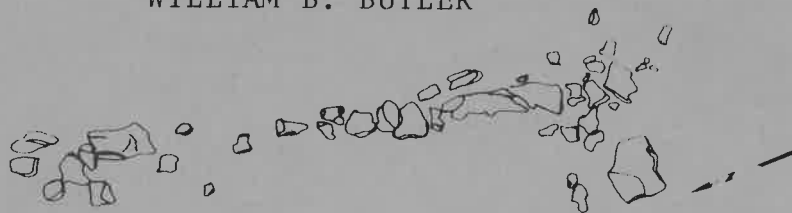


ANALYSIS OF ARCHAEOLOGICAL REMAINS: ROUTE I-435
FROM ROUTE I-35 TO ROUTE I-29, CLAY AND PLATTE
COUNTIES, MISSOURI



WILLIAM B. BUTLER



Hi people,

Hope this letter finds you all well and fine. Finally got the summer behind me - I think - so am trying to catch up on some correspondence with friends, family and bill collectors.

I never did get back to Kansas City since the summer I worked there but will sometime this semester as I have some things left to do in the area.

Seems like I'm always behind on everything before I even know about it - overworked and underloved (to quote Fenenga).

Mett, enclosed is a copy of the report on the work I did on that highway project. At best, the report is a rather cursory treatment of everything involved with the prehistory of the K.C. area. I want to revise it and get it published sometime this year. I would appreciate any and all comments you may have - good and bad. I would rather have you and others tear it up now rather than after it gets a wider distribution.

Sorry there are no photographs of the goodies but I will try to get some if you really need them.

Well, just wanted to say hi and get this manuscript to you for comment. Will see you all sometime this semester.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Bill".

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FROM ROUTE I-35 TO ROUTE I-29, CLAY AND PLATTE
COUNTIES, MISSOURI.

by

WILLIAM B. BUTLER
University of Missouri-Columbia

PARTIAL FULFILLMENT OF COOPERATIVE AGREEMENT 4-1-435-50

May 31, 1974

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PREFACE AND ACKNOWLEDGEMENTS

The following report is the result of investigations conducted along the proposed right of way of Interstate 435 under cooperative agreement "Archaeological Survey and Testing of Route I-435, Platte-Clay Counties, East of Route I-29 to Route I-35 (4-1-435-50)", between the Missouri State Highway Commission and the University of Missouri-Columbia, with the cooperation of the Federal Highway Administration.

The proposed construction consists of an extension of Interstate Highway 435 from its present juncture with I-35 in the city of Claycomo, Missouri, northward approximately seven miles, then continuing in a westerly direction about eight miles to I-29 near the new Kansas City International Airport and Ferrelview, Missouri.

The initial part of this report contains summary statements and recommendations on all archaeological sites encountered on or near the right-of-way of the project.

Sites such as 23 CL 130, 126, and 128 are only discussed in this first section due to their disturbed nature. The last section contains an interpretation and discussion of each site where more extensive forms of investigation and testing were conducted. Included are descriptions of the various artifacts recovered.

A lithic debitage analysis from sites 23 CL 35, 34, 127, 131, and 33 and seriation of these sites is also included.

Numerous specimens from live trees were collected as part of the summer research plan to provide data for the future establishment of a tree-ring chronology for the area. Research in dendrochronology and tree-ring studies is underway and the results will be published in the future.

Many people were involved in this investigation and their help is gratefully acknowledged.

Thanks, first of all, must go to J. Mett and Margaret Shippee of Kansas City, Missouri. Not only was Mr. Shippee's 30+ years of archaeological investigations in the area an immense help, but it was through his efforts and especially that of Mrs. Shippee, that suitable living accommodations were found for the field crew.

Gregg Stock, Director of the Kansas City Museum of History and Science offered the use of a spare room at the Museum for processing materials. The facilities were more than ample for our needs and many rainy days were spent cleaning and cataloguing the artifacts recovered. The use of this laboratory was most helpful.

Mr. William E. Eldridge, Clay County Recorder, a local historian, was helpful in identifying probable builders and inhabitants of the cabin (23CL125).

Mr. Earnest Schroeder of Leavenworth, Kansas, and Mr. John Kelly, representing the Curry Investment Company, each granted permission to survey and test the sites located on private land.

The crew members were: Kent Buehler, Janice L. Eickmeier, David J. Ives, Lynn Klearman, Yue-Eng Wang and Allan

Westover. Thanks are extended to all of them, not only for their hard work, but their patience.

Thanks to Donna C. Roper for help with the computer analysis, which was so important to the debitage study and to David Evans for assembling the report and taking the photographs.

Naturally, responsibility for the analysis and conclusions presented here rest with the author.

INTRODUCTION

Throughout the descriptive part of this paper, references will often be made to a specific terminology, definition, or concept which was derived from other published sources. In order to avoid undue repetition, only the more pertinent of the definitions will be repeatedly cited. Other investigators are urged to read the original source for this material, should any questions arise.

The discussion of projectile points includes comparison with specimens described and illustrated in other publications for the area. The specimens were weighed as a procedure which may facilitate functional considerations of the small and large projectile point traditions. It may also help to separate large projectile points from other tools, knives, etc., following the procedures of Fenenga (1953).

