village occupations in central Oklahoma. As such, the Washita River valley in central Oklahoma in one of the most important archaeological areas in all of Oklahoma.

III. PROJECT METHODOLOGY

Research Orientation

Since the excavation at 34GV202 was dictated solely by the need to identify, evaluate, and salvage potentially significant cultural features inadvertently uncovered during a highway project, no research design *per se* governed this investigation. However, based on previous investigation on this, and other Plains Village sites in the general area, it was believed that 34GV202 had the potential to clarify and expand on our understanding of the Paoli/Washita continuum in central Oklahoma. Efforts were made toward gathering charcoal for radiocarbon dating and artifacts to better ascertain the Plains Village component(s) present at 34GV202. Although the methodology was designed only to recover a representative sample of materials from the exposed features it was hoped the materials recovered would provide some information pertinent to research on Plains Village adaptations in Central Oklahoma.

For instance, very little information regarding macrobotanical remains on Washita River phase villages is currently available, therefore soil samples were collected for flotation in hopes of recovering charred plant remains. Drass (1993) analyzed macrobotanical remains from two nearby Paoli phase sites. The recovery of plant remains from 34GV202 provides a comparative sample to study changes in plant use from Paoli to Washita River phase. Of particular interest is the recovery of a large marshelder seed, similar to specimens recovered from the Densmore site which are believed to represent a domesticated variety (Drass 1993:56-57). Although possible domesticated marshelder was recovered from the Arthur site (Brooks 1987:117), it remains unclear if domesticated marshelder persisted into the Washita River phase.

Field Methodology

Detailed surface investigation of the exposed pit surface began on June 30, 1994, concurrent with the investigation of the new borrow location. This work revealed the presence of three general stained areas, tentatively identified as *Features 1, 2,* and *3* (Figure 1). Features 1 and 2 were located near the northern edge of the pit, while Feature 3 was a smaller and more diffuse stain near the center. Each stain was subjected to shovel and trowel skimming to delineate its extent and assess its probable nature.

It soon became apparent that Feature 1, the easternmost stain, was qualitatively different from the other two. Whereas Features 2 and 3 were relatively amorphous, sparse, and scattered, containing only moderate amounts of cultural material in what appeared to be silted or ponded deposits, Feature 1 exhibited clearly defined edges along most of its margin and contained massive concentrations of ashy soil and charcoal, large bone fragments, mussel shell, and numerous large sherds of *Nocona Plain* pottery. It was determined that subsequent test excavations would be focused on the examination of this feature, which was initially thought to represent either a house or series of large trash pits.

Following initial cleaning, a datum was established and a 48 square meter grid of 2x2 meter units was superimposed over Feature 1 (Figure 2). Each unit was carefully trowel cleaned to expose the surface of the feature and other soil anomalies. Subsequently, two 50cm wide trenches were excavated through the center of the stained area to provide a profile of the Feature 1 area (Figures 3 and 4).

The trenches were excavated in 2 meter lengths for general provenience control, conforming to the 2x2 meter surface cleaning units within which they were dug. All feature fill was removed as a unit from each 50cm by 2 meter trench unit and dry screened through a 1/4 inch mesh screen. In addition, ten 2 liter soil samples were collected from the feature area for water screening and flotation sampling. Numerous charcoal samples were also obtained. A detailed plan of the Feature 1 area was prepared (Figure 5) and profiles were drawn of both trenches (Figure 6). Following completion of all mapping and profiles, the Contractor and Resident Engineer were notified that backfilling of the borrow pit could commence. Field work was completed intermittently between June 30 and July 14, 1994.

Figure 1. *Portion of the U.S.G.S. 7.5' series Paoli quadrangle map showing location of 34GV202 and related sites. Insert is a schematic drawing showing the borrow pit and location of possible feature areas exposed on the bladed surface*

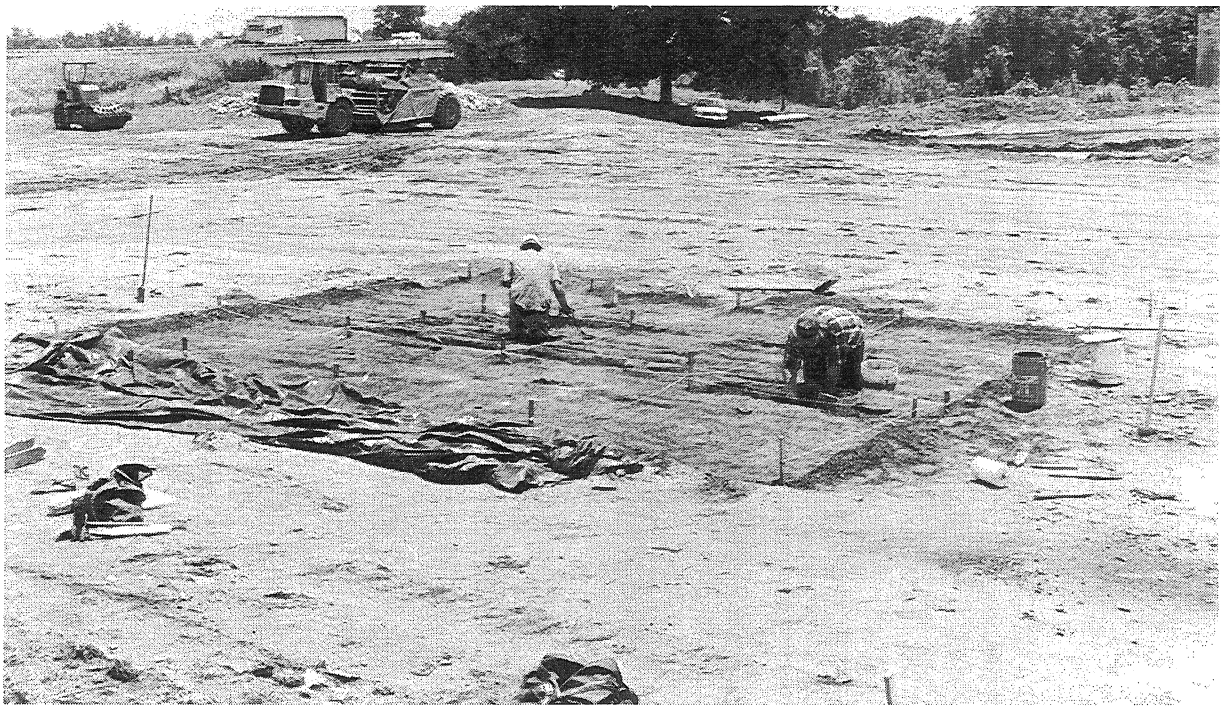

Figure 2. *34GV202 - View of Feature 1 area following initial hand scraping. Linear features on the exposed surface are furrows from previous machine excavation*

Figure 3. *34GV202 - Feature 1 area. Excavation of the east-west trench.*

Figure 4. *34GV202 - Feature 1 area nearing completion of both trenches*

Laboratory Analysis

All recovered items were processed in the laboratory at the Oklahoma Archeological Survey. With exception of a few items with residue, all were washed, cataloged and boxed according to provenience. All items recovered during the initial surface cleaning of Feature 1 are considered as a single provenience unit for analysis. All artifacts recovered from the trench excavations were analyzed according to trench and unit (2 x .5m). One unit (E4/N4) contained both the E/W trench and N/S trench.

Charcoal Recovery

Charcoal utilized for radiometric dating was derived from field collected samples as well as flotation samples. Field samples were separated from soil matrix and air dried in the lab. Charcoal derived from flotation was then air dried and separated from other remains in the flotation sample using both macroscopic and microscopic examination. Prior to shipment to Beta Analytical for final processing and dating, all samples were examined under a binocular microscope to assure no corn fragments were present.

Lithic Analysis

The lithic assemblage was divided into tool and debitage categories. All were classed into raw material categories. Chipped stone tool categories are based on morphology, assumed function, flake scar patterns and degree of flaking. Arrow points and preforms are basically the only formally shaped tools represented in the assemblage. Since these items are common and well described in previous reports, metric data were not

recorded. However, raw material types and some non metric attributes for these artifacts are provided and the items were photographed. The one exception are wedges. Since these objects have not been previously described from sites in the area, metric data and more detailed descriptions were recorded for these items.

Debitage was classed into flake categories established according to attributes exhibited by platforms and the dorsal and ventral faces. Analysis of these attributes allow the identification of technologies involved in the production of chipped stone tools. Two technologies were identified in the sample including direct handheld, and bipolar percussion.

Ceramic Analysis

During recovery and cleaning it was noted that many of the ceramic sherds may be derived from reconstructible vessel sections. In addition many sherds were broken during recovery. Therefore, prior to analysis, efforts were made to refit pottery sherds along both fresh and old breaks and into vessel sections. Both metric (thickness) and non-metric attributes were then recorded.

Modified Bone

A variety of modified bone was recovered. Like the pottery sherds some of these items were fragments broken during recovery. These items were also refit prior to analysis. They were subsequently classed according to the faunal element on which they were manufactured. Evidence relating to the use and manufacture of the tool was then recorded.

Faunal Remains

All other faunal remains were identified as to species and element when possible. Identification was made using comparative collections housed at the Oklahoma Archaeological Survey. If species could not be identified, remains were then classed according to taxon and further classed according to the size of the animal represented. All unidentified bone was classed as such.

Macrobotanical Analysis

Soil samples collected for flotation were processed in 2 liter increments in the wet lab at the Oklahoma Archeological Survey. Both light and hard fractions were collected and selected samples were further processed by passing through nested geologic screens and examined under a binocular microscope. Although many items were observed in the heavy fraction including small flakes, bone and ceramics, the analysis focused on the identification and tabulation of macrobotanical remains.

IV. RESULTS OF THE INVESTIGATION

Stratigraphy and Cultural Features

As initially exposed by the earthmoving equipment, Feature 1 appeared as an irregular stain of dark, charcoal-stained soil containing large quantities of ash, bone, shell, and other cultural material, measuring approximately 6.5 meters E/W by 4.5 meters N/S. As shown in Figure 5, detailed trowel scraping resulted in the identification of two apparent "lobes" of darker stained material, apparently connected or overlapping in one small area. The western and eastern edges of these lobes were relatively well defined against reddish sandy clay subsoil, while the northern margin was more mottled and irregular. A narrow extension of the stain continued south to the edge of the cleared area. Numerous pockets of dense ash and charcoal were noted within the stained areas, as were scattered areas of reddish clay or silty sand, suggesting either prehistoric disturbance to the features or natural deposition factors.

Soil profiles (Figure 6) revealed that the western lobe represented a large basin-shaped trash pit, containing layered deposits of dark, ashy material, medium dark brown soil, and areas of mottled reddish clay and dark soil. This feature, which was given the designation *Pit A*, measured approximately 2.75 meters N/S by 2.0 meters E/W at the top. It extended to a depth of approximately 60 cm below the machine-cleared surface, which probably represents very closely the original prehistoric ground surface. The nature of deposition in Pit A suggests that it was deliberately excavated and then filled by repeated trash-dumping episodes, including kitchen refuse, broken and discarded tools and pottery, and hearth material. Some scattered lenses of laminated silt also suggest some natural filling or washing in of sediment, as if the pit stood open for some time.

The eastern lobe was somewhat more difficult to interpret, as it proved to have been formed by two distinct and different episodes of deposition. N/S and E/W profiles in this area show a very large and shallow sloping depression filled with laminated layers of medium brown silty loam, dark ashy material, some mottled red clay, and sandy silt. This feature extends approximately 4.0 meters E/W and at least 5 meters N/S (it extends south out of the excavated area). This depression is interpreted as either a deliberately excavated or (more likely) a natural basin that was used for dumping activity. Artifactual material recovered from within this feature tended to be large, with little evidence for heavily shattered or processed bone, small flakes, or fragmentary mussel shell. Several very large fragments of pots with flared rims and noded necks were recovered from this material, lying on their sides, as if large, nearly complete pots had been tossed into the depression. Numerous laminated lenses of silt extended throughout the basin, suggesting that much of the soil deposition formed from sediment washing into the feature and mixing with the deliberately dumped earth.

Sometime after the natural basin began to fill, it appears that a second, smaller, pit was deliberately excavated into its eastern edge. This pit, designated *Pit B* is clearly seen on the E/W trench profile as a basin that truncates the earlier laminated sediment of the larger depression. As profiled, Pit B measures approximately 2.25 meters E/W and extends to a depth of roughly 40-50 cm below the scraped surface. Pit B is not easily identified in the N/S profile, as this trench only clipped its western edge. Nevertheless, a shallow surface spread of the same material contained in Pit B extends approximately 3 meters along the top of this profile, possibly reflecting the wider and shallower upper edge of the pit or overfilled/outwashed material.

The fill of Pit B is considerably different from the surrounding laminated matrix, consisting of a much darker and more uniform charcoal stained soil with numerous thicker lenses of dense ash and charcoal. In comparison with the surrounding deposits, Pit B contained larger amounts of small, heavily processed and fragmented bone refuse, increased quantities of mussel shell, scattered fragments of baked clay or daub, and small fire-cracked and thermally altered sandstone fragments. This material is believed to represent dumped hearth and kitchen debris. In addition, the

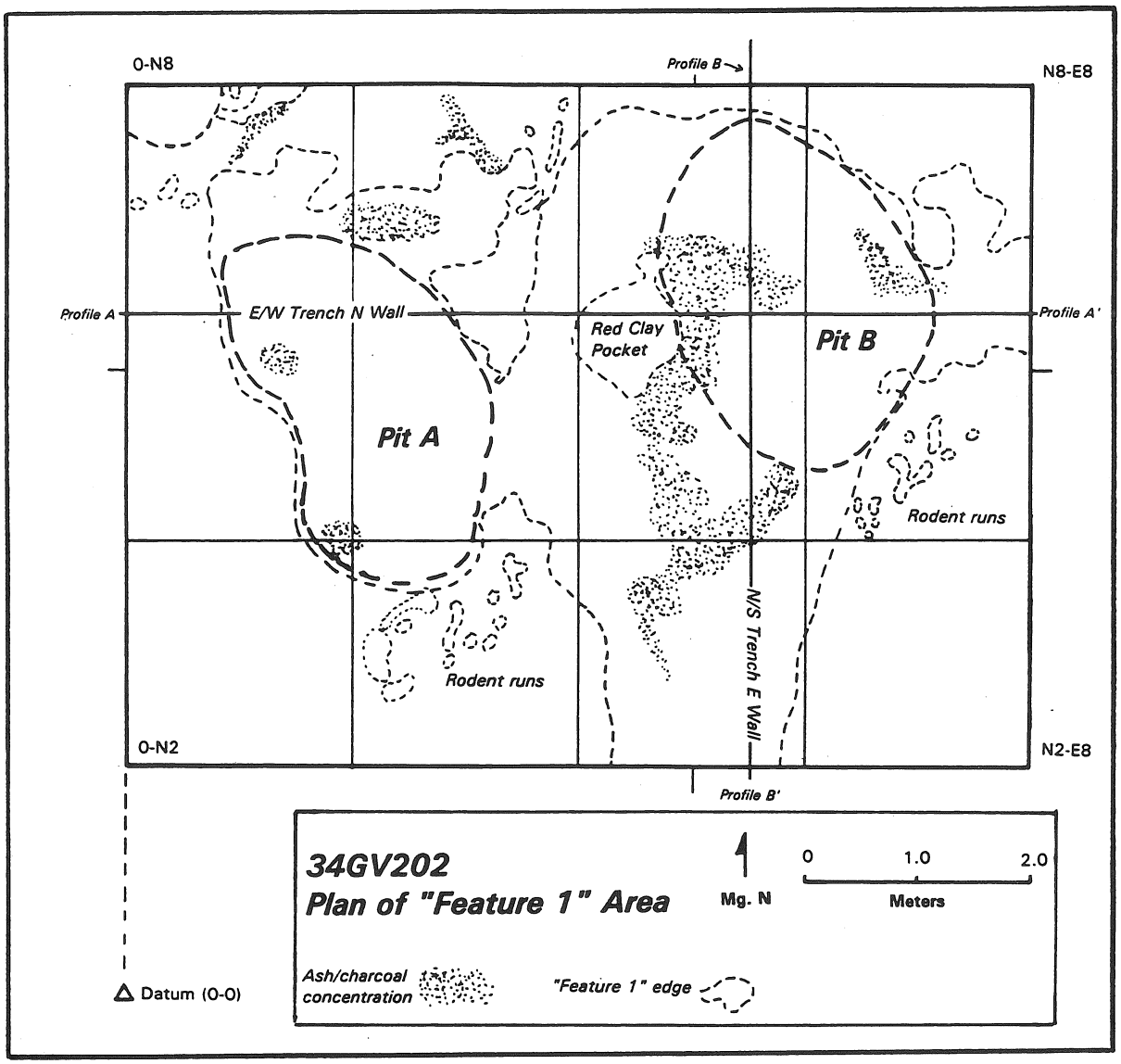

Figure 5. *34GV202 - Plan view of Feature 1 grid showing extent of soil staining, ash/charcoal concentrations, and locations of Pits A and B.*

general lack of laminated or washed deposits in Pit B suggests that the feature was excavated, utilized, and filled within a relatively short time. The possibility exists that Pit B was used as a prepared cooking feature, but the clay subsoil beneath it shows no sign of having been fired, or in other ways exposed to high heat.

Radiocarbon Dates

Two radiocarbon dates were obtained from charcoal recovered during the excavations and floatation of soil samples. Each sample was carefully checked for contamination by corn and a C13/C12 stable isotope ratio value determined for each sample with radiocarbon dates adjusted accordingly. Samples were selected from Pit A and Pit B proveniences. The resulting C13/C12 adjusted date from the Pit A sample is 670 +/- 70 (Beta 825552) radiocarbon years BP. A calibrated date of A. D. 1300 with a one sigma range of A. D. 1283-1328 & 1332-1396 is derived from the sample (Stuiver and Pearson 1993). The C13/C12 adjusted sample from Pit B produced a date of 570 +/- 70 (Beta 82551) radiocarbon years B. P. A calibrated date of A. D. 1403 with a one sigma range of A. D. 1307-1361 & 1378-1431 is obtained from the sample (Stuiver and Pearson 1993).

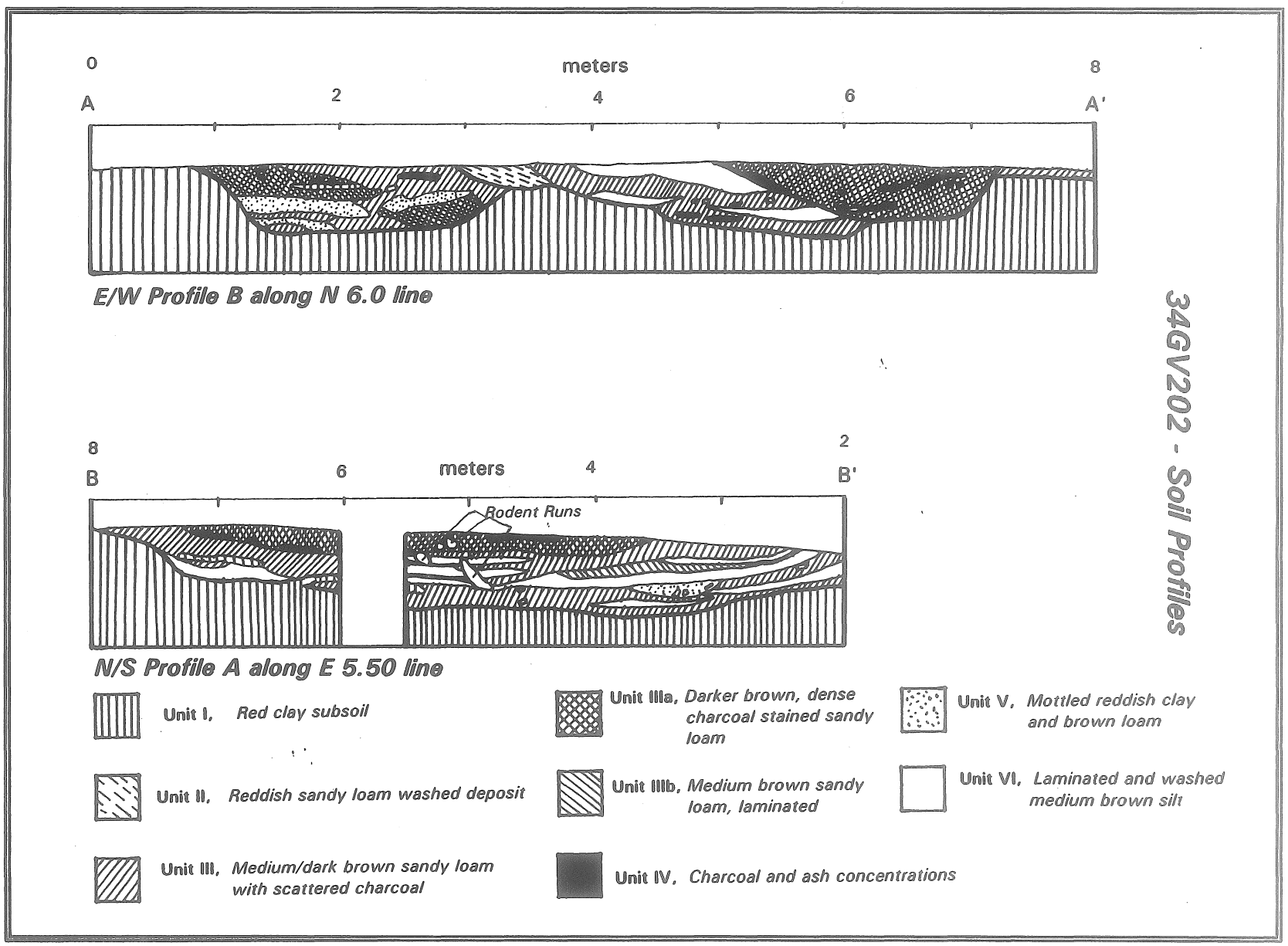

Figure 6. *34GV202 - Soil profiles of Feature 1 area along profile sections marked on Figure 5. Pit 2 clearly truncates layered gully sediments to the west*

Although more than 100 radiocarbon years apart, the sigma values for each date do overlap and both occur within the range of dated sites attributed to the Washita River phase. However, the possibility does exist that Pit A may be earlier than Pit B.