The basis for statements on heat treating of lithic materials is from Mandeville (1973: 177-203). Most of the terminology used in the descriptions of lithic materials is derived from Binford (1963 - for projectile points), White (1963 - for debitage), and Shepard (1971 for pottery).

SUMMARY OF SITES ENCOUNTERED AND RECOMMENDATIONS

The following summarizes the activities, findings and recommendations concerning the historical and archaeological remains encountered during the period of the project.

A surface survey of the proposed I-435 right-of-way between Kansas City International Airport and Missouri State Highway 169 was conducted in March and April, 1973. From 14 May through 24 May, 1973, a survey was conducted northward along the proposed right-of-way from the present junction of I-435 and I-35 to Highway 169. From 25 May through 28 July, 1973, systematic surface collections of archaeological and historical sites encountered in the surveys of the right-of-way area were made. Subsurface test excavations were conducted on three sites: 23 CL 34, 23 CL 35, and 23 CL 125.

Following are summary statements, along with recommendations for each of the historical and archaeological sites investigated on or near the proposed Interstate Highway right-of-way.

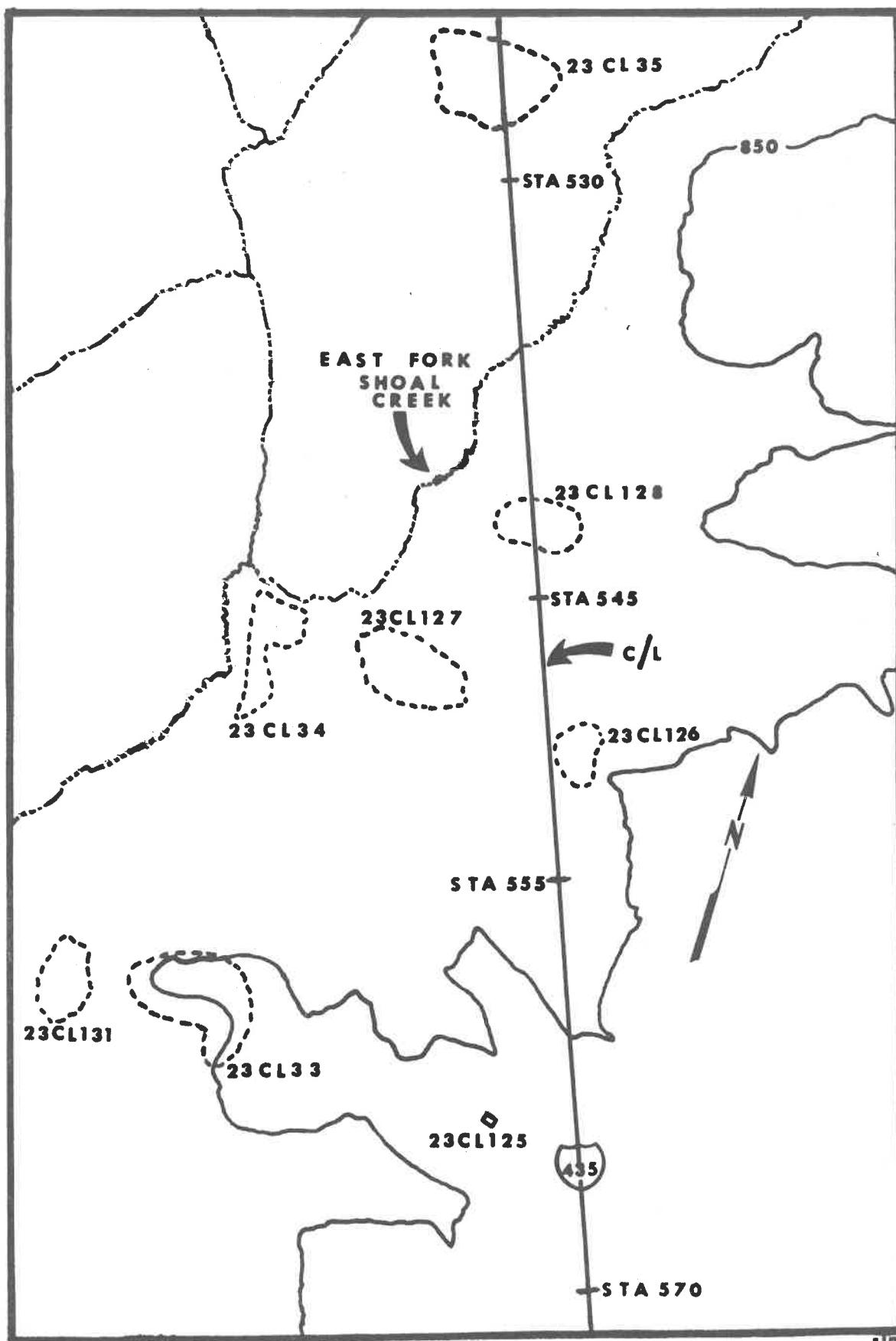


Figure 1. Archaeological Site locations along the I-435 right-of-way.

Archaeological Survey of Missouri Number 23CL130

Location: USGS, Liberty, Mo., 7.5 min. Quadrangle
1965 Center of NE $\frac{1}{4}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 21, T51N, R33W
(not shown on Fig. 1).

Missouri State Highway Commission Final Strip Map,
Route I-435 Clay County, U.S. 169 to I-35, Sta 75+00 to
sta. 580+00 Submitted 17 March 72.

Site is approximately 350 ft. southwest of P.T. 610+
73.93 immediately adjacent along the eastern edge of a
sewage lagoon. Historical and aboriginal artifacts in
mixed association were recovered under the Kansas City
Power & Light Co. transmission line. The original site
may have been located where the sewage lagoon is now
located and the artifacts recovered may be debris from the
sewage lagoon construction operations. Heavy brush pre-
cluded a thorough survey of area adjacent to west right-of-
way limits and west bank of an unnamed creek. If there was
a site in this area, it probably has been destroyed by the
electrical transmission lines and the sewage lagoon.

Archaeological Survey of Missouri Number 23CL125

Location: USGS North Kansas City, Mo. - Kansas 7.5 min.
Quadrangle 1970, SW $\frac{1}{4}$. SW $\frac{1}{4}$. SE $\frac{1}{4}$. " Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map
Route I-435 dated 17 March 1972.

Site is approximately 160 feet northwest of Sta.
23+75 Willis Road, on the proposed right-of-way of Ramp 2.

The site was an historic log cabin dating after 1825
and was probably built by a Mr. and Mrs. Willis. A
structure in approximately the location described above is
noted on the Standard Atlas of Clay County 1914 (Geo. A.
Ogle and Coe: Chicago). No other published data regarding
the nature of the structure has been located.

Archaeological Survey of Missouri Number 23CL33

Location: USGS North Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. SE $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map

Route I-435 dated 17 March 1972.

Site is approximately 1000 ft. west of Sta. 20+00 Willis Rd. Sta. 564+50 Rte. I-435 and approximately 800 ft. WNW of 23CL125 and is off the proposed right-of-way.

Post hole testing was used to determine the extent of cultural debris.

Artifacts recovered from the surface and from the tests indicate that possibly the main occupation was during Archaic times, although the recovery of a small projectile point and a few pottery sherds would tend to indicate that later Woodland peoples may have also used the area.

Sites, such as 23CL33, which are located high on hills above the river bottoms have been known to be associated with the Paleo-Indian and Early and Middle Archaic peoples. Sites located high above river bottoms are rarely encountered, thus, this site (23CL33) is potentially of great importance to the pre-history of the Kansas City area in terms of what we can possibly learn about the earliest inhabitants of the mid-west. Therefore, should this site be in any way endangered by construction, it should be excavated.

Archaeological Survey of Missouri Number 23CL131

Location: USGS North Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970.

This site is located approximately 600-800 feet west of 23CL33, or 1500-2000 ft. off the right-of-way.

As 23CL131 is approximately 40-60 ft. lower in elevation from 23CL33, it apparently represents an entirely different occupation of the area by woodland peoples.

A road cut for a power line probably destroyed most of the site.

Archaeological Survey of Missouri Number 23CL126

Location: USGS North Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. SW $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map

Route I-435 dated 17 March 1972.

This site is on Ramp 1 of the interstate highway right-of-way at Sta. 550+00.

Although this site had been previously reported it could not be relocated. Extensive terrace farming at this point likely destroyed the site.

The previous surface collection of materials from this site, housed at the University of Missouri, will contribute to the archaeological understanding of the area, although the extent of the occupation cannot be determined.

No further work is believed necessary for this site.

Archaeological Survey of Missouri Number 23CL128

Location: USGS Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. NW $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, and NE $\frac{1}{4}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$,

Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map

I-435, dated 17 March 1972.

This site is approximately 900 ft. northwest of 23CL126 along the center of the right-of-way, at approximately Sta. 542+00 to Sta. 543+00.

The initial evidence for this being an occupation site was based on the location and the recovery of a few flakes. The site area is such that it would appear to be well located for occupation by prehistoric peoples.

Like 23CL126, we were unable to relocate the previously reported site.

Archaeological Survey of Missouri Number 23CL127

Location: USGS Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. SE $\frac{1}{4}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map
Route I-435, Dated 17 March, 1973.

The site is approximately 400 ft. southwest, and at
a right angle to Sta. 547+00.

This site was extensively surface collected and is
of Woodland affiliation.

The site has been repeatedly plowed and the northern
end of the site area evidences a high mixture of both
aboriginal and historic materials.

The historic specimens probably came from a house or
similar structure which was located at what is now an
abandoned water well.

Archaeological Survey of Missouri Number 23CL34

Location: USGS Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. SW $\frac{1}{4}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map
Route I-435, dated 17 March, 1972.

This site is approximately 400 ft. due west of
23CL127 and is along and above East Fork of Shoal Creek.

The recovery of numerous stone artifacts and some
pottery fragments of an unidentified cultural affiliation
dictated testing of the site to determine depth of con-
centration and site boundaries.

This site is off the right of way. Previously
unrecognized pottery types recovered and the undisturbed
nature of the site makes this site important and should
be examined if endangered by construction activities.

The limited testing revealed the site to represent an
example of the little understood Late Woodland occupation
in the area. A Carbon 14 date (CWR-142) of A.D. 960 $\pm$ 90-55
was obtained from one test pit.