Recovered Artifacts and Debris

A variety of items were recovered by the investigations at 34GV202. Artifacts retrieved from the excavations and surface cleaning include arrow points, stone tools, chipped stone debitage, bone tools, ceramics and other miscellaneous items. Recovered materials also include faunal and botanical remains.

Chipped Stone Artifacts and Materials

The lithic artifact assemblage recovered from 34GV202 includes arrow points and preforms, bifaces, wedges, unifaces, utilized flakes and debitage. Aside from arrow points and preforms, the assemblage contains little in the way of formal stone tool types such as scrapers, drills or beveled knives. In addition, the debitage does not appear to reflect a technology oriented to the production of standardized flake blanks or cores.

A variety of raw materials are represented in the 330 items comprising the lithic assemblage. Much of the material is Ogallala quartzite and unidentified chert likely derived from local gravel deposits. Gravel in the Washita River as well as some of its tributaries contain small pebbles of various chert and quartzite. In addition, high terraces present in the Washita valley contain small chert cobbles and pebbles as well as cobbles of Ogallala quartzite, metaquartzite and petrified wood (Strain 1937). Frisco chert, geologic sources of which are located about 70 km southeast of 34GV202 is also present in the assemblage (Amsden 1960). A small amount of Alibates agatized dolomite is present, small cobbles and pebbles of which are known to occur in local gravel deposits within the Canadian River basin just north of the site (Wyckoff 1993). Minor amounts of Edwards chert and Boone chert as well as material derived from the Ouachita Mountains are also represented in the assemblage.

Chipped Stone Tools

The artifacts described in the following section include arrow points and preforms, a dart point, bifacial and unifacially modified items and wedges. Proveniences are provided in Table 1.

Side-notched Arrow Points (Table 1 Figure 7 a-i)
Sample Size = 9
A total of nine arrow points exhibit side-notches. Five may be classed into defined types including 4 Washita and 1 Harrell. Due to breakage, the remaining four can only be classed as side-notched. Washita points are common among Late Prehistoric assemblages throughout Oklahoma from about AD 1100 to 1500 (Bell 1958:98). Harrell points are similar to Washita points with the addition of a basal notch. The points occur over about the same time frame as Washita (Bell 1958:30). Four of the arrow points are manufactured of unheated Frisco chert, 1 of Alibates and 3 of unidentified chert.

Triangular Unnotched Arrow Points (Table 1 Figure 7 j-m)
Sample Size = 7
Seven triangular unnotched arrow points, all of which may be classed as Fresno were recovered. Fresno points become increasingly more common during the Late Prehistoric, and Protohistoric times (Bell 1960:44). Among these are 4 complete specimens and 3 fragments. Three are manufactured of unheated Frisco chert, 1 of Edwards chert, and 3 of unidentified chert. One of the Frisco chert items is rather large for a typical Fresno (Figure 7m). No evidence of the item being used as a knife was noted and it appears completed, therefore it is classed in this category. The point fragment of Edwards chert was discovered between two articulated deer carpals (lunar & scaphoid) while cleaning the surface of E2/N2.

Unidentified Arrow Point (Table 1)
Sample Size = 1
One arrow point blade fragment could not be classed in the above categories due to breakage. This item is made of unidentified chert.

Arrow Point Preforms (Table 1 Figure 7 n-q)
Sample Size = 4
A total of four arrow point preforms, all manufactured of unidentified chert are present in the sample. One was apparently abandoned after a longitudinal break occurred during an attempt to remove a stack (Figure 7p). Two were obviously abandoned because they were too thick (Figure 7 n,o). The other may have

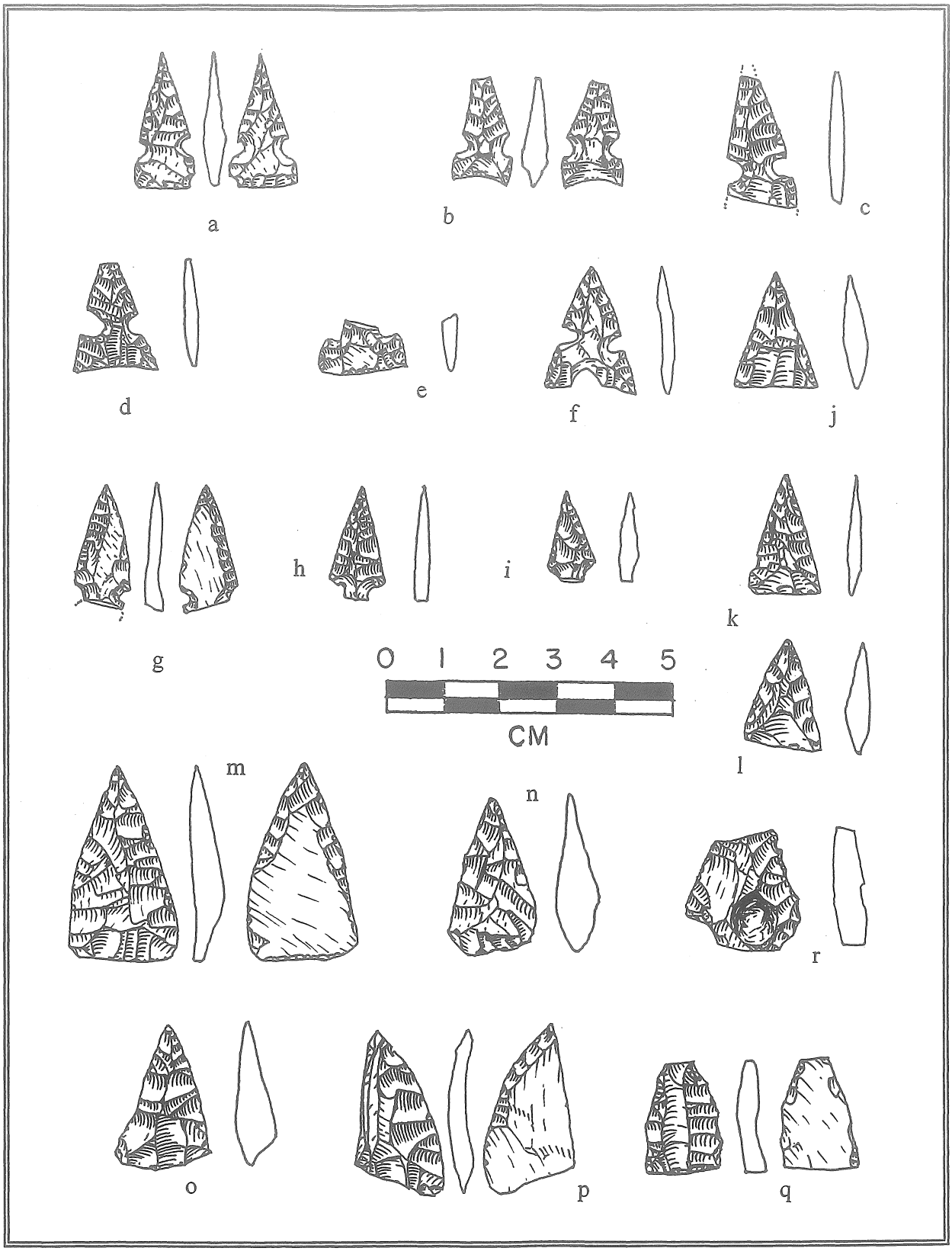

Figure 7. *34GV202 Recovered Artifacts - Points and Preforms. Side Notched Arrowpoints (a-i); Triangular Unnotched Arrowpoints (j-m); Arrowpoint Preforms (n-q); Dart Point Fragment (r).*

been abandoned due to loss of platform to finish thinning (Figure 7q).

Dart point Fragment (Table 1, Figure 7r)
Sample Size = 1
A dart point fragment of heat-treated Frisco chert was recovered from the north/south trench through N6/E4. Both the blade and stem exhibit bend breaks. Although the stem/blade juncture remains on the artifact, the lack of stem attributes does not permit identification of either a corner-notched or contracting stem biface.

Miscellaneous Bifaces (Table 1 Figure 8 a-d)
Sample Size = 4
Aside from the items already described, four other items exhibiting some degree bifacial flaking were recovered. None appear to be bifaced in a manner suggestive of formal tool manufacture, in fact most exhibit bifacial modification only along one or more edges. One artifact is manufactured on a secondary flake of Ogallala quartzite with bifacial flaking confined along one edge (Figure 8b). Numerous small step fractures and edge rounding have resulted from use of the artifact along the modified edge. The remaining three artifacts are manufactured of Frisco chert two of which are made of heat-treated material. One is a biface which exhibits a break, and although completely bifaced, does not appear to be a formally shaped tool (Figure 8c). Small flake scars along a portion of one edge are likely the result of use. The other artifact of heat-treated Frisco has been manufactured on a flake (Figure 8d). Bifacial modification occurs along all edges of this triangularly shaped tool. However, none of the flake scars extend across the face of the tool. The edges exhibit step fractures and edge rounding indicating heavy use of the artifact. The remaining item is of non heat-treated Frisco chert (Figure 8a). The artifact is a secondary flake not completely bifaced but is bifacially modified along one lateral edge. The other lateral edge is unifacially modified and both exhibit small flake scars and edge polish indicating use.

Unifaces (Table 1, Figure 8 e-f)
Sample Size = 4
Four artifacts exhibit deliberate unifacial flaking along one or more edges to create a working tool edge. These items are distinguished from utilized/modified flakes discussed later in that the edge modification appears to be oriented toward producing a desired edge shape or angle. Two unifaces were recovered from the excavations, one from E4/N4 E/W made on Frisco chert, and one from E6/N4 E/W manufactured of unidentified chert. Both have steep (75-85 degree) edge angles similar to those on endscrapers. The remaining two items in the category, both of unidentified chert, are from the surface. One exhibits alternate face flaking on two edges, the other is modified on all edges. The edge angles on these items are not as steep (50-60 degree) as those on the previously described artifacts.

Wedges (Tables 2, 3; Figure 9)
Sample Size = 7
The tools in this category exhibit battering and breakage patterns resulting from use as wedges. Crushing and small step fractures are common on the edge serving as a striking platform. The working edge usually exhibits hinge and step fractures often resulting in loss of the edge. These items were likely used in splitting materials such as wood, bone or antler. The tools do not appear to have been secondarily shaped for use but were selected based on attributes conducive for use as a wedge. In fact at least four different types of blanks are identifiable among the seven wedges in the sample including three different flake types and a pebble (Table 3). This particular tool type is rarely reported or described from Plains Village sites in the region, therefore more detailed attribute descriptions of these items are provided in Tables 2 and 3.

Lithic Debitage

A total of 219 flakes and 81 pieces other knapping debris, as well as 1 core were recovered from the excavated trenches (Table 4). Another 35 flakes and 11 pieces of other knapping debris was recovered during the surface cleaning of Feature 1. Several flake and debitage types are recognized among the artifacts in the sample. These include flakes and knapping debris produced by direct hand held percussion and pressure flaking as well as bipolar percussion.

Of the 347 items classed in this section, 169 (48.7%)are unidentified chert, 92 (26.5%) are of Ogallala quartzite, 39 (11.2%) are Frisco chert (12 or 37.5% of which is heat-treated) and 17 (4.9%) are unidentified metaquartzite. The remaining 8.7 % of the total are of various materials including Boone chert, Johns Valley chert, Alibates agatized dolomite, Oil Creek chert, Antlers quartzite, Tecovas jasper and novaculite. Since shatter and blocky debris can be produced at any time

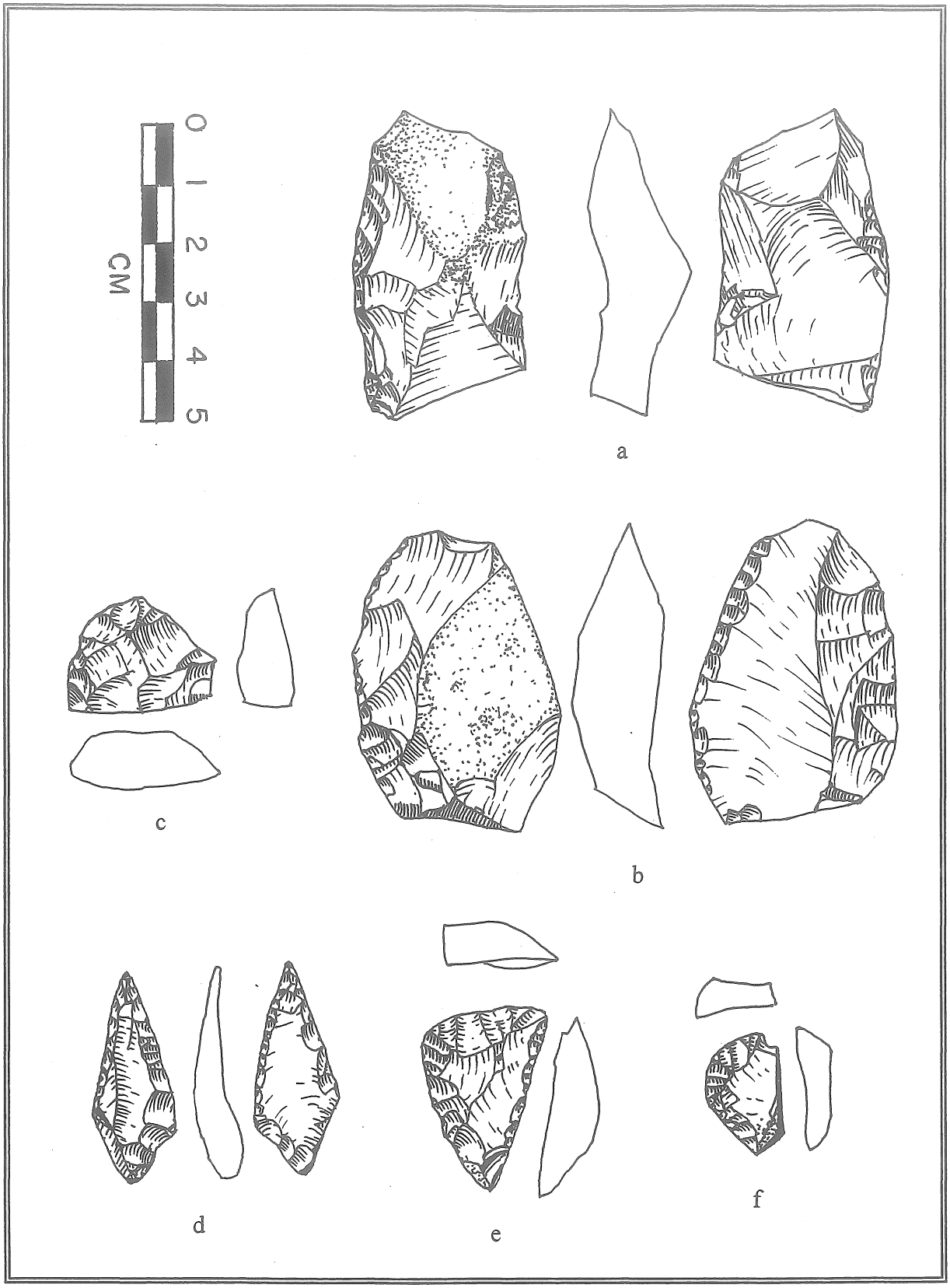

Figure 8. *34GV202 Recovered Artifacts - Bifaces and Unifaces. Bifaces (a-d); Unifaces (e-f)*

during the knapping process, this category was excluded from calculations of the percentages of each flake type among the total flakes (n=254) in the following discussion. This provides a clearer picture of the percentage of each flake category represented in the total flake assemblage.

Primary Decortication Flakes (Table 4)
Sample size = 39
Primary flakes are removed during initial reduction stages of raw material. They exhibit the weathered surface or cortex of the parent material. Flakes classed in this category exhibit cortex over at least 90% of the dorsal surface as well as the platforms. All of the cortex observed in this sample is typical of stream rolled gravel.

This category constitutes 15.4 % of the total 254 flake sample. Ogallala quartzite comprises 61.1% of the primary flakes, unidentified chert comprises 35.9% and the remaining 3% are of unidentified metaquartzite. Notably absent in this category is Frisco chert. A total of 5 (12.8%) of the flakes in this category exhibit evidence of utilization.

Secondary Decortication Flakes (Table 4)
Sample Size = 50
Secondary flakes are also produced during early reduction stages and have some cortex remaining on the dorsal surface. Platforms are often, although not necessarily cortex. Like the cortex present on the primary flakes, most is typical of stream rolled gravel. The exception is cortex typical of residual cobbles present on some of the Frisco chert flakes.

Secondary flakes comprise 19.7 % of the total flake sample. Of the 50 secondary flakes, 42% are unidentified chert, 22% are Ogallala quartzite and 18% are Frisco chert. A variety of lithic materials are represented among the remaining 18% (Table 4). Many (32% n=16) of the secondary flakes exhibit evidence of utilization.

Tertiary Flakes (Table 4)
Sample Size = 104
Tertiary flakes refer to those produced after the cortex has been removed. They may be produced from well prepared or randomly shaped cores. They may also result from non-bifacial tool production. Tertiary flakes are often selected as blanks for tool manufacture or for use as a tool with little or no modification. The flakes in this sample which retain platforms exhibit generally flat, unprepared, high angled platforms and appear to be derived from randomly flaked cores or material. The dorsal surfaces reveal few scars from previous flake removals.

Of the total sample of flakes, 40.9% are tertiary. Unidentified chert is represented by 45.2 % of the tertiary flakes, Frisco chert comprises 21.2% and Ogallala quartzite makes up 19.2 %. The remainder (14.4 %) is composed of a variety of lithic material (Table 4). Of the 104 flakes in this category, 19 (18.2%) exhibit evidence of utilization.

Biface Flakes (Table 4)
Sample Size = 7
Only seven flakes in the sample are identifiable as being removed from a bifacially flaked edge. These flakes commonly exhibit prepared, acutely angled, and lipped platforms, or a biface edge used as a platform. In addition, the biface flakes display several dorsal flake scars, often oriented in several directions.

This category comprises only 2.8% of the total flake sample. Four (57%) are of unidentified chert and there are one each of Frisco chert, Ogallala quartzite and Alibates agatized dolomite. Although only 7 items can be classed in this category, 57.1% (n=4) of which exhibit evidence of utilization.