Extensive archaeological investigation of this site
should be undertaken should any development of the area,
such as straightening of the East Fork of Shoal Creek, be
anticipated, or planned.

Archaeological Survey of Missouri Number 23CL35

Location: USGS Kansas City, Mo. - Kansas 7.5 min.

Quadrangle 1970. NW $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$, NW $\frac{1}{4}$, and NE $\frac{1}{4}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 16, T51N, R32W.

Missouri State Highway Commission Final Strip Map
I-435 dated 17 March 1973.

The major portion of this site extends the full width of the right-of-way, between Sta. 534-00 and Sta. 526+50.

This site has been so extensively cultivated that no portion is felt to have been left undisturbed. Lithic materials from the site were recovered on the same terrace as much as $\frac{1}{4}$ mile from the probable original location of the site. The major concentration of material, and probably the original site location, is as described above. Post hole testing supports this conclusion. Three, two meter square test pits were excavated in the area of artifact concentrations. All pits indicated a high degree of disturbance from the surface down to approximately 30 cm and including part of a brick clay loess which underlies the entire valley terrace on which the site is located.

A systematic surface collection of materials and recording, using a projected grid system was made from the major artifact concentration area. Detailed laboratory analyses did not permit identification of specific use areas.

It was not possible from the analysis of materials recovered from the grid system over the areas of high debris concentration to compare with the materials recovered elsewhere in the area to point out early vs. later occupation of the site or changes in tool technology.

No further work on this site is recommended.

ENVIRONMENTAL BACKGROUND

An extensive discussion of the environment will not be attempted here as it has been more ably done elsewhere. The following synthesis is taken basically after Calabrese (1969), in addition to the works of Wedel (1943) and Johnson (1974). These sources should be consulted for more detailed accounts of the environmental setting.

The average yearly precipitation is from 35 to 40 inches, occurring throughout the year with a spring and summer maximum. The months of May, June, August and September average over 3.5 inches of rainfall per month with the lowest average occurring during the months of December, January and February (less than 2 inches per month). The average annual temperature is 50 degrees Fahrenheit with the average high of 77 degrees occurring in July and the average low of 30 degrees in January. The average length of the growing season is about 172 days with the last killing frost sometime in mid-October. Prevailing winds are from the south and southwest in the summer and the north and northwest during the winter.

The topography consists primarily of rolling hills dissected by broad stream valleys and is considered to be within the southern margins of the Dissected Till plains.

The glacial deposition of till during the Early Pleistocene was followed by the deposition of alluvial and aeolian

deposits during the middle and late Pleistocene.

The underlying geological features of the region are characterized by elements of the Missourian series of the Pennsylvanian system. Limestone deposits of the Kansas City group include cherts which are useable for the manufacturing of lithic tools. These exposures outcrop frequently along the stream drainages of the area. The base limestone formations are capped by alternating beds of shale and limestone which are followed by glacial till and sands. Sandstone is known to occur as a member of the Pleasanton group of the Missouri series in the southeast corner of Clay County.

The ecological zones have been distinguished for the region as being part of a larger general Prairie environment, by Mori (1967). The first zone is uplands with bunch grass and/or other species of tall grasses, which is more commonly known as the tall grass prairie. The grass prairie border and associated smaller stream valleys contain a predominant oak-hickory forest. The last zone is characterized by plants requiring a more plentiful and permanent supply of moisture, which occurs along the larger stream bottoms, especially those of the Missouri River. The East Fork of Shoal Creek in the region covered in this paper can be thought of as only marginally representing part of this last zone.

The predominate large animals of the region were prob-

ably bison in the prairie zone with white-tailed deer in the oak-hickory forests and along the streams. Smaller mammals, such as rabbit, squirrel, raccoon, fox, beaver, etc. as well as numerous rodents could also be found. Snakes, lizards and both land and water turtles along with birds, both seasonal and more permanent residents, are also known to occur in the region. Fish can also be found in the more permanent streams of the area.

The aboriginal use of at least the prairie and oak-hickory forest zones might be suspected as both are within relatively close proximity to all the sites discussed in this paper. However, the lack of faunal remains from these sites - probably due to the high acid soil (pH) precludes any assessment of the relative use and importance of the various animals and plants contained within these zones to the people occupying the sites discussed.

SETTLEMENT PATTERN

The archaeological investigation of the area along the right of way can be used as a random test of settlement patterns for the Kansas City upland areas well away from the Missouri River. The proposed route of the freeway, as laid out by the highway department can be thought of as being entirely random - from the archaeologists viewpoint.

Beginning at the current intersection of Interstate 435 and Interstate 35, about 3.5 miles north of the Missouri River, the proposed highway right of way extends in a north-northwest direction about 3.5 miles where it then turns due north for another 3 miles. At this point it crosses Missouri Highway 291 (old U.S. 71 Bypass) where it then makes a right angle turn to the west. The right of way then runs north of and roughly parallel with Route 291 for approximately 5 miles, recrossing Route 291. The proposed I-435 right of way runs parallel with and just to the south of Route 291 for about 3½ miles to the vicinity of Ferrelview, Missouri.

The proposed northern, or east-west portion of the interstate essentially lies along a dividing ridge which separates streams which flow to the north and south. No sites were located along this ridge. It was systematically and extensively surveyed in April, 1973 and again at the

beginning of the summer, 1973. No local landowners or tenants knew of any sites in the area and the professional archaeological survey substantiated these statements.

No point along the right of way on the ridge is far from a permanent source of fresh water. The route crosses the headwaters of the north flowing First Creek and Second Creek as it approaches Ferrelview. A relatively high ridge, it has probably been an upland prairie for a considerable period of time. The absence of tree cover for both man and animals could have been responsible for the lack of any archaeological remains reflecting permanent occupations.

The north-south, or southern portion of proposed Interstate 435 also crosses many permanent sources of fresh water. The northern 3 miles of the right of way crosses two northwest to southeast flowing streams. The south stream, the East Fork of Shoal Creek, is recrossed as the right of way nears its planned intersection with completed Interstate 35. Only in the area of the second crossing of the East Fork of Shoal Creek in the southern 2 miles of the proposed route were archaeological sites located.

The location in which the sites discussed in this paper are concentrated encompass an area on, or near, the flood plain of the East Fork of Shoal Creek. At this point it is about 400 meters (1500 feet) wide.

With the exception of Whittmeyer Bottoms Site (23CL35),

all the sites discussed are on the left bank (east) of the creek. The location of the proposed right of way, and thus the area surveyed, is responsible for this apparent concentration of sites. In this area the creek has cut a steep bank along the southern and eastern edge of the flood plain, but easy access to the bottomland terraces is only prevented in limited areas.

Approximately two miles north of the site area where the right of way again crosses the East Fork of Shoal Creek the stream profile presents a 21 meter (70 ft.) high (70° angle from the horizontal) slope on its southern bank and a flood plain less than 60 meters in width. Access to the stream and bottoms from the southern bluff is not impossible but difficult. The opposite, northern, bank is relatively flat, offering very easy access, however, no sites were found in that area either.

The northwest-southeast flowing stream, a tributary roughly paralleling at about 1 mile distance the East Fork of Shoal Creek, also exhibits a 12 meter (40 ft.) high southern bank with a slope of about 50° - 60° , and a gradual northern border. The flood plain on this unnamed creek is less than 25 meters (80 ft.) wide.

As far as this survey can suggest, the only difference between the area where the sites are located and the areas where none were found, would appear to be in the width or

amount of flood plain at the point in space.

As will be discussed in the section of flake analysis and seriation, of the five sites examined there seems to be a general progression through time for movement of the occupation areas closer to the river bottoms with more recent sites nearer the stream.

Table 1 depicts the various relationships between the site locations and the creek bottoms supplying fresh water.

TABLE 1

Site	Present Distance to Creek	Site Elevation (above mean sea level)	Site Elevation above Creek
23 CL 35	107 m. (350 ft.)	248 m. (813 ft.)	5 m. (16 ft.)
23 CL 34	10 m. (30 ft.)	246 m. (807 ft.)	6 m. (19 ft.)
23 CL 131	61 m. (200 ft.)	249 m. (815 ft.)	6 m. (20 ft.)
23 CL 137	91 m. (300 ft.)	252 m. (825 ft.)	12 m. (40 ft.)
23 CL 33	214 m. (700 ft.)	260 m. (854 ft.)	24 m. (80 ft.)

With the exception of 23 CL 34, all sites are over 60 meters (190 ft.) from the stream. The earliest site, chronologically, 23 CL 33, is the farthest away from the stream as well as being the highest in elevation above the stream.

It might be postulated that this apparent movement through time may be related to the nature of the subsistence activities of the occupants. Though totally conjectural,

the following ideas are suggested as a possible model for further testing. (Based on surface survey and limited testing in a restricted area, proof is impossible at this point in time.) If the major occupation at 23 CL 33 does indeed represent a Late Archaic or Early Woodland manifestation then the location may be a reflection of a primary hunting/gathering subsistence system with a concomitant emphasis on:

- (1) avoiding close habitation to places where animals come to water.
- (2) maximum view of the surrounding landscape.
- (3) location on the edge of the prairie and stream valley biomes.
- (4) no use of bottom land for horticultural practices.

The sites which are more accurately assigned to Woodland occupations (23 CL 34, 127 and 131) probably also reflect the importance of hunting in the economy, but the move closer to the stream may be an indication of a need to be closer to agricultural fields.

If Whittmeyer Bottoms (23 CL 35) represents a Mississippian occupation, then its location on a relatively high terrace within the flood plain may be a reflection of a greater dependence on agricultural produce and the need to remain closer to the fields. The location of the site, away from the water, was probably not so much a result of wishing to stay away from potential animal watering places, but a compromise between close proximity to the large (ex-

tensively farmed?) flood plain and the need to remain above any periodic high waters during the flooding of the creek. Whether the Woodland or Mississippian Period cultures were agricultural is open to proof and thus this proposed settlement pattern change through time as based on a need for closer proximity to agricultural fields, is highly conjectural and should be thought of as an idea for further testing. A much broader and more specifically defined and researched data base than that used in this paper is needed, without predefined limits such as a narrow highway right of way. However, Johnson (1974) points out that the Archaic sites in the Brush Creek Valley, in adjacent Platte County, in the western Kansas City metropolitan area, are more often located on high hills and that Middle and Late Woodland peoples settled on the terraces of the valley. Johnson's work, just beginning to appear in print, has a broader base of testing than possible here.