Bipolar Debitage (Table 4 Figure 10)
Sample Size = 54
In addition to the above flake categories, another distinctive type of debitage is present in the sample. These particular artifacts are the result of bipolar percussion (Binford and Quimby 1963; Hayden 1980; Honea 1965; Shafer 1973). Bipolar debitage has not been reported or described among other Plains Village assemblages in the area and therefore merits a more detailed description than the categories above. The bipolar method of flake production involves placing small cobbles or pebbles on anvil stones and delivering a blow with a hard or soft hammer (Honea 1965). The result is often several pieces of debitage produced with one blow. This technique produces distinctive debitage exhibiting various combinations of opposing ridges, points, or areas of percussion often exhibiting numerous small step fractures, crushing and splintering (Binford and Quimby 1963; Hayden 1980; Honea 1965; Shafer 1973). Pieces are frequently cubical and

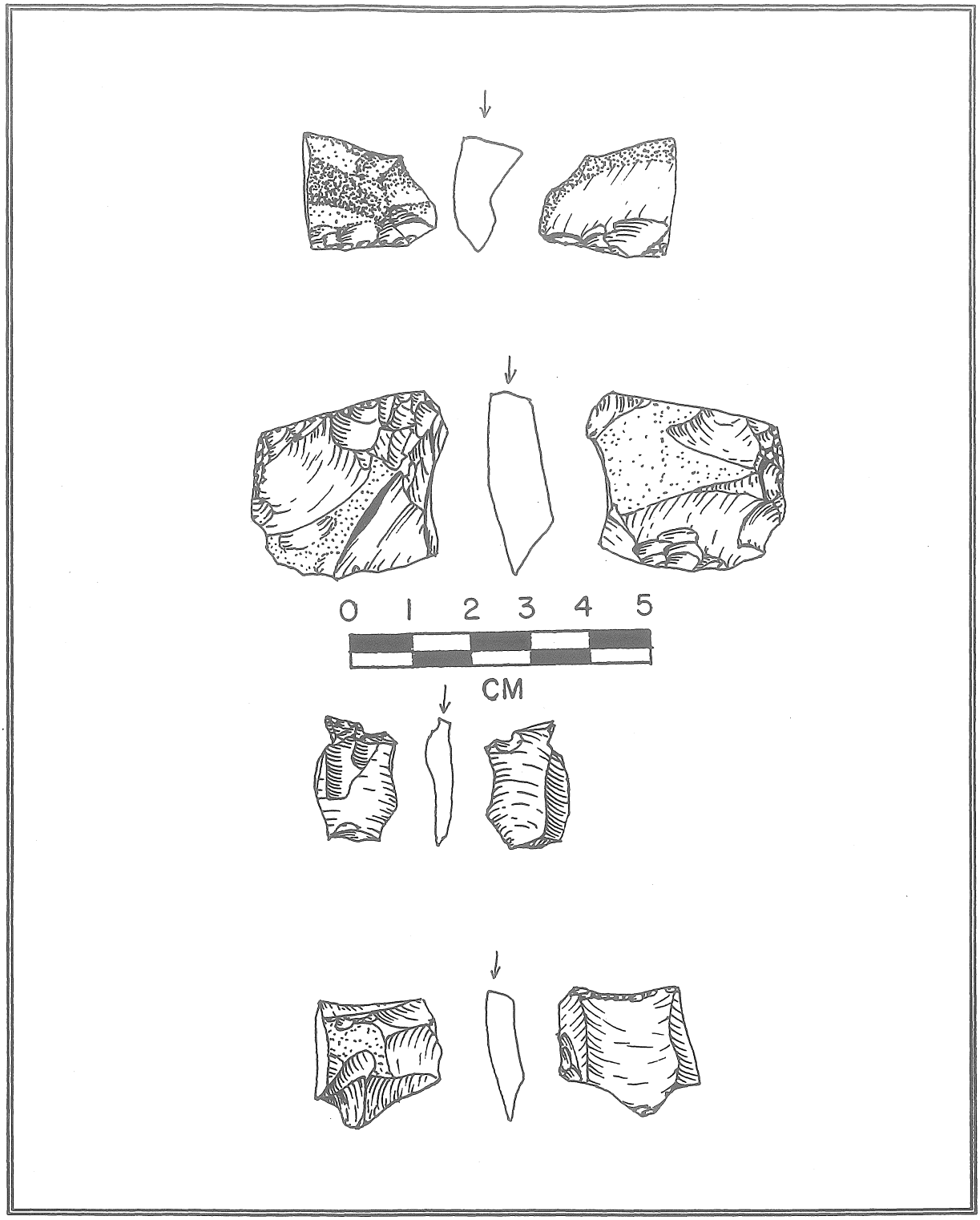

Figure 9. *34GV202 Recovered Artifacts - Wedges.*

may exhibit several cleavage faces which usually emanate from single or opposite ridges or points of percussion (Figure 10). Figure 10a is a photograph of three refit flakes evidencing bipolar percussion. A percussion blow was struck in the area at the upper part of the photograph with a rebound fracture evidenced in the area opposite the impact. This one blow resulted in the removal of at least these three flakes.

In addition to the debitage described above, this method may produce flakes which morphologically fall into primary, secondary and tertiary categories. Distinguishing between such flakes produced by direct hard or soft hammer percussion of hand held material and those produced by bipolar technique can be difficult, particularly when pebbles are being reduced. Shafer (1973:111-112) notes that some of the flakes produced in his bipolar experiments are indistinguishable from those produced by hand held direct percussion. Limited experimentation conducted in conjunction with this analysis also produced flakes indistinguishable from ones produced via percussion of hand held material. Only items exhibiting distinct attributes of bipolar percussion are classed in this category. Therefore, some of the flakes in the previously discussed categories may have been produced by this method. In addition, debitage retaining cortex but exhibiting clear evidence of bipolar percussion, was classed as such and not in either the Primary or Secondary flake categories already examined.

Of the 254 total flakes, bipolar debitage accounts for 21.3%. A total of 41 (75.9%) of the bipolar debitage is unidentified chert. Ogallala quartzite and Frisco chert are both represented by 3 (5.6%) pieces each. Alibates agatized dolomite, Boone, Oil Creek and Johns Valley chert comprise the remainder of the sample. Eighteen (33.3%) of the artifacts in this category appear to have been utilized.

Shatter and Blocky Debris

Sample Size = 92

Percussion flaking (both hand held and bipolar) often produces irregular pieces of material which do not retain characteristics allowing classification in any of the above categories. Most of these items may be described as small splinters or shatter and blocky, angular fragments.

Unidentified chert (45.2%) and Ogallala quartzite (38.7%) make up the majority of material in this category. Only 5.4% of the material is Frisco chert. Among the materials identified in the remaining 11% are unidentified metaquartzite, Johns Valley chert, novaculite and Tecovas Jasper (Table 4). Only 2 (2.2%) of the pieces evidence utilization.

Utilized flakes

The number of items in each debitage category exhibiting evidence of utilization are included in parentheses in Table 4. Evidence of utilization was limited to macroscopic, or low power magnification (10x) examination. The presence of small flake scars, rounding and/or polish along one or more edges of the flake provided the basis for determining utilization. Determinations were initially based on unaided observation and supplemented by examination under a 10x binocular microscope when necessary to better ascertain if the observed damage or modification is the result of use. A determination as to the activity or material being worked was not undertaken. Of the 347 pieces of flakes and other debitage discussed above, 64 (18.4%) evidence utilization along one or more edges. Most have not been modified, however, some do reflect minor amounts of random pressure flaking along the utilized edge. Unidentified chert comprises 62.5% (n=40) of the total number of utilized flakes. It further appears that secondary flakes (32%), biface flakes (57%) and bipolar debitage (33.3%) were selected for use more often than primary or tertiary flakes.

Core

Sample Size = 1

Only one core was identified in the sample. The item is made of Antlers Quartzite. The artifact exhibits five flake scars resulting from random flake removal.

Groundstone Artifacts

The five artifacts described in this section are stone items modified by pecking and grinding to the desired shape (Table 5). With the exception of a limestone pipe fragment, all are made of sandstone.

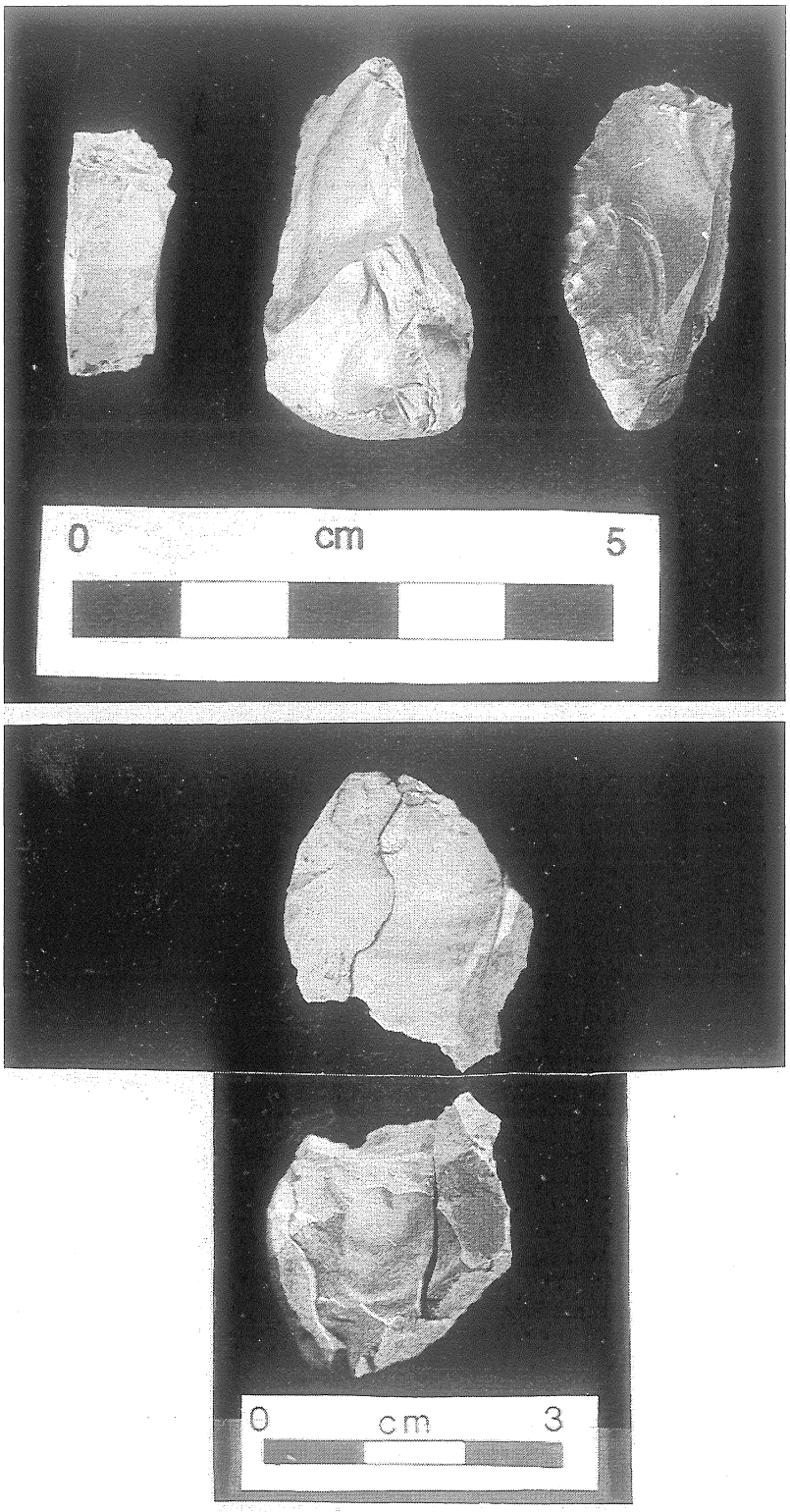

Figure 10. *34GV202 Recovered Artifacts - Bipolar debitage. Bottom illustration shows both faces of a refit specimen composed of three flakes removed by the same blow*

Abrader
Sample Size = 1
A fragment of a sandstone abrader was recovered from E4/N2 N/S trench. The artifact represents the rounded end of an abrader. Although only a small portion of the groove is present, it appears to be more V-shaped than U-shaped.

Pigment Palettes
Sample Size = 2
Two small fragments of smoothed sandstone with hematite residue were recovered. One was recovered during the initial surface cleaning, the other from E4/N6 N/S trench. Both items are smoothed on one face with obvious hematite residue adhering to the smooth surface. These items likely served to grind or mix hematite to produce red pigments.

Miscellaneous
Sample Size = 2
Two fragments of smoothed sandstone were recovered from E6/N4 E/W Trench. Both are well smoothed on both faces with the smoothing extending onto the edges. One piece is thin measuring a consistent 7.5 to 8 mm in thickness (Figure 3c). The remaining fragment varies from 17 to 13 mm in thickness (Figure 3b). The thicker item may be a mano fragment while the purpose of thinner item is unknown.

Miscellaneous Unmodified Sandstone

The items in this category are pieces of unmodified stone recovered during the investigation. Most evidence exposure to heat by intense reddening and fractures. These are likely discarded hearth or cooking stones. Counts and weights are provided in Table 5. However, it should be noted that collection of this material was not consistent during the investigation. Therefore the counts can only be considered a minimum representation.

Pipe Fragments
Sample Size = 2 (Figure 11)
Two pipe fragments were recovered during the investigations. One, recovered from E2/N4 E/W trench is made of limestone and is a portion of the opening for either the bowl or stem. It exhibits a collar around the opening.

The other fragment is manufactured of red shell-tempered pottery and appears to be a portion of a pipe stem. This item was found on the surface of the borrow pit floor.

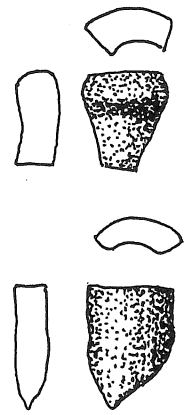

Figure 11. *Pipe Fragments. Top example is limestone; that on the bottom is fired clay*

Ceramics

A total of 243 sherds and 5 vessel sections were recovered from the excavated trenches, and 40 sherds and 1 vessel section were recovered from the surface of Feature 1 (Table 6). The vessel sections resulted from efforts to refit sherds along both fresh and old breaks prior to analysis. Thus, the six restored vessel sections were analyzed separately and individual sherds used in reconstruction are not included in the sherd counts. In addition, many sherds in the assemblage are less than 1 cm in length with several exhibiting fresh breaks. Since many of these represent small pieces broken from larger sherds, they are classified as sherdlets and tabulated in Table 6, but are not included in the total sherd counts. The sherds are separated into categories based on temper and surface treatment. The vast majority (97.2%) are shell tempered.

Nocona Plain
A total of 273 of the recovered sherds and the 6 restored vessel sections are shell tempered with platy to finely crushed mussel shell, the majority being finely

crushed. Most have brown to gray exterior and interior surfaces. The cores are mostly gray. The temper and surface treatment is similar to pottery identified as Nocona Plain. This type was initially identified in North-Central Texas (Suhm and Jelks 1962:115) and has since been identified on Plains Village sites in Central Oklahoma (Brooks 1987:93; Drass 1988:46-48, 1995:470). Among the sherds in this category are 24 rim sherds, 10 neck sherds, 9 base sherds and 230 body sherds.

Restored Vessels Sections
Sample Size = 6
A total of six partially restored vessel sections or large sherds of Nocona Plain in the sample allow for some discussion of ceramic vessels recovered from 34GV202. With the exception of one, all are reconstructed from sherds recovered in N4/E4.

On the surface of N4/E4, a large vessel section retaining a rim and body portion was recovered (Figure 12). Most breaks on this item are fresh. The section is from a large jar with an everted rim. Temper is finely crushed shell. The rim is about 9.5 mm thick with a flattened lip about 6.5 mm thick. The measurement from the lip to the neck is 34.8 mm. The body averages about 11 mm in thickness. The rim orifice was no more than 200 mm in diameter and the vessel had a minimum height of 26 cm. This vessel section was associated with a large number of charred dropseed discussed in the botanical section.

Three partially reconstructed vessels were recovered from the N/S trench through N4/E4. One is a small, plain, flat base, everted rim jar with finely crushed shell temper (Figure 13). The rim is 5.3 mm thick with a rounded to flattened lip averaging 2.8 mm thick. The measurement from the lip to the neck is 19.5 mm. The jar has a smooth, light brown interior and exhibits heavy carbon residue over its exterior. In addition, a deposit of carbonized residue is present around the interior of the rim. The rim is 133 mm in diameter and the neck orifice is 119 mm in diameter. The interior height is 111 mm and the exterior height is 124 mm.

Two mostly complete rims representing large everted rim jars were also recovered from the N/S trench in E4/N4. Both are decorated with nodes attached at the neck. The rim of the smaller of the two (Figure 14), reconstructed from old breaks, is about 180 mm in diameter with a neck orifice of 150 mm diameter. The rim is about 8.0 mm thick with 5.5 mm thick flattened lip. The rim measures about 31.5 mm from the lip to the neck. Only a small portion of the body is retained on this item and it measures about 9 mm in thickness. The temper is fine to platy shell. The larger rim (Figure 15) is from a large everted rim jar with nodes attached to the neck. The rim averages 7.5 mm in thickness and measures 35.2 mm from the lip to the neck. The flattened lip is 6.0 mm thick. The rim diameter is about 200 mm and the neck orifice is 150 mm in diameter. The portion of the body present on this vessel section is about 8 .5 mm thick and exhibits a heavy carbon residue over the exterior. The carbon was deposited in such a way that the body, nodes and rim are entirely covered while the neck has very little. The interior is well smoothed.

Approximately half of a large, plain, everted rim jar was reconstructed from sherds recovered from the surface and both trenches in E4/N4 (Figure 16). Most of the breaks are prehistoric. The rim is about 8.5 mm thick and measures 35.6 mm from lip to neck. The lip is about 5.5 mm thick and varies from rounded to flattened. The vessel is approximately 163 mm in diameter across the rim and 110 mm in diameter at the neck. The exterior height of the vessel is at least 32 cm and the interior at least 29 cm. The largest interior diameter is 28 cm with an estimated capacity of 11, 500 cc. The vessel likely had a rounded base. The body ranges from 12 mm to 18.2 mm in thickness, the thicker measurement taken near the base of the vessel. Very little in the way of carbon deposit is present on the vessel exterior. The interior is well smoothed and the vessel tempered with finely crushed shell.

Part of another small jar was recovered from the N/S trench in E4/N2 (Figure 17b). The jar has a small everted rim 5.5 mm thick with a rounded to flattened lip 2.8 mm thick. The rim measurement from the lip to the neck is 18.0 mm. A handle is present as well as a lip tab above the handle. There apparently was another lip tab adjacent to the one remaining which was broken prehistorically. The rim diameter is approximately 100 mm with an orifice of about 90 mm at the neck. The vessel height is at least 113 mm. The vessel exhibits moderately smooth interior and finely crushed shell temper. Carbon residue is present over all the exterior.

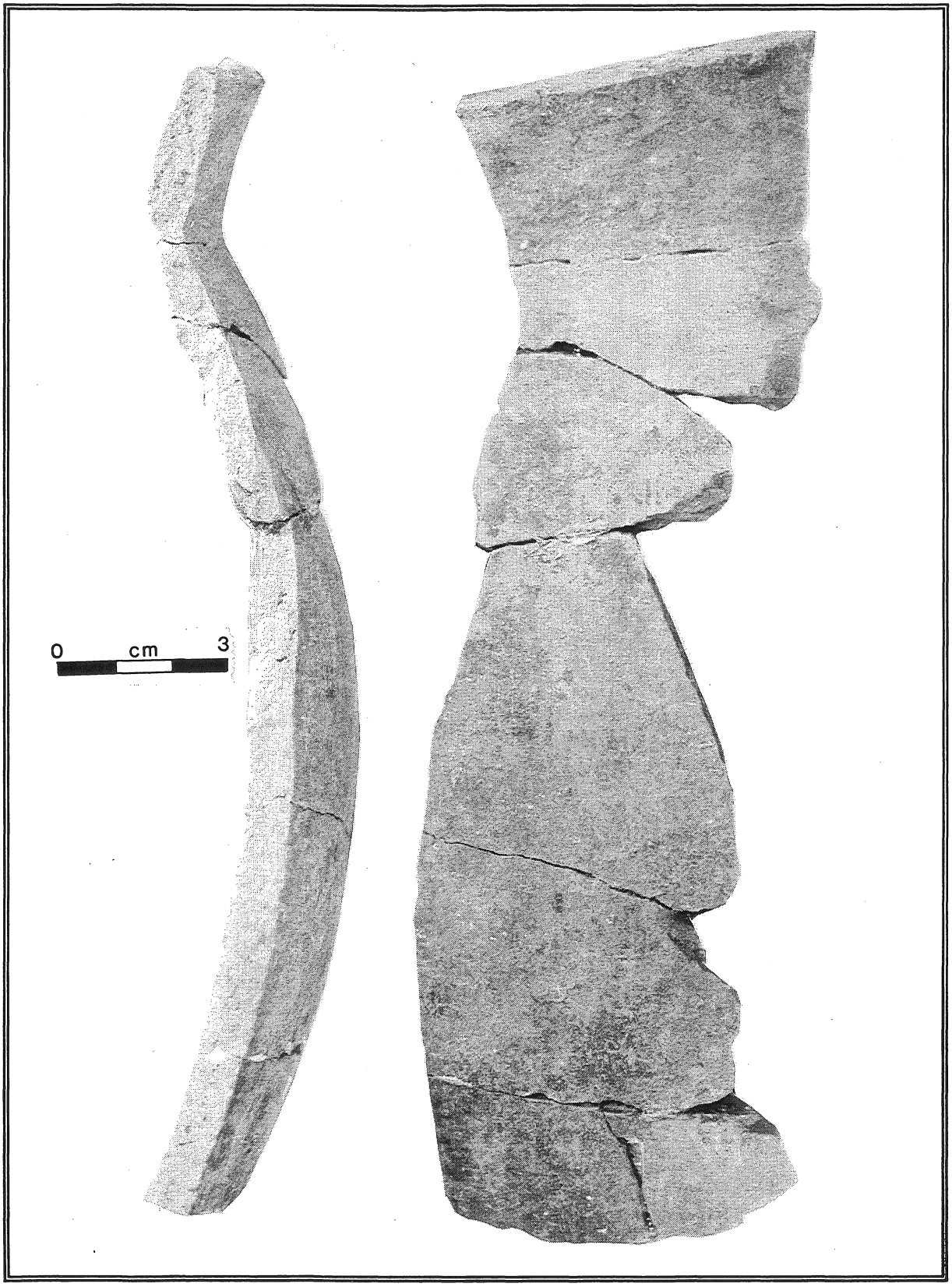

Figure 12. *34GV202 Ceramics. Restored Nocona Plain vessel section associated with charred dropseed*