With the exception of 23 CL 131 (inadequate sample) all sites reflect some similarity of physical remains. This may suggest some degree of permanency of the settlement and similar kind of activities. The apparent greater range in number and in artifact classes represented at 23 CL 36 and 23 CL 34 is probably a result of subsurface sampling utilized on these two sites. Were 23 CL 33 and 23 CL 127 to be excavated, the kinds and numbers of artifacts would probably be about equal to that for 23 CL 34 and 35.

TABLE 2. Artifact Classes represented at five sites:
(23CL35, 34, 131, 127, 33).

ARTIFACT CLASSES	SITE NUMBERS				
	23CL35	23CL34	23CL131	23CL127	23CL33
Points					
corner notch expanding					3
stem (dart)					
triangular no notch			2		
side notch (arrow)	4	2		1	1
leaf		2			
stem w/corner	1	3		1	
corner	4	1		2	
Auger				2	
Drills		2			
Scraper					
Side					
End	2	1			1
Plane		2			
Knife	3	4		4	
Spokeshave		2			
Biface	9	10	2	20	
Chopper				1	
Blanks/Preform	9			2	5
Cores		8		17	
Hammerstones		5	1		
Mano				2	
Palette				1	
Hematite		1		1	
Awl Sharpner			1		
Utilized Flakes					
Utilized flake	22	35	5	18	12
Scraper	8	4			
End	2	1			1
Side	5	1			
Ovate	2	1			1
Scraper/Knife	2			2	1
Retouch Knife		1	3		
Ovate Knife	1				
Flake Knife	1	1	1	1	
Spokeshave	4	1			1
Auger	1				
Drill	1	1			
Hopewell Blade		1			
Projectile/Biface		1	1		
Chopper		1			
Retouch Flake				1	1
Sand Tempered Pottery		yes	yes		yes
Shell Tempered Pottery	yes				

Hunting and gathering, wood and hide working, stone tool producing activities appear to be represented at all the sites considered, with the exception of 23 CL 131. It would therefore not seem as if there was any major change in subsistence activities, and the move to the bottom lands may have been one of convenience and not of necessity. Additional work must be done in the area to investigate these ideas.

FLAKE ATTRIBUTE ANALYSIS

The following analysis is a test of Osborne's (1965) work on changes in lithic manufacturing techniques through time to artifacts gathered from the sites investigated here.

Osborne's study of large amounts of chipped material from Anasazi sites on Wetherill Mesa, Mesa Verde National Park, Colorado, was able to demonstrate "patterns of change... in chipping methods and materials that correlated well with other aspects of cultural change."

The analysis attempted here is based on the following observations:

1. Cultural change, as reflected in changes in projectile point style, pottery, house form, etc., occurred among the people occupying the Kansas City area during the Late Archaic/Early Woodland through the Middle Woodland to Late Woodland/Mississippian periods.

2. The sites used in this study represent a broad span of time, primarily within the Woodland Period - based on projectile point style changes presented by Wedel (1943) and Shippee (1964, 1967, 1972). The descriptions of these projectile points are presented elsewhere in this paper.

Assumption: A measure of the change in lithic manufacturing techniques can be ascertained by an examination of chipping waste or debitage as changes in lithic tool manufacturing techniques also took place in this area among these people through time.

The attributes chosen for the analysis (to detect cultural change), are detailed below and are a result of a modification of Osborne's southwestern criteria, the observations and descriptions as presented by White (1965), and here. The following list of attributes are presented in the manner in which the observations were recorded for computer assisted analysis. See Figure 2 for a graphic representation.

Flakes are often defined as being the lithic waste resulting from the manufacture of chipped stone tools. It should be noted that flakes were used as tools, although the following analysis does not reveal any deliberate effort to produce a flake of a specific shape for a particular tool. All flakes studied are of locally available chert and all observations are made with the bulb of percussion end oriented as a base line for all other measurements and observations.