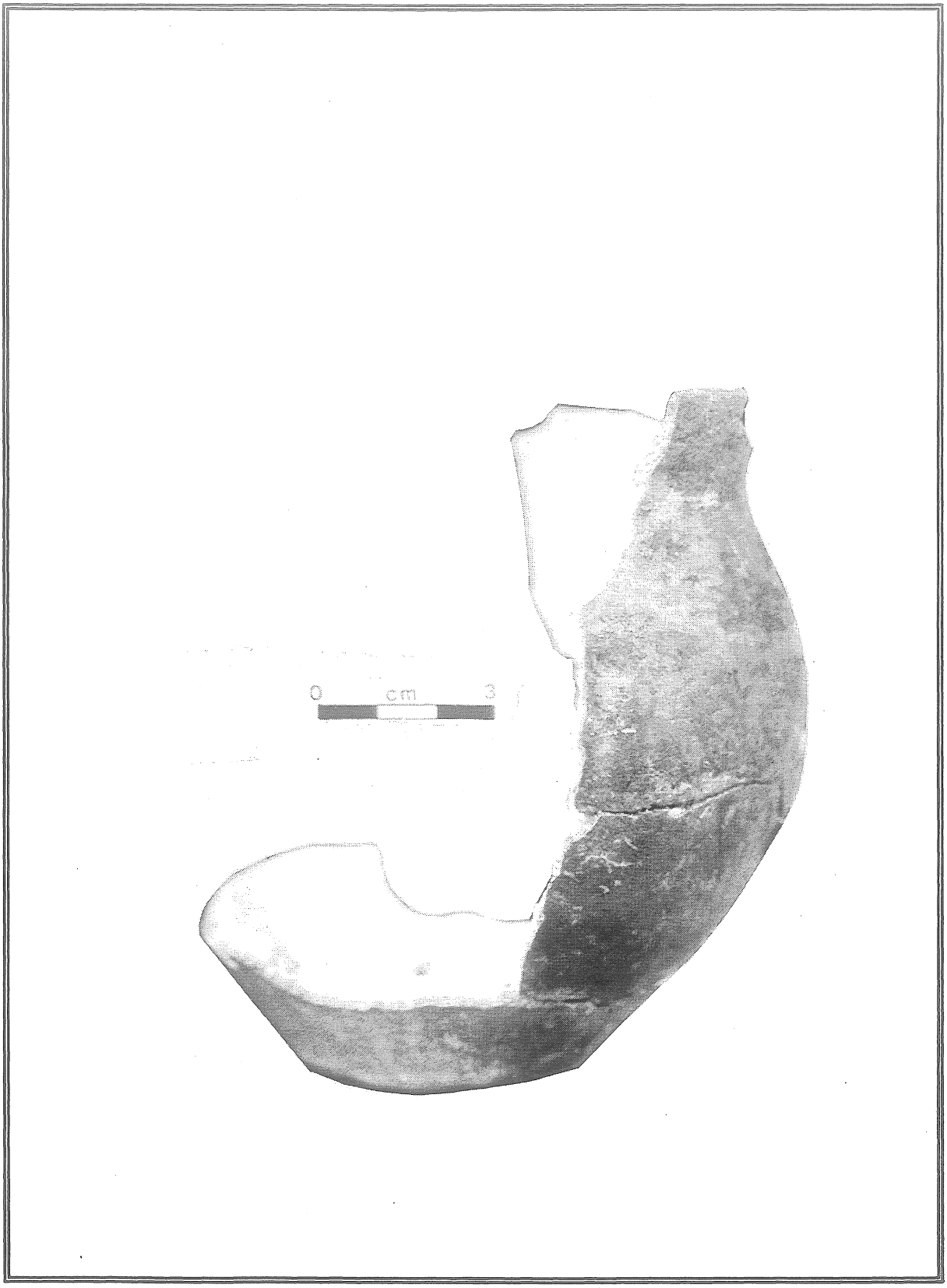

Figure 13. *34GV202 Ceramics. Restored Nocona Plain small flat-base jar vessel section*

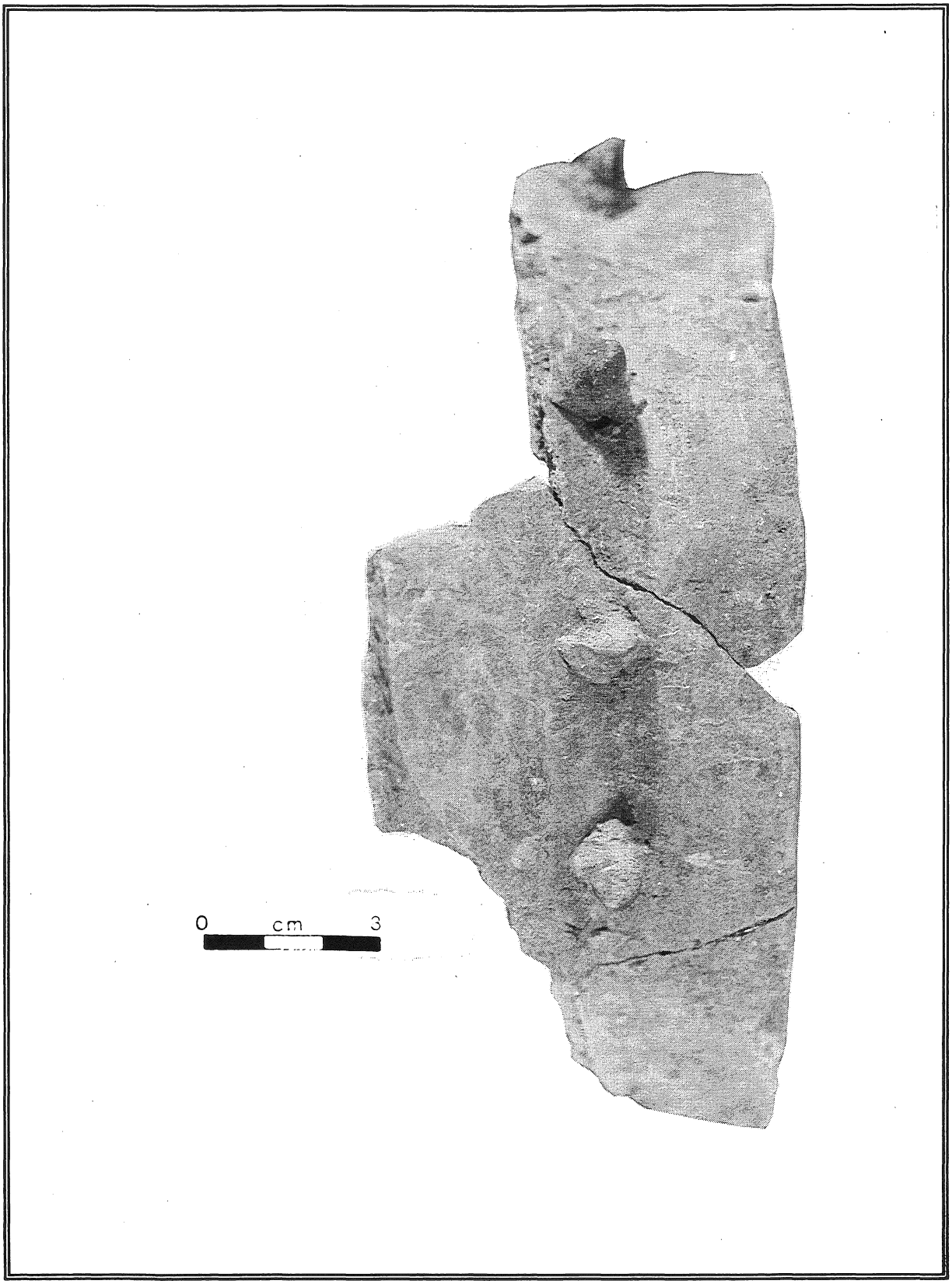

Figure 14. *34GV202 Ceramics. Restored Nocona Plain noded rim section*

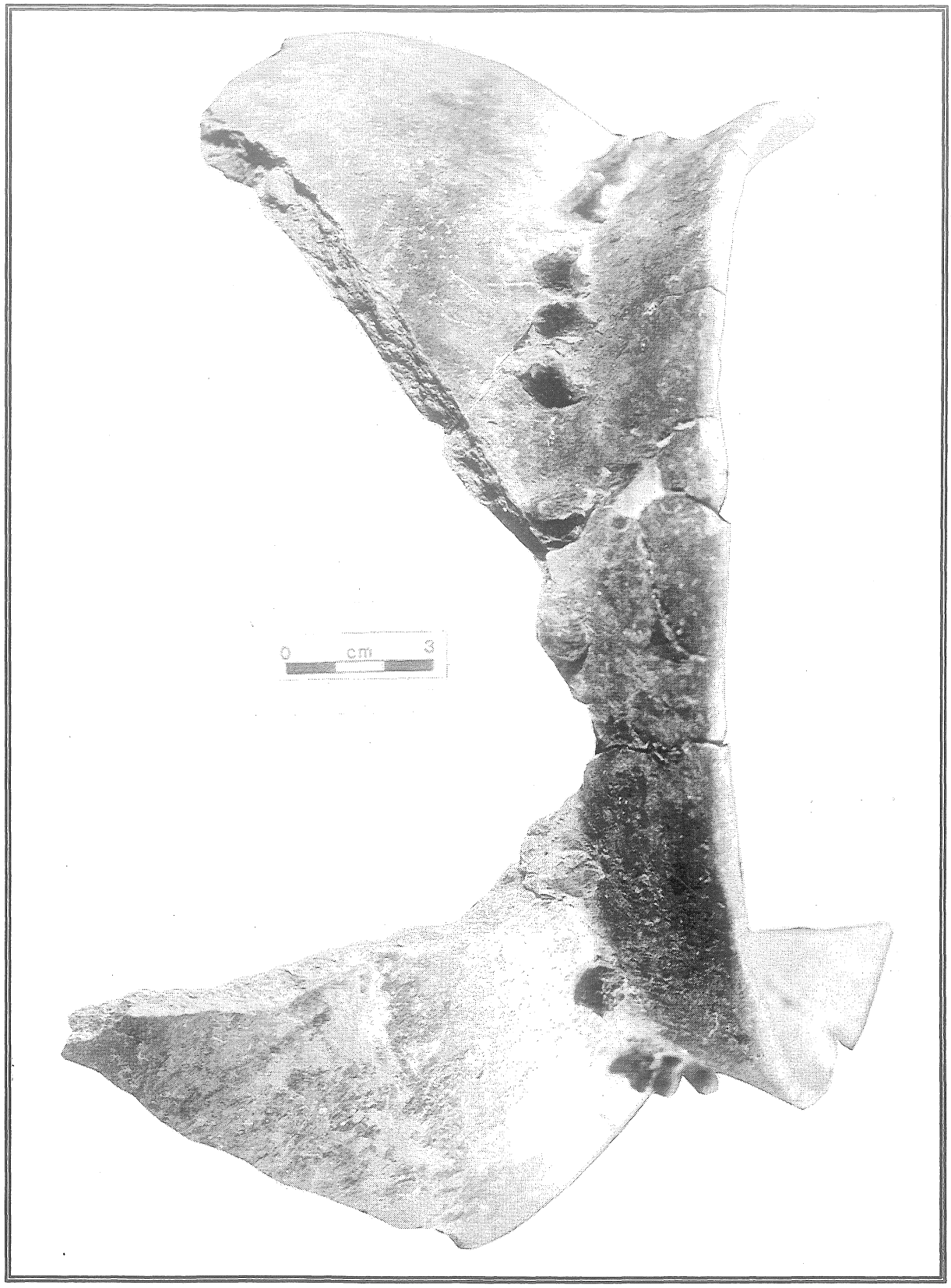

Figure 15. *34GV202 Ceramics. Restored Nocona Plain large noded rim and shoulder section*

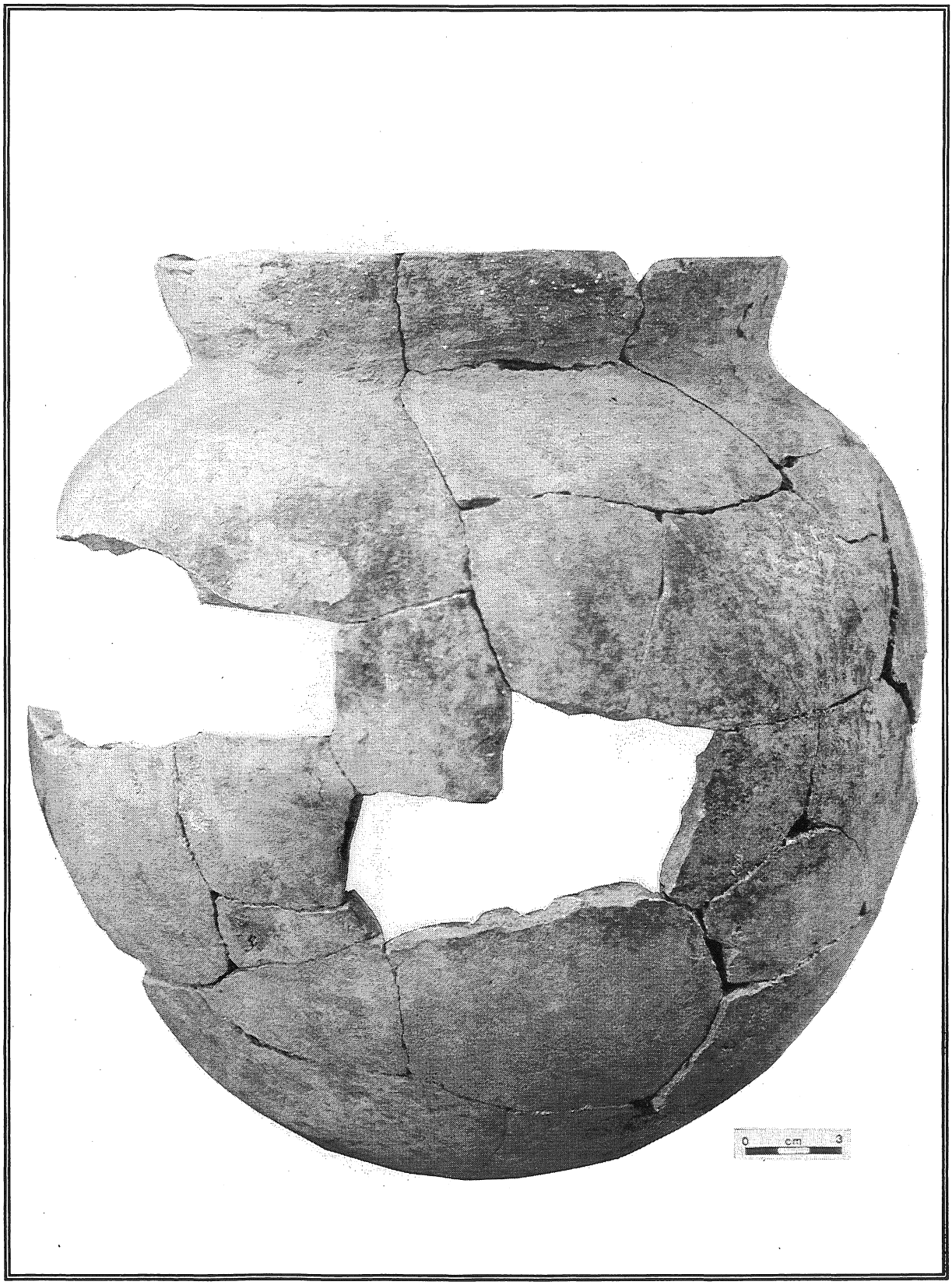

Figure 16. *34GV202 Ceramics. Restored Nocona Plain large everted-rim vessel*

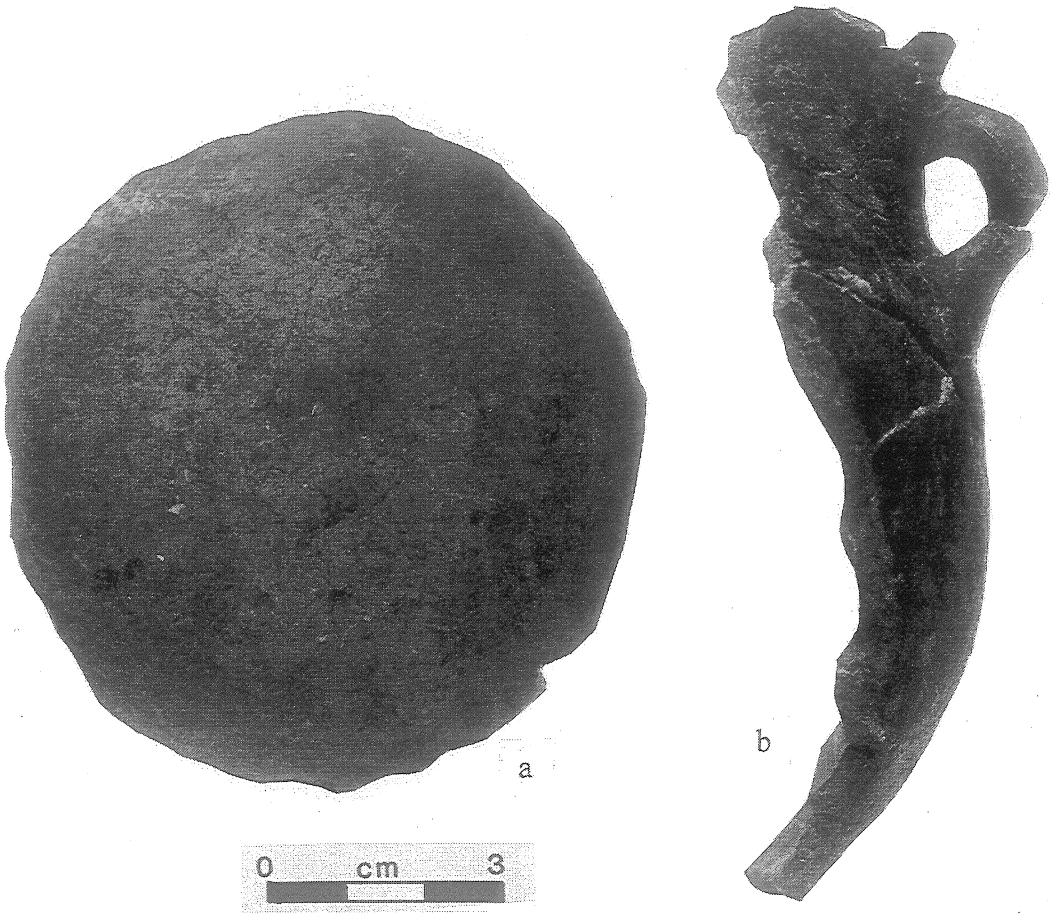

Figure 17. *34GV202 Ceramics. (a) Large Nocona Plain rounded base sherd; (b) Small Nocona Plain jar section with lug handle*

Sherds
Sample Size = 273
Body N = 230
All the 230 body sherds are plain and range from 3.8 to 16 mm in thickness. However, most fall within the 8 to 10 mm range. Many appear to be from larger vessels similar to the vessel sections discussed above.

A large Nocona Plain body sherd from E4/N2 N/S Trench deserves a more detailed description. The sherd is from a large vessel with an average thickness of 9.8 mm. One edge of the sherd has been utilized as evidenced by abrasion and perpendicular striations confined mostly to the exterior surface along the edge and extending partially onto each adjoining edge. Some minor rounding is evident on the interior surface.

Rim N = 24
All rim sherds retaining a portion of the body or neck have everted rims with flattened or rounded lips. Most appear to be from large jars. One rim sherd is obviously from a very small vessel, likely a jar. Rim thickness ranges from 11.8 mm to 5.0 mm. However, most are between 7 and 8 mm. Lips range from 2.8 mm in thickness on the small rim sherd to 7 mm on larger rims. Only two rims exhibit decoration, one with a lip tab and another with a collar about halfway between the lip and neck area.

Neck N = 10
Neck sherds refer to sherds from the area of the rim/body juncture. Most retain a portion of the body, however, only a small portion of the rim. All are from everted rim vessels, most of which appear to be medium to large size vessels.

Base N = 9
One rounded base sherd (Figure 17a) and 8 flattened base sherds are present in the sample. All appear to be from medium to large jars and range from 8.5 to 21.0 mm in thickness. Unlike the rim sherd sample, the base sherds exhibit a wide degree of variability in thickness.

Unidentified Stone and Sand Tempered
Sample Size = 1
A fragment of a handle tempered with crushed stone and minor amounts of sand was recovered from E4/N4 E/W Trench. The sherd is 8.5 mm thick and 10.7 mm wide. It measures 10.5 mm in length however, is broken on each end and whether it is portion of a strap or loop handle cannot be determined. The color is brown with a gray core, which is very similar to the colors exhibited by the Nocona Plain items discussed above.

Unidentified Shell and Sand Tempered
Sample Size = 4
Four body sherds having a shell/sand temper are present in the sample. The sherds range from 7.8 to 11.8 mm in thickness. Three of the sherds have a red slip on the interior and one has slip over both the interior and exterior. Brooks (1987:96) reports 19 sherds with a shell/sand temper from the Arthur site. However , they are not slipped. None of the sherds from 34GV202 are large enough to permit analysis of vessel shape.

Unidentified Shell, Sand and Grog Tempered
Sample Size = 3
Three body sherds exhibit shell, sand and grog temper. The sherds vary from 7.3 to 8.1 mm in thickness. An exterior red slip is present on 2 sherds and both an interior and exterior red slip is present on the remaining one.

Unidentified Sand Temper
Sample Size = 1
One sand tempered body sherd exhibiting a red slip on both the exterior and interior surface is present in the sample. The vessel shape is undetermined and the sherd is about 6 mm thick.

Modified Bone

A total of 50 identifiable bone tools or pieces of modified bone were recovered from the investigations at 34GV202. Thirty of the items are recognizable as bone tools or portions thereof, manufactured from identifiable bison and deer elements and are described in categories according to element (Table 7). Two additional items, including a bison rib and a bird bone are also modified although not for use as tools. In addition, 18 unidentifiable fragments of bone exhibiting use or modification were recovered. These latter items are small portions of modified bone but are not identifiable as to an element or tool type and therefore not included in the categories discussed below.

With the exception of nine items recovered during surface cleaning and 2 bison scapula tools from Pit A, most of the modified bone was found in the vicinity of Pit B (Table 7).

Bison Scapula Tools

Sample Size =11 (5 identified tools and 6 fragments)

These tools have been fashioned from bison scapula which were commonly selected for the production of tools on Washita River phase sites. Tools produced from scapulae were employed as hoes or digging implements, skin dressing tools (Bell 1971) and possibly in plant processing (Sharrock 1961:22, 64). A minimum of 5 tools are represented in the sample and are described below. The remaining 6 fragments are only identifiable as fragments of modified scapulae and cannot be attributed to an individual tool or element.

Hoes N = 4

Four of the bison scapula artifacts from 34GV202 exhibit attributes of tools similar to those ethnographically described as hoes or digging tools among the Pawnee (Wedel 1936 :58). These items are among the more numerous bone tools recovered from Washita River phase sites (Sharrock 1961; Richards 1971; Pillaert 1963, 1962; Schmitt and Toldan 1953; Oakes 1953).

Of the 4 items described here, 3 are essentially complete and were apparently discarded when exhausted (Figures 18, 19, and 20). Two of these exhibit fresh breaks but have been reconstructed (Figures 18 and 19). The remaining tool exhibits predepositional breakage and was likely discarded for that reason (Figure 20). Post-depositional damage is minimal on the specimen in Figure 19 with only minor root etching on the dorsal side. The example in Figure 18 has some root etching on the ventral face as well as rodent gnawing along part of each lateral edge. Only a minor amount of root etching is evident on the broken tool in Figure 20.

All the tools have had the spine and posterior ridge on the dorsal face removed and smoothed by abrading. Remnants of impact cones are visible along the area of the posterior spine attesting to use of a small hammerstone in its removal. The coracoid has also been removed and the area smoothed. Removal was accomplished by battering along the spine/blade juncture then snapping (Savage 1992).

Two of the complete tools are manufactured from right scapulae (Figures 18,19). A hafting groove is present on the artifact in Figure 19 extending from the glenoid along the posterior edge for approximately 113 mm. The groove is 30 mm wide at its mid point, and angled at about 85 degrees toward the posterior edge. Very little of the glenoid remains on the tool due to wear through use (Savage 1992). The hafting groove on the item in Figure 18 begins close to the center of the glenoid and is about 33 mm in diameter at the surface of the glenoid, and about 25 mm wide at the midpoint, approximately 90 mm in length and also angled about 85 degrees toward the posterior edge. The difference in the amount of glenoid remaining on the hafting groove aperture is the result of use. The haft was originally attached to a concavity manufactured along the posterior ridge and glenoid. Through use the haft area migrates toward the center of the glenoid (Savage 1992).

Use wear is evident on both items mostly in the form of polish over much of each face. The tool in Figure 18 exhibits a high polish for about 2/3 of it's length from the proximal end. The ventral face is darker in this region. The lighter, lesser polished portion begins at the distal edge and extends further up the blade along the lateral edges than in the medial portion of the blade. Overlapping parallel and transverse striations are evident on the ventral face.

One hoe is manufactured from a left scapula (Figure 20). This item exhibits apparent prehistoric breaks which likely resulted in its discard. The hafting groove is about 112.5 mm in length along the posterior edge at an 85 degree angle and a 28.5 mm diameter concavity in the glenoid. Of the three hoes with hafting grooves, this artifact retains more of the glenoid. This is likely the result of the tool being broken and discarded early in its use cycle. Although polish and striations are present on the blade, they are not as pronounced as those on the other two items.

One fragment of the proximal or hafted end of a right scapula hoe was also identified. Although only a fragment, polish and striations as well a remnant of the haft area indicate the item is a fragment of a tool similar to those just described.

Unspecified Scapula Tool N = 1

One scapula tool from E0/N4 E/W (Pit A) made on a left bison scapula exhibits a high polish over the ventral

Figure 18. *34GV202 - Bison Scapula Hoe*

Figure 19. *34GV202*
Bison Scapula Hoe

surface of the blade (Figure 21a). No portion of the outer dorsal surface of the blade is present with only cancellous bone visible. Oblique striations are visible on the ventral face toward the proximal end of the tool. A diagonal working edge with heavy polish and striations perpendicular to the edge is present toward the distal end. The item may be a hoe fragment adapted to an alternate use after breakage. However, removal of the dorsal face and the striations on the diagonal edge are not consistent with use wear on the edges of items used as hoes. Similar tools, postulated to have been employed in plant processing are reported from the Grant site (Sharrock 1961:22,64).

Modified Scapulae Fragments N = 6
In addition to the above items, 6 fragments of bison scapulae exhibiting polish and striations were recovered. Three appear to be fragments of right scapula, the other 3 are only identifiable as portions of a scapulae. The nature of the modification is suggestive of use as hoes or digging implements.

Bison Tibia Tools
Sample Size = 3
Digging Stick Tips N = 2
One relatively complete and one fragment of a bison tibia digging stick tip were identified in the sample(Figure 21b,c). These tools were manufactured by removing the distal articular end of the tibia to facilitate hafting and manufacturing a beveled digging tip from the shaft of the bone. The tool was hafted to a digging stick by means of a hole made into the cancellous bone in the distal end of the shaft. The more complete item in this sample exhibits a portion of the hole through which the haft was inserted. Due to the small size of the fragment and the alteration that has occurred on the tool, ascertaining whether it is made from a right or left tibia cannot be determined.

The more complete tool exhibits a high polish as well as multi-directional striations on one side (Figure 21a). Very little evidence of use is visible on the opposite side. This area must have been covered, possibly by hafting material. The hafting hole diameter measures 30.3 mm at the opening, and tapers to 23.5 mm at the last point from which a measurement can be taken. This taper would serve to keep the haft secure through use.

The small fragment in this category is only identifiable as a part of the hafted end of the tool (Figure 21b). The item is well polished.

Unspecified Tibia Tool N = 1
The third tool in this category is manufactured from the proximal end of a left tibia (Figure 22a). The portion of the tool present is made on the shaft with the lateral and working edges being flattened and smoothed by abrading, in a manner similar to that observed on the bison radius tools discussed below. The working edge is toward the proximal end of the bone. Very little use wear is evident on the exterior surface of the bone. The lateral and working edge exhibits oblique striations from shaping. The concave portion of this surface has very little alteration. The interior surface of the bone exhibits more smoothing and polish attributable to use suggesting the tool was used in a manner with this surface toward the material being worked.

Bison Radius Tools
Sample Size = 2
Two tools recovered by this investigation have been manufactured from bison radii (Figure 23a, b). Both have been fashioned from proximal ends of right radii. However, the working edges are manufactured on opposite ends.

One specimen (Figure 23a) has a working edge manufactured toward the proximal end of the radius. The bone was split and the proximal articulating surface (epiphysis) removed. The working edge is fashioned in the shaft area immediately below where the bone begins to flare toward the proximal articulating surface. The edges along each side of the marrow cavity have been flattened and smoothed as well as the outer surface. The tool has been burned and a high polish is present on the entire item. The tool was broken during recovery and subsequently reconstructed. Two old breaks are evident, one along the lateral edge near the working end, the other on the opposite end of the tool. The working edge is basically straight and has been bifacially sharpened by abrading on each surface to produce slight bevels. The abrasion on the interior surface is oblique to the left and that on the outer surface is oblique with left over right abrading striations.

The second tool (Figure 23b) is also manufactured from the proximal end of a right bison radius. However, in contrast to the previously described tool, the working edge is toward the distal end of the element.

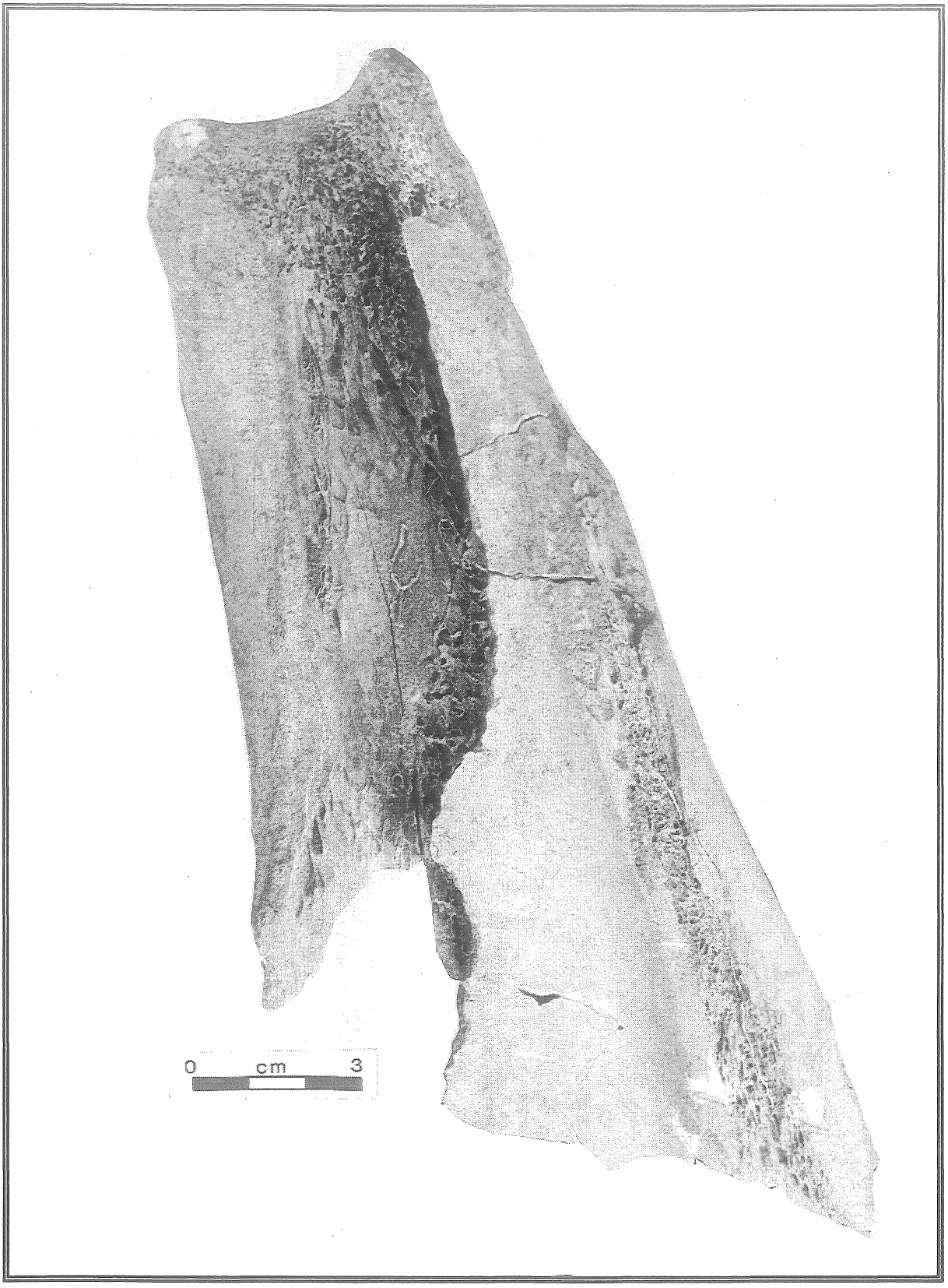

Figure 20. *34GV202 - Bison Scapula Hoe*

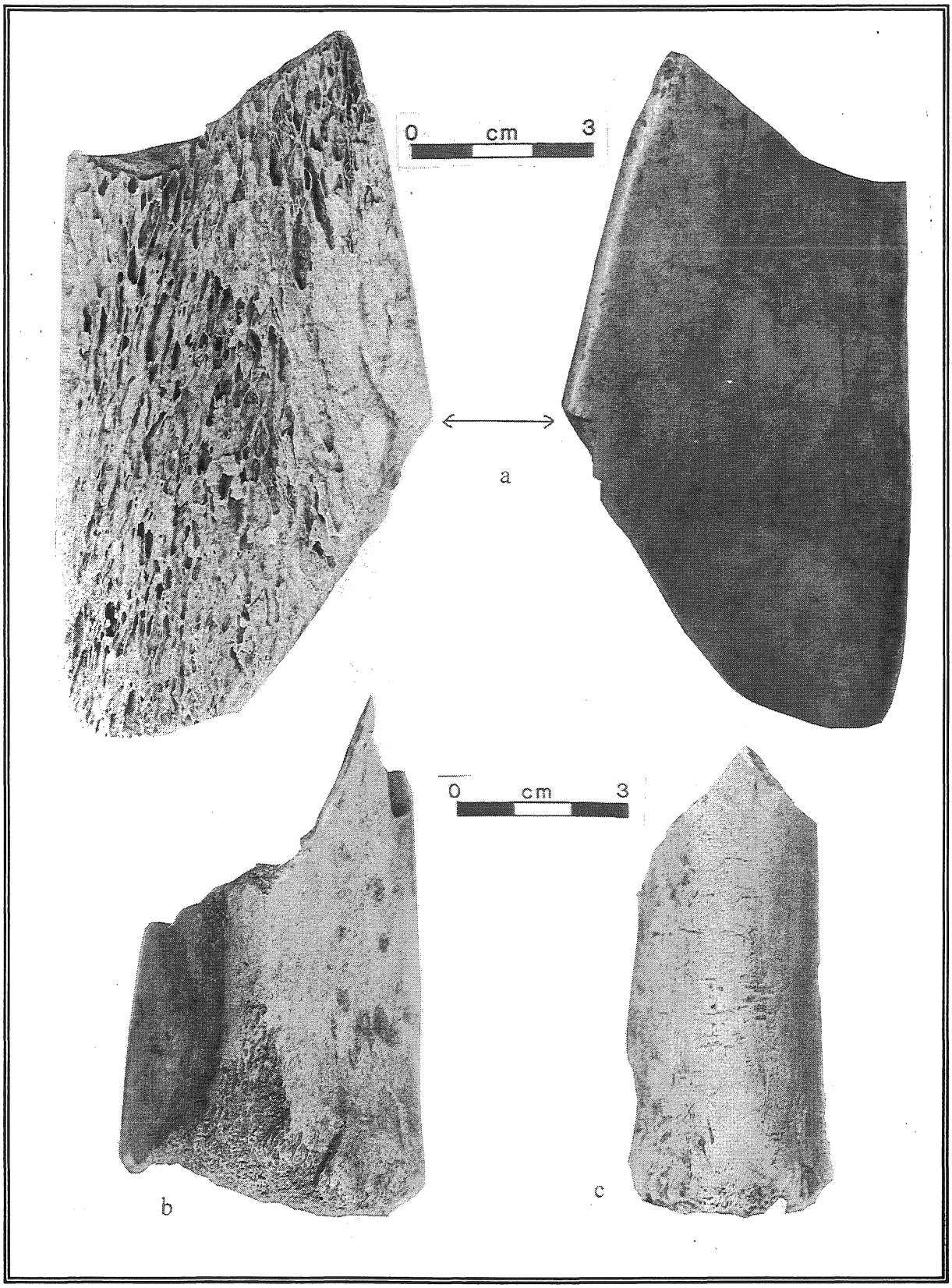

Figure 21. *34GV202 - Miscellaneous bone tools. (a) Unspecified bison scapula tool; (b,c) Bison digging stick tips.*

Both of the items described above exhibit working edges and polish similar to that on bison tibia digging stick tips. However, neither appear to have been hafted in a manner similar to digging stick tips. Also the working edges of both tools are manufactured on opposite ends of the same area of the radius shaft suggesting different manufacturing processes.

The function of these tools is unknown, although the high polish and tapered edges suggest use in digging or a comparable activity. However, unlike bison tibia digging stick tips, they do not appear to have been hafted in a manner conducive to such activity. It would appear that tools manufactured from bison radii may have served a function different from that of bison tibia.

Bison Horn Core Tools

Sample Size = 3

One complete, one mostly complete, and one small fragment of a tool manufactured from bison horn cores were recovered. These items are fashioned from split bison horn cores and an adjoining portion of the skull. These items are fairly common on Washita River Phase village sites however, their function has remained somewhat enigmatic. They have been described as digging tools, scoops and squash knives.

The one intact tool is manufactured from a right horn core and exhibits some minor rodent gnawing (Figure 24a). Polish is visible on the entire tool, however, is most prominent on the skull portion of the tool. The tool's working edge is irregular and concave over about half its length. A bevel on the exterior surface coincides with the concave portion of the edge. The edge itself is rounded and polished. Along a portion of the deeper part of the concavity, the interior surface along the working edge is worn slightly more to the inside than the outside.

The second tool, manufactured from a left horn core, was broken during recovery. Prior to this, the artifact had been severely rodent gnawed, as well as subjected to significant root etching. However, enough of the tool remains after reconstruction to provide an adequate description. The tool is less polished than the intact tool described previously. Most of the high polish is confined to a bevel on the exterior surface of the working edge. Like the specimen illustrated in Figure 24a, the bevel corresponds to the most concave portion of the working edge. The majority of striations on the exterior are roughly parallel to the long axis of the tool. The striations become obliterated at the bevel. The horn core portion of the tool is well smoothed on the interior. However, it does not exhibit the concavity of the previously described horn core tool.

In addition to the above tools a small fragment of a horn core tool was recovered. The fragment exhibits both exterior and interior surfaces. The interior is highly polished while the exterior exhibits only a light polish. The fragment is from the area where the horn core meshes with the crania. Since this area is present on the two tools described above this fragment can be considered as a representing a separate tool.

Notched Bison Rib

Sample Size =1

A portion of a bison rib with deliberate transverse notches cut into one side was recovered (Figure 24b). The series of deep cuts are about 10 mm long and placed in a linear series along the length of the rib. The last notch is at the break and it is likely more were present on the entire artifact prior to breakage. A light polish is visible in the area of notches. Similar items from other Washita River Phase sites have been postulated to be rasps producing a musical sound when a stick or bone is rapidly rubbed across the notches. The light polish visible in the notched area would be consistent with such a use.

Deer Mandible Tools

Sample Size = 2

Sickles N = 2

Two deer mandible tools were recovered (Figure 25a,b). Such tools are thought to have served as sickles utilized in the harvesting of grasses (Brown 1964). Both artifacts are right mandibles of mature animals. Although use wear on the tooth row may have some effect on tooth wear comparisons as far as aging, one appears to be from an animal no older than 3 years (Figure 25a), the other likely from an animal at least 7 to 8 years old (Figure 25b). In addition to exhibiting extremely worn molars and bone loss around the periodontal area, the older mandible is missing the first molar and the cavity is filled by bone growth indicating tooth loss prior to the animals death.