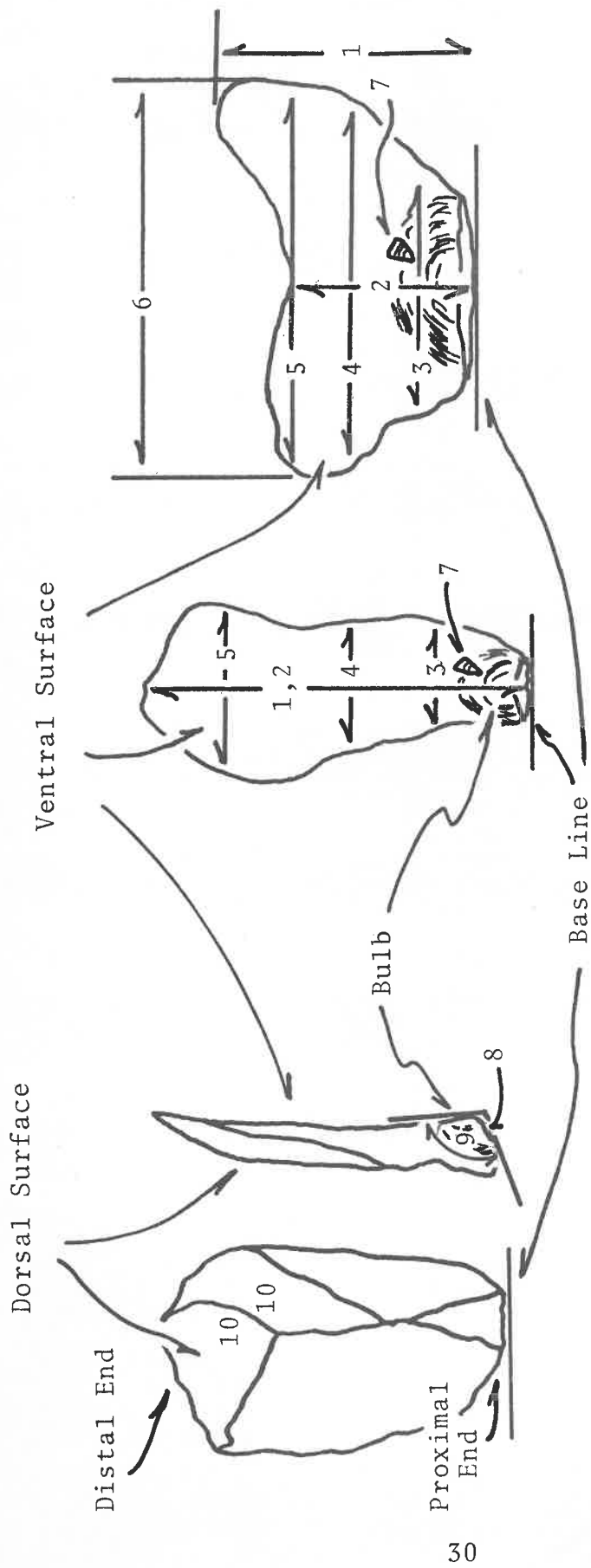
Definitions:

Proximal End: That end of the flake being nearest the bulbar end or base.

Distal End: The end of the flake opposite that of the bulbar or proximal end.

Dorsal Surface: The surface of the flake that is opposite the surface containing the bulb of percussion. The surface that was originally oriented toward the outer surface of the original core or cobble from which it was detached.

Ventral Surface: The surface containing the bulb of percussion. The surface which was originally on the inside of the core or cobble from which it was struck.



- | | |
|----------------------|----------------------|
| 1. Maximum length | 6. Maximum width |
| 2. Force Axis length | 7. Bulb scar |
| 3. Basal width | 8. Platform |
| 4. Medial width | 9. Separation angle |
| 5. Distal width | 10. Secondary facets |

Figure 2

FLAKE OBSERVATION AND ATTRIBUTES

Cortex: The natural outermost position of a chert cobble. Often rough and/or granular in appearance.

0. No cortex present.
1. Cortex covers from 1-25 percent of the flake surface.
2. Cortex covers from 26-50 percent of the flake surface.
3. Cortex covers more than 51 percent of the flake surface.
This kind of flake is sometimes known as a primary decortication flake (White 1965).

Platform Location: The area in which the platform was located. Platform is the place where the cobble was struck to remove a flake.

1. Located on cortex.
2. Located on a "fresh" surface. The fresh surface was the result of another flake which had been previously removed.

Platform Preparation: How the striking area was prepared before the blow which removed the flake.

0. No modification.
1. Platform area battered.
2. Platform area ground.
3. Platform area battered and ground

Platform Morphology: Shape of the striking surface as viewed from the ventral surface with the flake in a flat position.

1. Flat
2. Concave
3. Convex
4. Multiple

Flake Detachment: How the flake separated from the core.

1. Normal tear flake - force dissipated evenly toward the outer surface of the core with the distal end of the flake tapering toward the surface at a shallow angle.
2. Hinge Flake. The flake hinges at the distal end
3. Step Flake. The flake detached in a step.
4. Hinge and Step.
5. Shatter. Flake detachment unknown - usually because of secondary flaking which has removed original bulb scar and/or distal end.

How the flake was removed would seem to be related to the striking angle and the force applied.

Secondary Facets: Secondary flakes removed from the primary flake used in the analysis.

0. Absent - usually a primary decortication flake.
1. Flakes removed before the flake separated from the core.
2. Flakes removed after the flake was separated from the core; usually shows up, and is evidenced by a destroyed bulb or flakes on the ventral surface.
3. Before and after separation: Often found where a flake was modified to be used as a tool.

MEASUREMENTS

Maximum length: From the bulb base line to the most distal extent of the flake.

Force Axis Length: As measured perpendicular from the center of the bulb of percussion and horizontal base line to the edge of the flake at the point of intersection of the perpendicular axis and edge of flake.

Basal Width: As measured perpendicular to the force axis length at a point approximating the first or proximal most 1/4 of the length of the flake. The width as measured parallel to the baseline at approximately 1/4 of the distance from the baseline to the distal most portion of the flake.

Basal Thickness: Maximum thickness along the basal width (above).