The diastema has been removed from both mandibles, apparently prior to use and both exhibit polish on the horizontal ramus. Polish as well as striations are most prevalent on the interior side of the mandibles. The

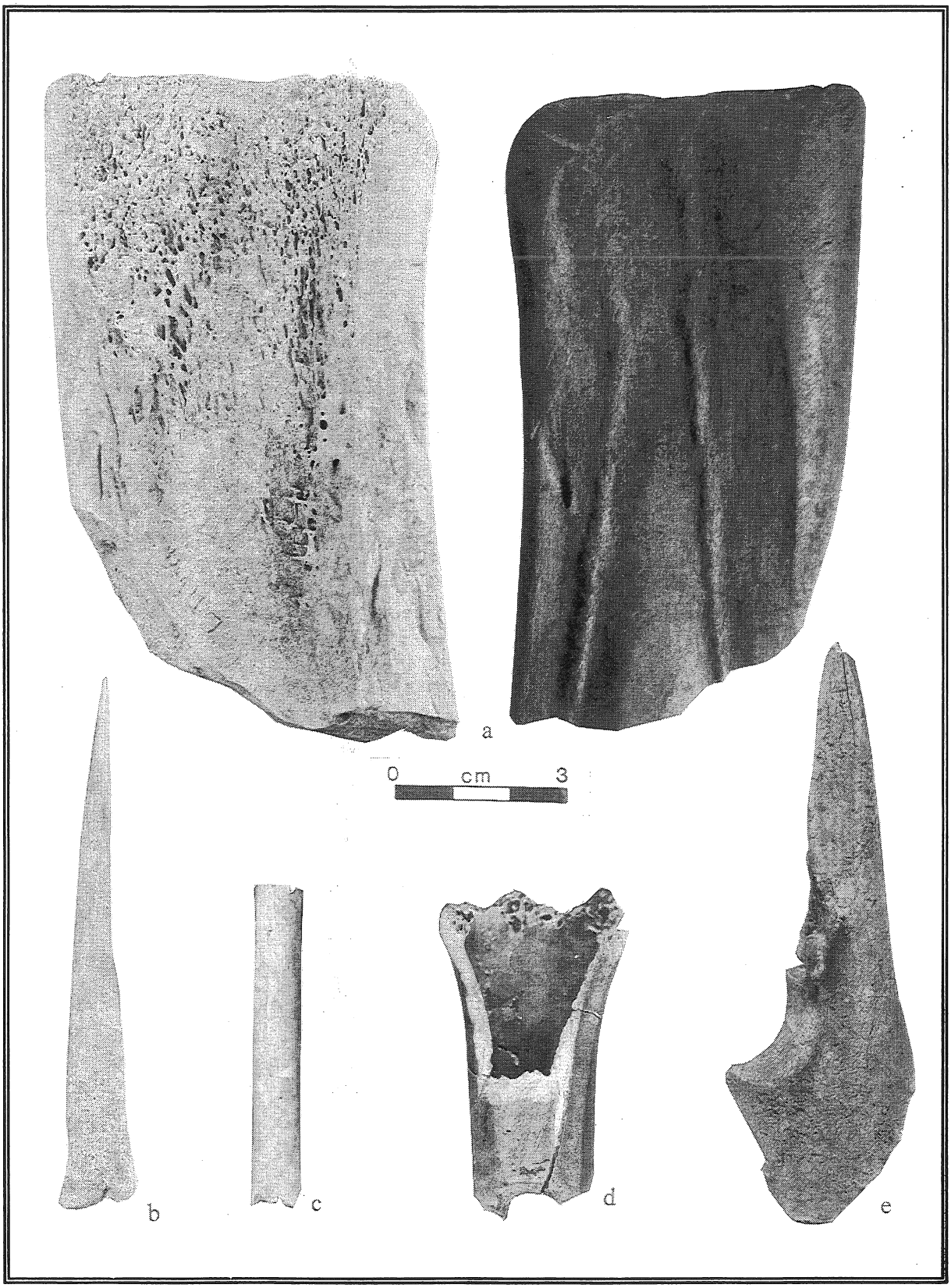

Figure 22. *34GV202 - Miscellaneous bone tools. (a) Unspecified bison tibia tool; (b) Bone awl; (c) Bird bone bead or whistle; (d) Deer tibia shaft wrench; (e) Deer ulna flaker.*

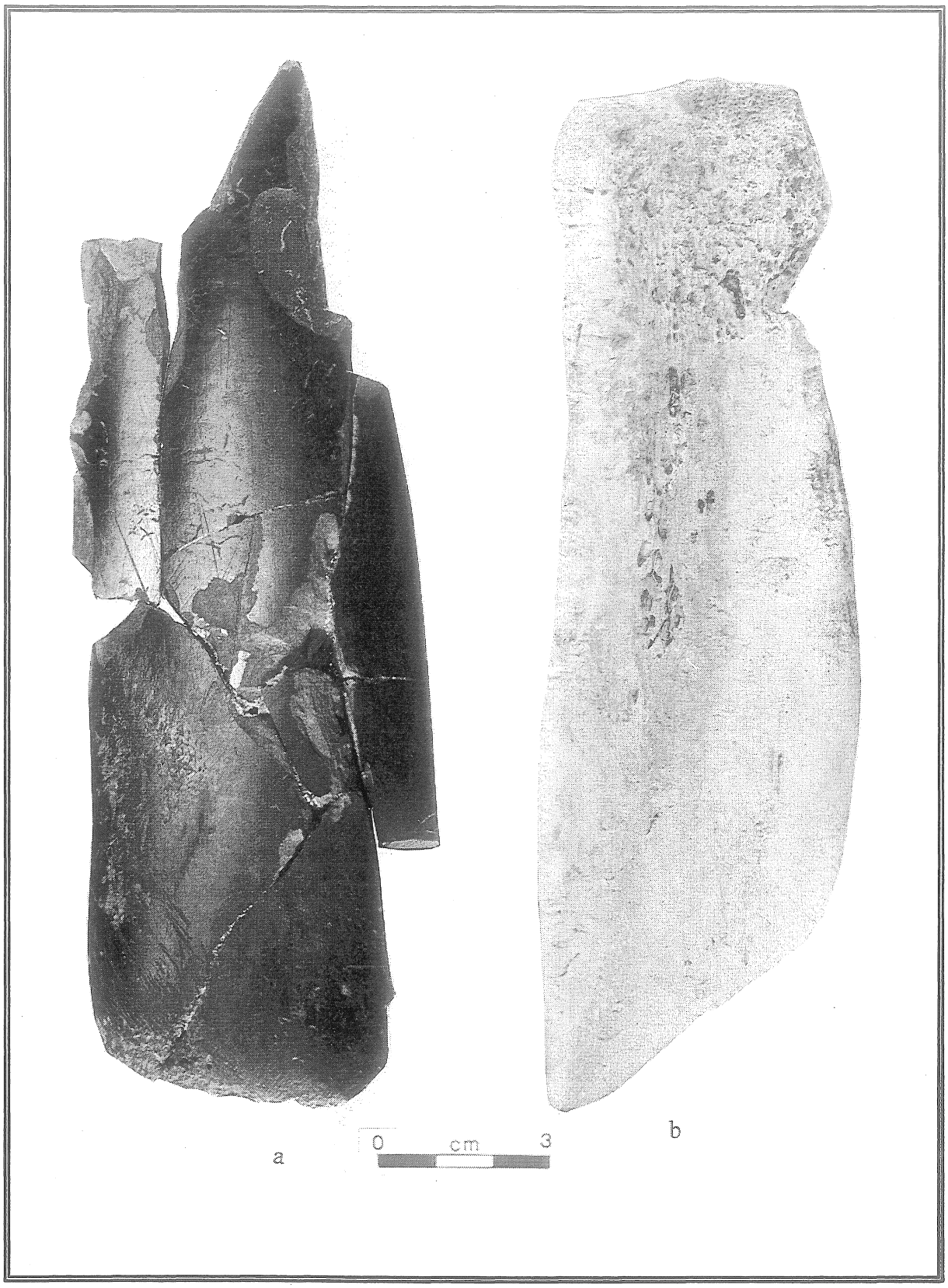

Figure 23. *34GV202 - Bison radius tools.*

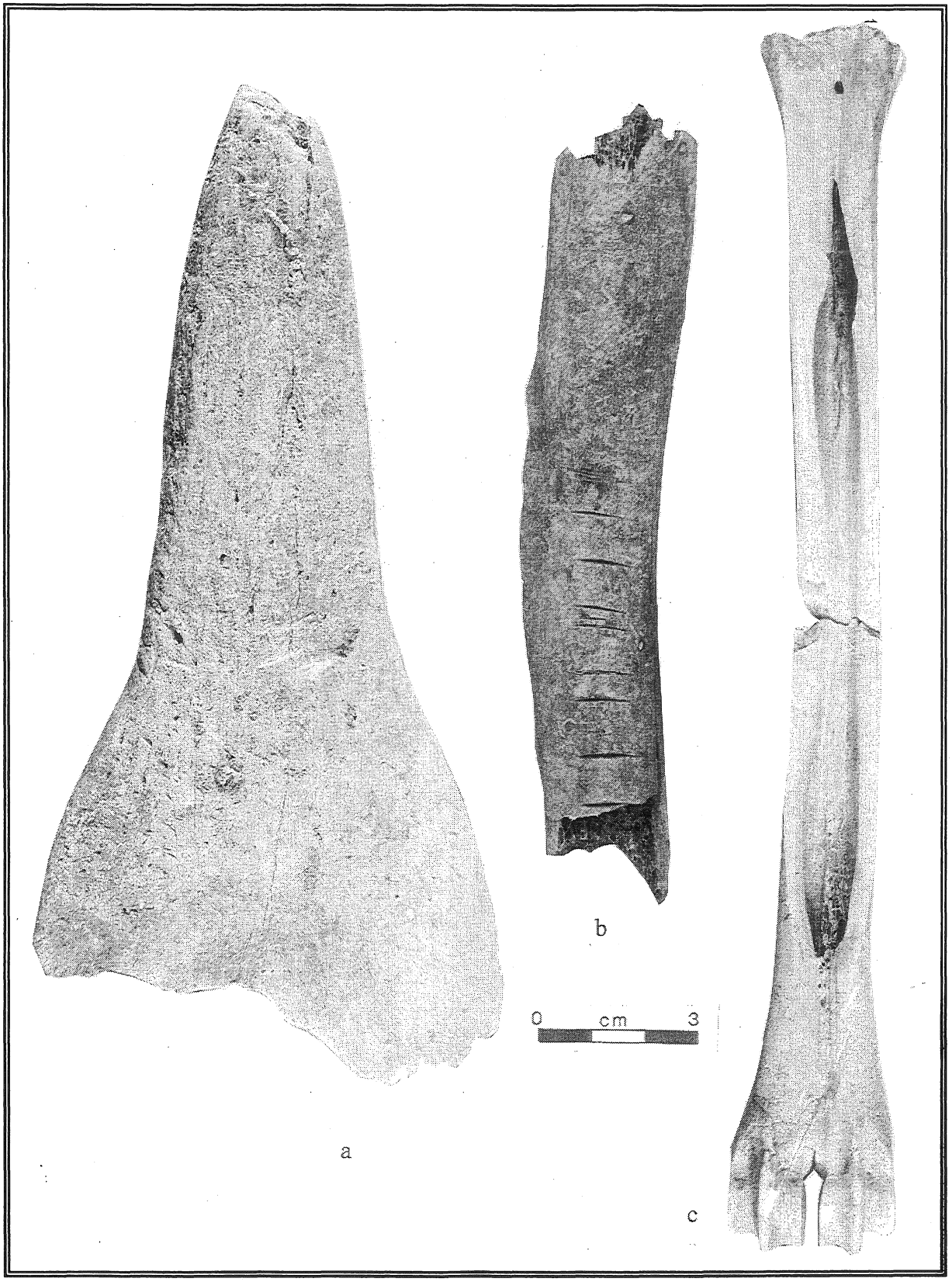

Figure 24. *34GV202 - Miscellaneous bone artifacts. (a) Bison horn core tool; (b) Notched bison rib; (c) Deer metatarsal beamer.*

striations are difficult to see on one of the items as the surface is root etched, but they appear to be mostly perpendicular to the long axis. The other mandible is in much better condition and the striations just below the tooth row on the interior are somewhat angled on a slant toward the diastema. The angled striations are likely the result of use as they occur on the most polished surface. The striations present toward the base of the ramus become more perpendicular. The striations on the exterior side are basically perpendicular.

Deer Metatarsal Tools
Sample Size = 5 (3 identifiable tools and 2 fragments)
Beamer N= 1
One deer metatarsal with a concavity manufactured on the dorsal side was recovered in two pieces (Figure 24c). The artifact is broken about midway on the shaft. The break appears to be prehistoric. The concavity was manufactured by cutting and abrading parallel to the long axis of the bone and is about 100 mm in length and about 8 mm deep.

Although not as common as other bone tools, similar tools have been found on other Washita phase village sites. They are commonly referred to as bone beamers and are thought to have been used in skin processing.

Awls N=2
Two bone awls were recovered which are manufactured from the proximal ends of deer metatarsal (Figure 22b). Both are manufactured of ridges split from the posterior face where two prominent ridges flare from the shaft into the articulating surface. The illustrated tool is manufactured of the right ridge of a left metatarsal, the other from the left ridge of a right metatarsal.
One tool is missing its tip due to a fresh break. The artifact exhibits transverse striations which overlay parallel striations. Both sets of striations appear to be from manufacturing the tool and most are worn by polish. Use wear is evidenced by polish over most of the tool. The illustrated specimen is complete and exhibits much more use wear that the previous item.
A very high polish is present over about 20 mm of the distal, or working tip of the tool. The polish completely obliterates the surface features of both the exterior and interior surfaces on the bone. These particular tool types are common on plains village sites and are thought to have served as awls used in the manufacture of baskets and hide working. The usewear on the tools described above would be consistent with such a use.

Awl Fragments N= 2
It should be noted here that two tips similar to those on awls were also recovered. Although they were likely manufactured from deer metatarsal, their fragmentary nature hinders positive identification.

Deer Tibia Tools
Sample Size = 2
Shaft Wrench N=1
A badly fragmented distal portion of a right tibia was recovered (Figure 22d). A hole has been cut into the shaft, only a portion of which remains on the recovered portion of the tool. The measurable portion of the hole is 12.3 mm. Circular striations resulting from the carving of the hole are visible. However, no obvious use wear can be observed anywhere on the hole. The tool may be a "shaft wrench" broken in manufacture. These tools are common to Plains Village sites.

Unspecified Tibia Tool N=1
A portion of a split left deer tibia was recovered. The portion includes part of the shaft towards the proximal end. A medial break is evident with the proximal end purposely modified. The artifact was split and the edges smoothed. The shaft area is highly polished and exhibits predominantly parallel striations. However, there are many multi-directional striations. No definite working edge is evident on the tool and it's function is unknown.

Deer Ulna Tool
Sample Size = 1
Pressure Flaker N = 1
A tool manufactured from the right ulna of a mature deer was recovered (Figure 22e). The shaft of the ulna was removed up to the thicker portion toward the proximal end. A blunted point was manufactured at this point. The tip exhibits a high polish and pitting. Only a light polish is present over the remainder of the tool. A series of deep cut marks are present on the posterior ridge. Shallow cut marks are visible just above these as well as on the coronoid process on the opposite face. Similar tools recovered from other Plains Village sites have been suggested to have served as pressure flakers. The polish and pitting on the tip of this tool would be consistent with such use, and the lack of striations or heavy polish on the remainder of the tool would rule out use as an awl.

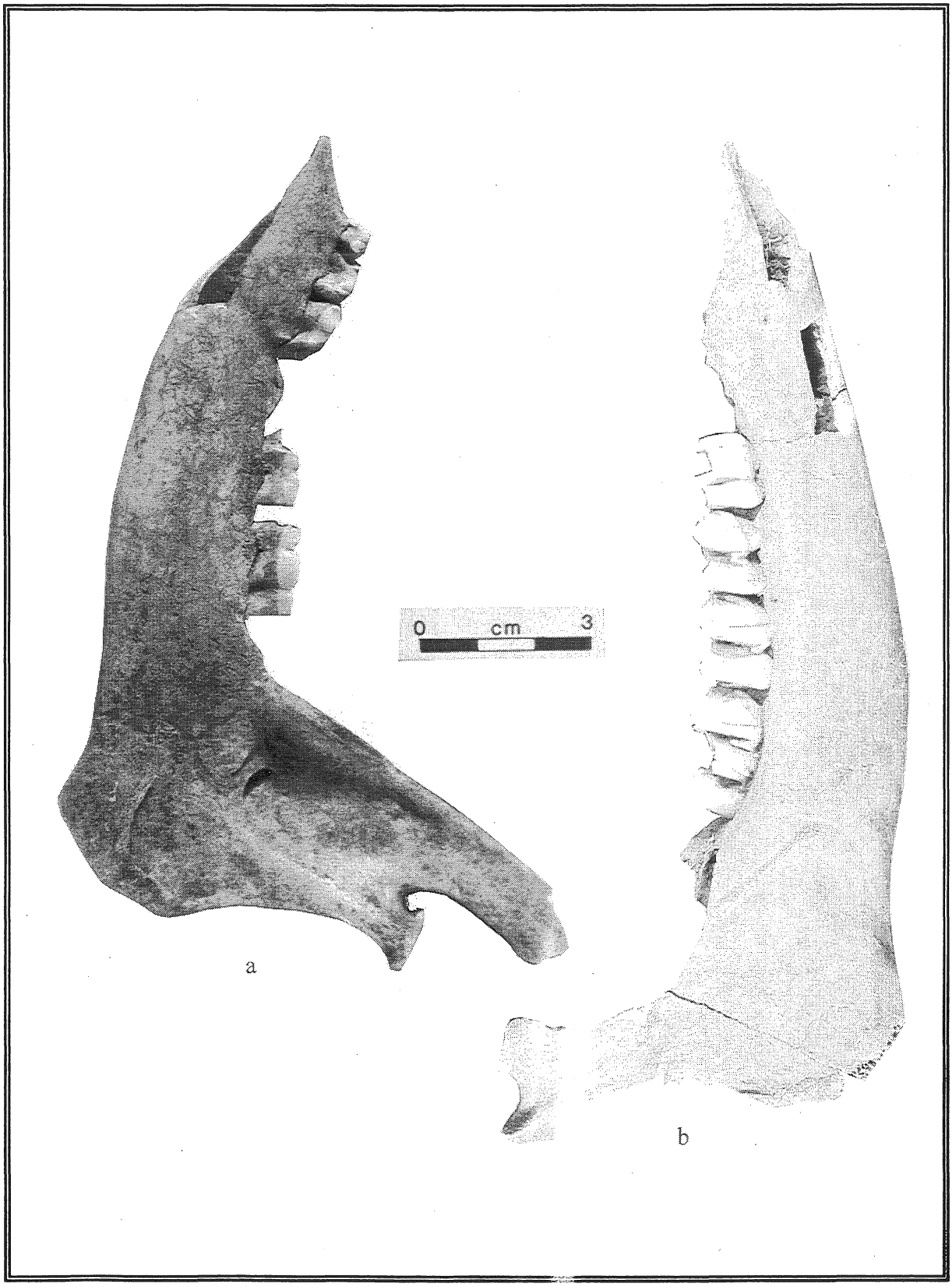

Figure 25. *34GV202 - Deer mandible sickles*

Deer Radius Tool
Sample Size = 1
A portion of a right deer radius comprised of the proximal end and portion of the shaft exhibits use polish on the fractured end of the shaft. The shaft exhibits a spiral fracture and was used without further modification. The tool is likely an expedient tool employed for an unknown use.

Unidentified Bird Bone Bead or Whistle
Sample Size = 1
One modified bird bone was recovered (Figure 22c). The item does not retain enough features to identify beyond being from a large bird. Bones of appropriate size occur in turkey, raptors, and large wading birds. The artifact is highly polished and evidence of a bevel cut smoothed after completion is evident on the intact end. In addition, random striations are visible over the surface. The item is hollow inside and likely served as a bead, or perhaps a whistle.

Unidentified Fragments
Sample Size = 18
A total of 18 fragments of modified bone exhibiting polish and/or striations were also recovered. All are too fragmentary to identify beyond being modified bone.

Miscellaneous Items

Mica (Muscovite)
Sample Size = 2
Two fragments of sheet mica or Muscovite were recovered from E4/N4 E/W trench. One exhibits a rounded corner possibly indicting it was carved or shaped. The item may have served as an inlay. However, this is purely conjecture. The presence of mica in association with wood maskettes and boxes at Spiro is the best documented prehistoric use of this material in Oklahoma (Brown 1976:450). Mica is reported in association with Plains Village components at the Duncan-Wilson Bluff Shelter (Lawton 1968:90). A fragment of mica was also recovered from a refuse pit at the nearby Arthur site (Brooks 1987:92). The recovery of mica at two roughly contemporaneous Washita River phase villages (34GV202 & 34GV32) is intriguing. Although Muscovite is present as an accessory mineral in some granites of the Wichita Mountains (Virdrine and Fernandez 1986), sources of this material in readily accessible sheet form are presently not documented in Oklahoma. The closest known source of Muscovite in sheet form is the southern Rocky Mountain region (personal communication, Oklahoma Geological Survey). However, the source of the material recovered at 34GV202 is undetermined.

Daub/Burned Clay
Sample Size = 102
Most of the items in this category are small pieces of daub and burned clay less than 2 cm in size. Only one of the artifacts exhibits attributes allowing further description. A piece of daub recovered from E4/N2 N/S trench measures about 38 x 33.5 mm and is 11.2 mm at it's thickest. The item is concave on one surface which displays stick or bark impressions over an area about 25 mm in width. The area is apparently where the daub was formed around a small log or stick.

Faunal Remains

A total of 1586 pieces of bone was recovered by the investigation (Table 8). A majority of the bone are fragments with more that a third (581) unidentifiable as to taxa. These particular fragments are very small, many being cancellous bone. Most are likely fragments of mammal long bones. A total of 913 bones are identifiable as mammal, of which 746 can only be categorized as being from small or large mammals. For this purpose, large mammals would include animals in the size range of bison, deer and antelope. Small mammals being anything smaller (including medium size animals such as canis). The majority of the fragments identifiable as being from large mammals appear to be derived from long bones. A total of 167 bones could be classed into 8 mammal species. In addition, 76 turtle bones representing at least three species, six unidentified fish bones, and nine bones representing at least three bird species were identified in the sample.

The majority of identified elements originating from large mammals are fragmentary with many exhibiting spiral fractures. Cut marks were observed on 12 elements (mostly bison and deer ribs) and carnivore teeth marks observed on one deer rib. In addition, some bones exhibit impact cones from battering.

Most of the bone is well preserved with very little rodent gnawing, root etching or exfoliating present. This fact is likely due to the bone being rapidly and relatively deeply buried in an organic rich matrix.

Only 10% of the bone is burned most of which are small unidentifiable fragments.

In order to provide a basis from which to quantify the faunal assemblage, a minimum number of individuals (MNI) was derived for each species identified in the analysis. The MNI in this analysis is based on a determination as to side on all identified elements as well as a whether a mature or immature animal was represented. Once a side determination is achieved, then duplication of individual bone elements or portions thereof provides a basis to determine a MNI. For example, the presence of two left tibia from mature bison in a particular assemblage provides evidence that at least two individuals are represented. In addition, data on mature and immature animals may also be used in the determination of a MNI. For instance if a left tibia of a mature animal and a right tibia of an immature animal of the same species are identified, it can be said two animals are represented. In the descriptions below, the sample size includes the total number of identified elements of that species in the sample, while the MNI is the minimum number of individuals represented within the sample of identified elements.

Bison *(Bison bison)*
Sample Size = 38, MNI = 2
At least 2 bison are present in the sample as evidenced by the presence of proximal end fragments of 2 left tibia of mature animals. Other identified elements include crania (2 small fragments), a mandible, vertebrae, ribs, pelvis, femur, tibiae, metatarsal, radii, humerus, scapula, phalange, and an astragalus. Most numerous were ribs, radii, tibiae, and scapula. Many elements are only singularly represented including a vertebrae, pelvis, mandible, femur and metatarsal, all of which are represented only by fragments. All long bones have been fragmented and exhibit green bone breaks. Many of the ribs have cut marks.

White-Tailed Deer *(Odoicoileus virginianus)*
Sample Size = 83; MNI = 3
The presence of 2 proximal ends of left metacarpal from mature animals and one distal unfused metapodial condyle from an immature animal, indicate at least 3 deer are represented in the assemblage. At least 1 mandible and 9 crania fragments including a frontal from which the antlers have been removed were identified. Other elements present in the sample include vertebrae, ribs, pelvis, tibia, scapula, metacarpal, metatarsal, phalanges, a humerus and an ulna.

Most of the deer bone is fragmented exhibiting spiral fractures. In addition, several cut marks are visible on some elements including ribs, phalanges, an axis, an ulna, and a metacarpal.

Pronghorn Antelope *(Antilocapra americana)*
Sample Size = 3; MNI = 1
An occipital, a thoracic vertebrae and upper 3rd molar of at least 1 Pronghorn antelope is present in the faunal sample. All identified elements are from the north/south trench through unit N6/E4. It is likely that all elements are from a single individual.

Canis *(Canis sp)*
Sample Size = 1; MNI = 1
One lower 1st molar identifiable as either domestic dog or coyote is present in the sample. The presence of only a single tooth does not necessarily imply cultural processing of this animal.

Cottontail *(Sylvilagus floridana)*
Sample Size = 31; MNI = 4
The proximal ends of 4 right ulnas indicate the presence of at least 4 cottontails in the faunal sample. A minimum of 3 individuals are from Pit A. Other elements recovered include pelvis, crania, scapula, ribs, radii, vertebrae, humerus, and various tarsal bones.

Jackrabbit *(Lepus californicus)*
Sample Size = 1; MNI = 1
The right humerus of a jackrabbit was recovered. This element is the only remains of this species identified in the sample.

Fox Squirrel *(Sciurus niger)*
Sample Size = 2; MNI = 2
The recovery of a right mandible of a mature individual and the femur of an immature individual provides evidence of at least 2 fox squirrels in the sample. No other elements attributable to this species were recovered.

Plains Pocket Gopher *(Geomys bursarius)*
Sample Size = 7; MNI = 3
The recovery of 3 left mandibles indicates at least 3 individuals are present in the sample. Other identified

elements include an ulna, femur and humerus.

Ornate Box Turtle *(Terrapene oranta ornata)*
Sample Size 68; MNI = 2
Although numerous carapace and plastron fragments were recovered, only two individuals can be identified. This is based on the identification of two right scapula. Other elements recovered include a radius and femur.

Slider *(Pseudemys floridana)*
Sample Size = 3; MNI = 1
A left humerus and at least 2 carapace fragments are identified as slider.

Smooth Soft Shell *(Trionys muticus)*
Sample Size = 2; MNI =1
Two carapace fragments of smooth soft shell turtle are present in the sample.

Aquatic Turtle (unidentified)
Sample Size = 3
One vertebrae and 2 carapace fragments are identifiable as an aquatic species of turtle. Further identification as to species was not possible. However, the vertebrae is likely from a Cooter or Red Eared turtle *(Pseudemys sp)*.

Fish (Unidentified)
Sample Size = 7
Although unidentifiable as to species, the recovery of six fish vertebrae and a ctenoid fish scale attest to the presence of fish among the faunal remains.

Crow *(Corvus brachyrhynchos)*
Sample Size = 1; MNI = 1
The proximal end of a left tibiotarsus of a common crow was identified. This is the only element in the sample attributable to this species.

Common Goldeneye *(Bucephala clangurla)*
Sample Size = 1; MNI = 1
A right radius of a common goldeneye is present in the sample. The element is the only one attributable to this species.

Ringneck Duck *(Aythya collarus)*
Sample Size = 1; MNI = 1
The left femur of a ringneck duck was identified in the sample. No other elements attributable to this species was identified.

Unidentified Waterfowl
Sample Size = 3
Two scapula and a tibiotarsal are likely from a species of duck *(Anas sp)*.

Unidentified Bird
Sample Size = 3
Three bone fragments are only identifiable as belonging to a bird species. Further refinement regarding identification of species was not possible.

Mussel Shell
Sample Size = 585 +
All excavated units produced mussel shell and a large quantity was recovered during the investigation. Nevertheless, much of this material is friable becoming fragmented during recovery and collection was not consistent during the investigation with many of the smaller fragments were discarded in the field. For these reasons, an exact count in this category was not made and the sample size given is only a minimum. Some of the more complete specimens could be identified as to species and at least two, maple leaf *(Quadrula quadrula)* and pimple back *(Quadrula pustulosa)* are recognizable in the sample.

Botanical Analysis

Soil samples were collected from 10 proveniences, 5 of which were selected for formal analysis by a full sort (Table 9). Others were partially sorted or only scanned. The samples were processed in 2 liter increments with both the light and heavy fractions passed through nested geologic screens of 2 mm, 1 mm, .5 mm, and .25 mm and weighed. On full sorts, the material in each screen was examined under 10X-25x magnification. Four of the samples subjected to a full sort are from proveniences in Pit A and Pit B. A sample was collected from the surface of each exposed pit on the floor of the borrow pit (approximately 45 cm below the original surface) as well as from the E/W trench wall near the base of each pit. The fifth fully sorted sample is from dark stained soil associated with the pottery vessel section in Figure 5 found *in situ* on the exposed feature surface in N4/E4.

Table 9 presents a tabulation of the charred seeds of the five fully sorted samples. Contamination of each sample is mostly in the form of small rootlets and ranges from about 50% to 80% by volume in the upper samples to 40% to 70 % in the lower samples. Only

five modern (uncharred) seeds were present in the entire 10 liters. Three of these are Carpetweed (*Mollugo*) and 2 are unidentified.

Pit A and B Samples

A total of 608 charred seeds and plant fragments were discovered in the four 2 liter samples from Pits A and B. The most common remains recovered are of corn (*Zea mays*), represented mostly by cupules and kernel fragments. As evident in Table 9, most kernels and kernel fragments are from Pit A with cupules abundant in all samples. Cheno-Ams including goosefoot (*Chenopodium*) and pigweed (*Amaranthus*), are the second most numerous seeds in the Pit A and B samples. Although present in each sample, most are from Pit A. Seeds present in the Pit A samples and absent in the Pit B samples include bulrush (*Scirpus*), prickly pear cactus *(Opuntia*), sunflower (*Helianthus*), wild bean (*Strophostyles*), domestic bean (*Phaseolus*), and marshelder (*Iva*). One ragweed (*Ambrosia*) and 2 purslane (*Portulaca*) were identified in the Pit B sample but not in Pit A. Little barley (*Hordeum*) is common in the Pit B sample and absent in the samples from Pit A. In addition, dropseed (*Sporabulus*) is well represented in the Pit B sample (n=22) with only 1 present among the Pit A samples. An additional 16 seeds identifiable as grasses (Gramineae) are also present in the Pit B sample and absent from Pit A. It is readily apparent that a variety of grass seed are common in Pit B and absent in Pit A.

Sherd Sample

The remaining fully sorted sample is from a soil sample collected from a dark stain associated with the vessel section in Figure 12. The large pottery sherd was embedded in the dark stain on the exposed surface near the south edge of Pit B. One 2 liter sample was fully sorted and produced 299 dropseed as well as 68 little barley (Table 9). The high number of grass seeds in this sample is similar to the Pit B samples. In addition, their association with the vessel section may indicate the use of that vessel in the storage or processing of the seeds.

Recovered Marshelder

In order to investigate the possibility that the marshelder seeds from 34GV202 may be derived from a domesticated variety, the seeds were measured (Table 10). Research on the prehistoric use of marshelder has suggested that the presence of domesticated marshelder may be indicated by mean achene lengths of 4.0 to 4.2 mm or above (Adair 1988:59; Smith 1992:49). Measurements of a small sample (n=20) of modern marshelder seeds from central Oklahoma yielded a size range of 2.5-4.3 x 2.1-3.3 mm (Drass 1993:57). Elsewhere, measurements of modern seeds from five locations in Kansas and 1 in Missouri (total n=344) resulted in a range of 2.4-4.3 x 1.9-3.4 (Adair 1988:58). Other studies of modern marshelder seeds indicate they rarely exceed 4.5 mm in length (Adair 1988:58). In order to compensate for charring, shrinkage and loss of pericarp, the measurements of the seeds in this sample were corrected using formulas provided by Adair (1988:59). Table 10 includes the measurements of 10 complete or mostly complete marshelder seeds recovered from 34GV202. The mean corrected size of the 34GV202 sample is 4.24 x 3.02 which falls within the upper range of the modern wild samples discussed above. However, three (30%) of the seeds fall well above the 4.5 mm length which modern wild seeds rarely exceed and are well within the range of domesticated marshelder (Adair 1988:58, Smith 1992:49).

Table 1. Projectile points, preforms, bifaces, wedges and unifaces from 34GV202.

Provenience	Raw Material	Artifact Type	Comments
General Surface	Unidentified chert	Fresno point	Complete
	Frisco chert	Fresno point	Complete
	Frisco chert	Washita point	Complete
	Unidentified chert	Uniface	Two modified edges, alternate faces.
	Unidentified chert	Uniface	All edges modified, two on one face.
	Unidentifed chert	Wedge	(see Tables 2, 3)
	Ogallala Quartzite	Wedge	(see Tables 2, 3)
E2/N2 Surface	Edwards chert	Fresno point	Base exhibiting impact fractures; associated with articulated deer carpals.
E2/N6 Surface	Frisco chert	Fresno point	Complete; larger than typical Fresno
	Edwards chert	Wedge	(see Tables 2, 3)
E6/N4 Surface	Unidentified chert	Side-notched arrow point	Impact break on tip; burin breaks on base.
	Unidentifed chert	Arrow point preform	Abandoned.
E0/N4 E/W Trench	Unidentified chert	Wedge	(see Tables 2, 3)
E2/N4 E/W Trench	Oil Creek chert	Side-notched arrow point	Blade with hinge fracture; stem and base missing.
E4/N4 E/W Trench	Frisco chert	Washita point	Complete.
	Frisco chert	Washita point	Base and stem.
	Frisco chert	Washita point	Tip of blade broken.
	Unidentified chert	Side-notched arrow point	Blade with hinge fracture; stem and base missing.
	Unidentified chert	Side-notched arrow point	Blade with bend break; stem and base missing.
	Unidentified chert	Arrow point	Blade with hinge fractures on both ends.
	Frisco chert (ht)	Biface	Small; thick; utilized edges.
	Frisco chert	Biface	Made on secondary flake; one edge bifacially modified, one edge unifacilly modified .
	Unidentified chert	Uniface	Broken; two edges modified; steep (85 degree) edge angles.
E6/N4 E/W Trench	Unidentified chert	Fresno point	Complete.
	Unidentified chert	Fresno point	Base with bend break; blade missing.
	Frisco chert	Biface	Triangular tool with bifacial edge modification on flake.
	Unidentified chert (Boone like)	Arrow point preform	Longitudinal break in attempt to remove stack.
	Frisco chert	Uniface	Two modified edges; steep (75 degree) edge angle.
	Unidentified chert	Arrow point preform	Abandoned; thick.
E4/N4 N/S Trench	Johns Valley chert	Wedge	(see Tables 2 ,3)
	Unidentified chert	Wedge	(see Tables 2, 3)
	Unidentified chert	Wedge	(see Tables 2, 3)
E4/N6 N/S Trench	Frisco chert	Fresno point	Complete
	Frisco chert (ht)	Dart point	Blade exhibits bend break; most of stem missing.
	Alibates agatized dolomite	Harrel point	Complete
	Unidentified chert	Arrow point preform	Abandoned; thick.
	Ogallala quartzite	Biface	One edge bifacially modified; multiple step fractures and edge rounding from use.

* (ht) = heat treated

Table 2. Metric attributes of chipped stone wedges from 34GV202.

Specimen	Lithic Material	Length	Width	Thickness
1 (Fig. 2g)	Un. Chert	22.0	20.3*	7.5
2 (Fig. 2d)	Un. Chert	19.0	21.3*	9.6
3 (Fig. 2c)	Un. Chert	34.8	23.1	9.5
4 (Fig. 2h)	Johns Valley Chert	22.0	20.4*	6.1
5 (Fig. 2i)	Edwards Chert	21.0	13.4	4.5
6 (Fig. 2f)	Ogallala Quartzite	22.8	19.7	7.3
7 (Fig. 2e)	Chert (Antlers Grv)	28.0	31.4	9.2
		r=19.0-34.8 x=24.2s=5.4	r=13.4-31.4 x=21.3s=5.4	r=4.5-9.6 x=7.7 s=1.9

all measurements in mm. *minmum measurement due to breakage

Table 3. Non metric attributes of chipped stone wedges from 34GV202.

Specimen	Blank	Cross section	No. of wedging axes	Striking platform	Working edge shape
1 (Fig. 2g)	Uk(Bf)	Biconvex	1	Flat Surface	Straight
2 (Fig. 2d)	PF	Wedge	1	Flat Surface	Straight
3 (Fig. 2c)	PF	Biconvex	1	Flat Surface	Concave
4 (Fig 2h)	F	wedge	1	Flat Surface	Straight
5 (Fig 2i)	F	Wedge	1	Flat surface	Broken
6 (Fig. 2f)	SF	Wedge	1	Flat surface	Broken
7 (Fig 2e)	Pb	Wedge	2	Flat Surface (2)	Straight & Broken

SF=Secondary Flake PF= Primary Flake F=Flake Pb= pebble Uk=Unknown Bf=completely bifaced by use

Table 4. Lithic materials and debitage categories from 34GV202.

Provenience	Raw Material	P	S	T	B	BP	Sh/Bd	Core	Total
Surface	Ogallala Qrtz.	2	2	3	--	--	3	--	10
	Unid. Chert	1	6(2)	7(2)	--	5(3)	8	--	27(7)
	Frisco Chert	--	--	6	--	1	--	--	7
	Alibates	--	--	1	--	--	--	--	1
	Johns Valley Ch	--	--	--	1	--	--	--	1
	Total	3	8(2)	17(2)	1	6(3)	11	--	46(7)
E4/N2 N/S	Ogallala Qrtz.	2	--	2	--	1	3	--	8
	Unid. Metaqrtz.	1	--	--	--	--	--	--	1
	Unid. Chert	1	--	--	--	1(1)	--	--	2(1)
	Frisco Chert	--	1	--	--	--	--	--	1
	Antlers Quartz.	--	--	--	--	--	--	1	1
	Total	4	1	2	--	2(1)	3	1	13(1)
E4/N4 N/S	Ogallala Qrtz.	1	--	2	--	1	1	--	5
	Unid. Metaqrtz.	--	--	--	--	--	1	--	1
	Unid. Chert	--	2(1)	5(1)	--	2(1)	1	--	10(3)
	Frisco Chert	--	--	1	--	--	--	--	1
	Total	1	2(1)	8(1)	--	3(1)	3	--	17(3)
E4/N6 N/S	Ogallala Qrtz.	5	4(1)	3	--	--	9	--	21(1)
	Unid. Metaqrtz.	2	1	4	--	--	--	--	7
	Unid. Chert	2(1)	5(2)	9(5)	1	14(2)	8	--	39(10)
	Frisco Chert	--	4(1)	8(3)	--	--	2	--	14(4)
	Alibates	--	--	1	--	--	--	--	1
	Oil Creek Chert	--	1	1	--	--	--	--	2
	Boone Chert	--	1	--	--	--	--	--	1
	Petrified Wood	--	1	--	--	1	--	--	2
	Johns Valley Ch	--	--	1	--	--	--	--	1
	Antlers Qrtz.	1	2(1)	2	--	1	--	--	6(1)
	Total	10(1)	19(5)	29(8)	1	16(2)	19	--	94(16)
E0/N4 E/W	Ogallala Qrtz.	2	--	1	--	--	3(1)	--	6(1)
	Unid. Metaqrtz.	--	--	--	--	--	3	--	3
	Unid. Chert	1	1	4(1)	--	4(3)	1	--	11(4)
	Frisco Chert	--	2(2)	3	--	--	1	--	6(2)
	Alibates	--	--	--	--	1(1)	--	--	1(1)
	Oil Creek Chert	--	--	--	--	1(1)	--	--	1(1)
	Total	3	3(2)	8(1)	--	6(5)	8(1)	--	28(9)
E2/N4 E/W	Ogallala Qrtz.	--	1	4(1)	--	1(1)	--	--	6(2)
	Unid. Metaqrtz.	--	--	1	--	--	1	--	2
	Unid. Chert	2(2)	1	--	--	2	1(1)	--	6(3)
	Frisco Chert	--	--	2	--	--	1	--	3
	Boone Chert	--	--	1(1)	--	--	--	--	1(1)
	Total	2(2)	2	8(2)	--	3(1)	3(1)	--	18(6)
E4/N4 E/W	Ogallala Qrtz.	8	3(1)	4	1(1)	--	14	--	30(2)
	Unid. Metaqrtz.	--	1	--	--	--	--	--	1
	Unid. Chert	4(1)	4(1)	15(2)	3(2)	11(4)	16	--	53(10)
	Frisco Chert	--	1(1)	1	--	1(1)	1	--	4(2)
	Johns Valley Ch	--	--	2(1)	--	--	--	--	2(1)
	Novaculite	--	--	--	--	--	1	--	1
	Tecovas	--	--	--	--	--	1	--	1
	Total	12(1)	9(3)	22(3)	4(3)	12(5)	33	--	92(15)
E6/N4 E/W	Ogallala Qrtz.	1	1	1	--	--	3	--	6
	Unid. Metaqrtz.	--	--	1	--	--	1	--	2
	Unid. Chert	3(1)	2(1)	7(1)	--	2	7	--	21(3)
	Frisco Chert	--	1(1)	1(1)	1(1)	--	--	--	3(3)
	Alibates	--	1	--	--	2	--	--	3
	Johns Valley Ch	--	1(1)	--	--	1	1	--	3(1)
	Boone Chert	--	--	--	--	1	--	--	1
	Total	4(1)	6(3)	10(2)	1(1)	6	12	--	39(7)
Total		39(5)	50(16)	104(19)	7(4)	54(18)	92(2)	1	347(64)

P=Primary flakes; S=Secondary flakes; T=Tertiary flakes; B=Biface flakes; BP=Bipolar debitage; Sh/Bd=Shatter/Blocky debris; ( ) = Number of items within category exhibiting evidence of utilization.

Table 5. Groundstone artifacts and unmodified sandstone items recovered from 34GV202.

Artifact	Surface Feature 1*	East/West Trench				North/South Trench			
		E0/N4	E2/N4	E4/N4	E6/N4	E4/N2	E4/N4	E4/N6	Total
Groundstone items									
Pipes	1	--	1	--	--	--	--	--	2
Abrader	--	--	--	--	--	1	--	--	1
Pigment Palettes	1	--	--	--	--	--	--	1	2
Misc. Modified	--	--	--	--	2	--	--	--	2
Total	2	0	1	0	2	1	0	1	7
Unmodified Sandstone									
Number	9	3	34	139	31	50	41	79	386
Weight (in gm)	439	409	1057	1311	496	2135	3553	892	10,292

* Includes artifacts recovered from all squares during surface cleaning of Feature 1.

Table 6. Ceramics recovered from 34GV202.

Provenience	Shell Temper sherds (Nocona Plain) Body	Neck	Rim	Base	Total	Sherdlets	Restored Vessel Sections	St/Sd Temper Handle	Sh/Sd Temper Body	Sh/Sd/Grog Temper Body	Sd Temper Body	Total
Surface	30	1	5	2	38	54*	1	--	--	1	1	41
E4/N2 N/S	57	1	2	1	61	9*	1	--	--	1	--	63
E4/N4 N/S	18	--	2	1	21	11*	3	--	2	--	--	26
E4/N6 N/S	22	1	1	1	25	15*	--	--	1	--	--	26
E0/N4 E/W	11	1	1	--	13	14*	--	--	--	--	--	13
E2/N4 E/W	13	2	3	1	20	19*	--	1	--	--	--	20
E4/N4 E/W	65	4	9	2	80	49*	1	--	1	1	--	83
E6/N4 E/W	14	--	1	1	16	7*	--	--	--	--	--	16
Total	230	10	24	9	274	178*	6	1	4	3	1	288*

*Sherdlets not included in total counts; St = Stone; Sh = Shell; Sd = Sand

Table 7. Modified bone recovered from Feature 1, 34GV202.

Elements	Surface Feature 1*	East/West Trench				North/South Trench			
		E0/N4	E2/N4	E4/N4	E6/N4	E4/N2	E4/N4	E4/N6	Total
Bison									
Scapula	4	2	--	--	--	--	3	2	11
Radius	--	--	--	1	--	--	1	--	2
Tibia	--	--	--	1	1	--	--	1	3
Horn core	--	--	--	1	--	--	1	1	3
Rib	1	--	--	--	--	--	--	--	1
Total	5	2	--	3	1	--	5	4	20
Deer									
Mandible	--	--	--	1	1	--	--	--	2
Metatarsal	1	--	--	3	--	--	--	1	5
Tibia	1	--	--	--	--	--	1	--	2
Ulna	1	--	--	--	--	--	--	--	1
Radius	1	--	--	--	--	--	--	--	1
Total	4	--	--	4	1	--	1	1	11
Unidentified Bird	--	--	--	--	--	--	--	1	1
Unidentified Fragments	3	--	--	5	--	--	2	8	18
Total	12	2	0	12	2	0	8	14	50

* Includes bone recovered from all squares during surface cleaning of Feature 1.

Table 8. GV202 Bone Counts for Feature 1, Excluding Bone Tools.

Species	Surface Feature 1*	East/West Trench				North/South Trench			
		E0/N4	E2/N4	E4/N4	E6/N4	E4/N2	E4/N4	E4/N6	Total
Mammal									
Bison	4	3	1	10	--	8	5	7	38
Deer	11	16	12	8	7	6	10	13	83
Antelope	--	--	--	--	--	--	--	3	3
Canis sp.	--	1	--	--	--	--	--	1	2
Cottontail	1	16	--	6	1	2	1	4	31
Jackrabbit	--	--	--	--	--	1	--	--	1
Fox Squirrel	1	--	--	1	--	--	--	--	2
Plains Pocket Gopher	2	1	--	3	--	--	1	--	7
Small Mammal	9	26	11	41	7	1	10	23	128
Large Mammal	54	54	52	220	85	41	27	85	618
Total	82	117	76	289	100	59	54	136	913
Turtle									
Box Turtle	14	4	4	23	6	--	13	4	68
Slider	3	--	--	--	--	--	--	--	3
Smooth Soft Shell	--	--	--	1	--	1	--	--	2
Unidentified Aquatic	--	2	1	--	--	--	--	--	3
Total	17	6	5	24	6	1	13	4	76
Fish									
Unidentified	--	--	--	4	--	--	1	2	7
Bird									
Crow	1	--	--	--	--	--	--	--	1
Common Goldeneye	1	--	--	--	--	--	--	--	1
Ringneck Duck	--	--	--	--	1	--	--	--	1
Unidentified Waterfowl	1	--	--	2	--	--	--	--	3
Unidentified	2	--	1	--	--	--	--	--	3
Total	5	0	1	2	1	0	0	0	9
Unidentified	95	37	11	156	40	32	48	162	581
Total	199	160	93	475	147	92	116	304	1586

* Includes bone recovered from all squares during surface cleaning of Feature 1.

Table 9. Tabulation of Charred Seeds from Fully Sorted Flotation Samples at 34GV202.

Plant	Pit A Upper Sample	Pit A Lower Sample	Pit B Upper Sample	Pit B Lower Sample	Total PitSamples	E4/N4 Sherd Sample	Total
Corn Kernel Fragments	14	33	3	5	55	2	57
Corn Kernels Whole	-	6	-	-	6	1	7
Corn Cupules	63	42	107	47	259	17	276
Bean	1	-	-	-	1	-	1
Wild Bean	4	-	-	-	4	-	4
Sunflower	9	28	-	-	37	-	37
Marshelder	2	9	-	-	11	-	11
Cheno-Ams	14	114	10	2	140	2	142
Purslane	-	-	-	2	2	-	2
Dropseed	-	1	22	-	23	299	322
Little Barley	-	-	37	1	38	68	106
Prickly Pear	-	1	-	-	1	-	1
Bulrush	-	1	-	-	1	-	1
Ragweed	-	-	1	-	1	-	1
Gramineae	-	-	15	1	16	1	17
Unidentified	7	-	2	4	13	6	19
Total	114	235	197	62	608	396	1004

Table 10. Measurements of Charred Marshelder (*Iva sp.*) Seeds Recovered from 34GV202*.

Provenience	Measured Length x Width	Corrected** Length x Width
Pit A		
Upper Sample	2.8 + x 2.5 mm	3.98 + x 3.56 mm
Lower Sample	5.5 x 4.6 mm	7.65 x 6.61 mm
	2.2 x 1.4 mm	3.16 x 1.97 mm
	2.5 x 2.0 mm(P)	2.77 x 2.22 mm
	1.6 x 1.2 mm	2.35 x 1.68 mm
	2.2 x 1.3 mm	3.16 x 1.83 mm
	2.6 x 1.6 mm	3.71 x 2.26 mm
	2.7 x 1.7 mm(P)	3.0 x 1.88 mm
Lower Sample #2 (only scanned)	4.5 x 2.9 mm	6.29 x 4.15 mm
E0/N6 Surface NW corner (only scanned)	4.5 x 2.8 mm	6.29 x 4.1 mm
Range	1.6-5.5 x 1.2-4.6 mm	2.35-7.65 x 1.68-6.61 mm
Mean	3.11 x 2.2 mm	4.24 x 3.02 mm

*includes only complete or mostly complete seeds

**corrected using formulas provided by Adair (1988:59); for seeds without pericarp: Corrected Length = *L* X 1.36 + .17; Corrected Width = *W* X 1.45 - .06; with pericarp L and W are divided by 0.9.

+indicates minimum length due to breakage

(P) indicates pericarp present on seed

V. SITE INTERPRETATION

The two radiocarbon dates from 34GV202 of around A. D. 1300 and 1400 fall well within the date range (A. D. 1250-1450) proposed for the Washita River phase (Drass and Swenson 1986). The arrow point, ceramic and bone tool assemblage recovered from all excavated units is also typical of Washita River phase villages. The identification of a large midden filled gully and two pits, all of which contain a variety of well preserved artifacts as well as faunal and botanical remains provides evidence that 34GV202 contains a large well preserved Washita River phase village. The confirmation of the site as a Washita River phase village containing well preserved features has important implications. The radiocarbon dates demonstrate the site is likely contemporaneous with the nearby Arthur site and further study of 34GV202 may address questions of population density in the central Washita River basin during the Washita River phase. In addition, with the nearby Patton and Densmore sites, there is now documented within a 1.5 km area along the Washita River an apparent continuum of Plains Village occupations beginning around early Paoli phase A. D. 900 and lasting into the late Washita River phase, post A. D. 1400. All three sites contain well preserved features and artifact assemblages as well as faunal and floral remains. An obvious opportunity to study cultural change during the southern Plains Village Tradition via several avenues of research is afforded on this terrace of the Washita River (Drass 1995).

Although this analysis was conducted on a representative sample from a small portion of the site, the investigation provides important data pertinent to Plains Village studies. The artifacts, faunal and botanical remains recovered by this investigation indicate the features encountered are associated with an intensely occupied Washita River phase village and reflect a wide range of activities. Subsistence practices include hunting of animals identified with forest (white-tailed deer, fox squirrel, cottontail rabbit), prairie (bison, pronghorn antelope, jackrabbit) and aquatic (aquatic turtle, fish, mussels, waterfowl) habitats. In addition, gathering wild plants such as chenopodium, amaranth, sunflower, little barley and dropseed was also practiced by the sites inhabitants. As mentioned in the environmental discussion, it is likely that all resources were present near 34GV202. The availability and practical utilization of this range of resources within close proximity to a Washita River phase village in the central Oklahoma Washita River basin has been demonstrated by Brooks (1987). Horticultural endeavors are represented by corn, beans and possibly marshelder. Many of the items in the artifact assemblage relate to these activities. Arrow points are the only artifacts which can be firmly attributed to hunting. Lacking are knives and scrapers useful in processing animals. However, some of the utilized flakes and unifaces may represent expedient tools used for these tasks. The majority of bone tools in the assemblage relate to horticulture and plant gathering.

Analysis of the lithic assemblage recovered by the 34GV202 investigations has revealed some interesting insight into the chipped stone technology of Washita River phase village inhabitants. Although this is admittedly a small sample, the lack of formalized bifacial and unifacial tools is apparent. Arrow points, both side-notched and unnotched triangular types, are the foremost formalized stone items present in the sample. Drills, scrapers, gouges and knives are notably absent. In comparison with Washita River phase sites in the area on which excavations have been conducted, only the Arthur site (34GV32) reflects a similar lack of formal tools (Brooks 1987; Drass 1995:183). In contrast, the Grant site (34GV2) produced a large number of biface knives, end, thumb and side scrapers and drills (Sharrock 1961; Drass 1995:183). Whether this reflects differential village activities or is a result of sample size is unknown. The 7 stone wedges identified in the sample attest to the first documented use of this particular tool on Washita River phase sites in central Oklahoma.

Documentation of the bipolar reduction of lithic material at 34GV202 is another important finding revealed by this analysis. It appears the technique was employed chiefly in the on site reduction of chert pebbles collected from local gravel deposits. Apparently this technique was employed to produce flakes to serve as tools with little or no modification. The bipolar technique has been argued as more likely to be employed by sedentary societies(Parry and Kelly 1987). Although this may be the case with Washita River phase villagers, a much larger debitage sample, ideally derived from several sites, should be analyzed to more accurately measure the extent of this technology. The recovery of only one core evidencing

direct percussion suggests that this technology was also employed by the site's inhabitants. Thus two lithic technologies appear to be present at 34GV202.

The sample of chipped stone from 34GV202 also differs from other reported Washita River phase village sites in the percentage of Frisco chert among the flakes and debitage. In fact, the percentage of different lithic materials represented in both the tool and debitage assemblages from 34GV202 are more like those reported from Paoli phase sites rather than those from Washita phase sites (Drass 1995:239). Lithic assemblages recovered from Plains village sites in the vicinity of 34GV202 tend to increase in the percentage of Frisco through time with Washita River phase villages in the Pauls Valley area containing 22% to 43% Frisco chert (Drass 1995:246). The increase in the use of Frisco chert in the area during Washita River phase is thought to reflect expanding populations and trade resulting in the exploitation of more regional resources (Drass 1995:252). Although 32.4% of the stone tools from 34GV202 are made of Frisco chert, the low percentage of Frisco chert in the debitage assemblage (11.2%) is an anomaly in this scenario. In fact the percentage of Frisco chert in both the tool and debitage assemblage more closely resembles that from Paoli phase sites in the area (Drass 1995:248-249). In addtion, only 5.4% of the shatter and blocky debris is Frisco chert. If Frisco chert was being knapped on the site, more shatter and blocky debris as well as cores would be expected. Again, small sample size may be a factor. Alternatively however, other factors may be considered. For instance local chert and quartzite dominate both the chipped stone tool and debitage assemblages, being 54% and 75.2% respectively. Since these materials were obtained locally and must reflect a lithic material acquisition strategy focused on obtaining local materials, then one must consider the acquisition of Frisco chert as well as other exotic materials on a more local level. Aside from trade, possible sources of this material are the many of the Archaic and Woodland sites in the region which occur on stream terraces and near streams, both of which are sources of the small chert pebbles and Ogallala quartzite being collected by 34GV202's inhabitants. Sites in the area attributed to these time periods contain Frisco chert artifacts, much of it being heat-treated (Bartlett 1993;1994, Wyckoff et al 1994). Plains villagers may very well have collected Frisco chert from these sites. Evidence of collecting lithic materials from earlier sites may be manifest by the recovery of Paleoindian and early Archaic bifaces at some Plains Village sites (Brooks 1987:83; Duffield 1953:68; Drass 1995:193). The dart point fragment of thermally altered Frisco chert and wedge of a patinated flake of Johns Valley chert from 34GV202 may also be evidence of collecting material from these earlier sites.

Although the sample analyzed here is much to small to address this question, one avenue of future research in regards to Washita River phase acquisition and use of Frisco chert may be in the thermal alteration of this material. It is well documented that the thermal alteration of Frisco chert enhances its knappability (Bartlett 1994; Wyckoff et al 1994). Heat-treating this material in has been employed in Paleoindian, Middle Archaic and Woodland times throughout central Oklahoma (Bartlett 1993,1994; Hartley and Bartlett 1995; Wyckoff et al 1994), particularly in the production of formal tools. Among the 13 Frisco chert arrow points, bifaces and unifaces recovered at 34GV202, only a dart point, a flake with bifacial edge modification, and a small thick biface are manufactured of thermally altered material. Among the Frisco chert flakes, 37.5% are heat-treated. Since heat treatment of this material renders it more knappable, it would be expected that Frisco material used in the manufacture of items such as bifacial knives and arrow points would be regularly heat-treated. If it is assumed that the thermally altered material present in the debitage is the result of the village inhabitants investing time in heat-treating Frisco chert to facilitate tool manufacture, then a higher percentage of heat-treated flakes and tools would be expected. None of the seven arrow points of Frisco chert are made on thermally altered material. Further, it is doubtful that an investment in heat-treatment would be made simply to produce flakes for expedient tools.

The 34GV202 ceramic assemblage is dominated by Nocona Plain. A total of 98% of the sherds are of this type. Most of the sherds are from large vessels probably used for storage. The dominance of Nocona Plain in the assemblage is typical of Washita River phase sites. Large everted rim jars, some with noded decoration on the neck as well as lip tabs and handles, are common on village sites (Brooks 1987; Sharrock 1961; Schmitt and Toldan 1953). The partially restored Nocona Plain vessels from 34GV202 include not only large everted rim jars, but also smaller jars. The heavy carbon on the exterior of some vessels may be the result of their use in cooking or their initial firing

during manufacture. The few red slipped sherds in the sample exhibit a variety of tempers. However, all include sand in the temper. The ware is similar to Sanders Plain, a contemporaneous grog tempered ware from the woodlands in the eastern portion of the state (Brown 1971:164). Red slipped sherds with similar temper are reported from the Arthur site (34GV32) (Brooks 1987:96). Petrographic analysis of tempering grains in a sample of red slipped sherds from the region suggest a local manufacture of these items (Ferring and Perttula 1986).

The bone tools recovered from the investigation represent a range of typical tools used by Washita River phase villagers. The wide variety of tools present in such a small sample, attests to the extensive bone tool industry during the Washita River phase. The common selection of bison elements including crania, scapula, ribs, tibia and radii for the manufacture of tools is evidenced in the assemblage. Most of the tools were likely utilized in horticultural endeavors. Although tools such as bison tibia digging stick tips and bison scapula hoes are well documented for Washita River phase sites, the use of bison radii in the manufacture of tools at 34GV202 provides evidence pertaining to the regular use of other bison long bone elements in the manufacture of bone tools.

In addition to bison, several deer elements are present among the modified bone items. Tools manufactured from mandibles, metatarsal, tibia, a radius and an ulna attest to the use of deer bone in the manufacture of tools relating to several activities. Metatarsal were selected to manufacture beamers likely used in hide processing, as well as awls used in basketry and hide work. Mandible sickles were used in gathering plant material and an ulna likely used in pressure flaking lithic material are present in the assemblage.

Although difficult to interpret, the recovery of sheet mica (Muscovite) fragments from 34GV202 as well as the Arthur site may indicate the extent of trade contacts on the Southern Plains during the Washita River phase. Mica fragments as well as granite with mica inclusions are also reported from the Plains Village component at the Duncan Wilson Bluff Shelter (Lawton 1968:90). The origin of this material is unknown. However, sources of sheet mica are known in the southern Rocky Mountain region as well as the Appalachian Mountains (Brooks 1987:92). Perhaps there is a source in the Wichita Mountains of southwest Oklahoma yet to be documented. If more of this material is recovered from other Plains Village sites in the future, a trace element study may be worthwhile to identify possible sources of the Muscovite, or at least if the samples from 34GV202, 34GV32, Duncan Wilson and Spiro are chemically similar.

The 34GV202 faunal assemblage reflects the exploitation of a range of habitats. Bison, antelope and jackrabbit are representative of prairie habitat, deer and fox squirrel of woodland habitat, and waterfowl, aquatic turtle and fish are representative of riverine exploitation. Species from such varied environments is consistent with previously documented Washita River phase faunal assemblages (Brooks 1987; Drass 1995). With the spread of grassland after A. D. 1300, it is likely that all the above species were locally available within the Washita River valley. Brook's (1987) catchment analysis of the Arthur site suggests such a local exploitation of subsistence resources. Virtually all of the long bone elements identifiable as from large or medium sized mammals bear evidence of intensive processing. The processing is further evident in the large number of bone fragments recovered. It appears that those elements not selected for tool manufacture were processed to recover marrow and grease.

Intrafeature Analysis

Although the small sample of both artifacts and faunal remains (in relation to the size of the site) renders comparison with assemblages from other sites tentative, however, some interesting trends are noteworthy between the two pits identified in Feature 1. Prior to the following discussion it should be noted that the only materials with exact proveniences within both Pits A and B are the botanical remains. All other items are provenienced only as far as Trench and unit. Since the units containing the pits also contained fill from within the erosional feature, a distinction between items derived from the pits and those form the erosional fill cannot be made. Therefore an analysis and comparison of the contents of each pit is not possible. However, differences in faunal remains and selected artifact categories from the excavated units in which the pits occur are noteworthy. Pit A, was present in the E/W trench in E0/N4 and part of E2/N4, with Pit B in E4/N4 and E6/N4. Units E4/N4 and E4/N6, N/S Trench intersect parts of Pit B.

As discussed earlier, the adjusted radiometric dates

from each pit indicate the possibility of a 100 year difference between the Pit A and Pit B. As evident in Table 9, there is a dissimilarity in the botanical remains recovered from each pit which may indicate a temporal difference in plant use. Alternatively, the contrast in botanical remains may be seasonal. Many of the botanical remains from Pit A including sunflower Cheno-ams and marshelder are late summer to fall maturing seeds whereas many from Pit B, including little barley and dropseed are spring maturing plants. Therefore the fill within each pit may contain materials discarded during different times of the year.

A comparison of the faunal material from the units excavated through Pit A and Pit B is intriguing in this respect. When the percentage of deer and bison bone per unit recovered along the E/W trench is plotted from west to east, a dramatic increase in bison bone accompanied by a steady decrease in deer bone is evident (Figure 21). The deer crania recovered from the Pit A vicinity evidences removal of the antlers suggesting the deer was taken in fall or winter. In addition, more than 50% of the recovered rabbit bone is from the Pit A vicinity. The possibility certainly exists that the differences in the faunal material, like that of the botanical remains may be the result of seasonal exploitation patterns. If the 100 year difference in the calibrated mid range radiocarbon dates of Pit A (A. D. 1300) and Pit B (A. D. 1403) are considered, the increase in bison and decrease in deer may indicate changes in subsistence over a 100 year period. Drass's (1995 :327-333) study has shown a high incidence of deer and rabbit remains on Paoli phase sites (A. D. 900 -1250) with an increase in bison exploitation on Washita River phase sites, particularly after A. D. 1300.

Further evidence of possible seasonal differences in the pit contents is found in the bone tool assemblage. A total of 94.7% (n=36) the modified bone recovered by excavation are derived from the area of Pit B (Table 8). Since most of the tools relate to horticultural practices, they may represent exhausted and broken tools discarded and replaced while use of these tools is at it's peak. This would most likely be spring to early summer when planting and tending fields would occur. Like the botanical evidence from each pit, the contrast in faunal remains and bone tools from the excavated units in which each pit occurs, may be indicative of either temporal changes in subsistence or reflect the filling of each pit with refuse during different seasons.

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