Bulb Thickness: Maximum thickness of the bulb of percussion.

Bulb/Base Pronouncement: The relationship of the thickness of the bulb to that of the base.

1. Bulb is thinner than the base.
2. Bulb is equal in thickness to the base.
3. Bulb protrudes (is thicker) than the base.

Bulb Scar: The presence or absence of the small flake that sometimes detaches from the bulb on the ventral surface as a result of a reflection of the force used to separate the flake from the core or nodule.

Medial Width: As measured parallel to the baseline at a point approximately one-half the distance between the base and the most distal portion of the flake.

Distal Width: Measured parallel with the base at a point approximately $3/4$ of the length of the flake from the base line; the last, or distal most $1/4$ of the flake.

Distal Thickness: Greatest thickness as measured along the distal width axis as defined above.

Separation Angle: The included angle as measured to the nearest degree between the ventral surface and the platform.

Weight: In grams on the scoring scale 0-5 g. = 1, 5-10 g. = 2, etc.

METHOD

In order to speed up the observations of the 26 variables for each flake, a scaling device was created for all measurements.

A piece of graph paper marked off in 5mm. increments from 0 - 120mm. was used to make all measurements on the flakes. A flake was simply moved up or down the scale until the attribute being measured fit into the closest increment and that increment was recorded. Likewise, weight was recorded in 5 gram increments using an Ohaus Triple Beam Dial-o-gram Balance.

Fearing that some data might have been lost due to these seemingly crude forms of ordinal measurement, a test was made utilizing 21 flakes.

First the flakes were measured for every attribute utilizing a set of calipers to the nearest $1/10$ of a millimeter. Next the same measurements were made on these flakes utilizing the graph paper scale described above.

Three multivariate statistical tests were run on these two sets of data with the aid of the University of Missouri's IBM360/70 computer.

Veldman (1967) program HGROUP was first used on both sets of data. This program was used to see, within each group of

flakes, whether those flakes determined to be most similar would be grouped together. In both instances, the flakes which grouped together in the actually measured set were the same as those in the scaled set.

The data from each set of measurements were then analyzed using Veldman's Program FACTOR and the factor loading matrices produced for each set of data were then introduced into Veldman's Program RELATE. Program RELATE was used to test how closely the factor structures of one group matched those of the other group. The results show that there was little or no data being lost by the use of the sliding scale method rather than actual measurements.

Tools on Flakes

In some instances, flakes were utilized as tools - usually as small knives or scrapers. Observations for the general flake attributes, as above, were made as were the following general observations on the tool morphology etc.

Kind of Use:

1. Use flakes on a natural, or unmodified edge.
2. Use flakes on edges modified by retouching.
3. Both natural and modified edges used.

Edge Morphology:

1. Primarily unifacial
2. Primarily bifacial
3. Both unifacial and bifacial

Length of use on edges: Ventral surface down, force axis length vertical. Measurements on the scoring scale.

Left Edge:

Right Edge:

Proximal End:

Distal End:

These last observations were not well defined in that a great deal of subjectivity was involved in determining where the left edge left off and the distal end began. In general, it does measure the amount of the circumference of the flake that was being utilized. The use factors

listed above should not be viewed out of context with the total flake morphology and observations.

In actuality, attempts were made to see if there was a difference between flakes which were used for tools and those which were recorded as simply being debris, etc. Conclusion: No difference. The functional properties of a flake used as a tool remain the same through time, although the method of deriving a flake may change.

Each site was handled separately and all the above attributes were observed, measured, and recorded for all flakes having a bulb of percussion. Some 1338 flakes from the five sites were used in the analysis: Whittmeyer Bottoms, 23CL36 = 367; Bluff Site 23CL34 = 610 (two pits and surface); Shroeders Farm 23CL127 = 156; Powerline 23CL131 = 19; and Pence Hill 23CL33 = 186.

The observations along with any additional provenience data were then punched on standard IBM computer cards for processing.

The first question asked was: "is there any difference at all between the flakes from one site versus those from another?" This was assuming, of course, that those attributes chosen for analysis were actually capable of reflecting any differences and similarities.

An analysis utilizing a Discriminant Functions technique was first applied utilizing Veldman's Program DSCRIM (1967) on the University of Missouri's IBM 360/70 computer.

Discriminant functions is a powerful statistical technique which can be used with univariate and multivariate problems. Readers not familiar with the discriminant functions technique are referred to Davis (1973: 442-455) and Veldman (1967: 273-280).

Basically the program is a multiple analysis of variance. This technique can detect within group as well as among group variation.

Each site was considered as a separate group made up of

the interrelationships or variations existing for all twenty variables existing on each of the n number of flakes per site. The program first computes the within-group variation for each site and then computes this variation between the sites (Table 3).

A total of 99.97 percent of the trace (variance) was extracted by four Roots from the application of all five sites to the program. Wilks' Lambda and the Chi-square tests of significance as derived from Rao are significant. The p value for Roots 1, 2, and 3, is significant to greater than .0000 and for Root 4 to .0093, thus indicating that the differences between sites are not due to random chance. In other words, a real difference exists among the interrelationship between each of the 20 variables for the flakes from any one site.

This may be related to the changes in manufacturing techniques which, based on seriation and projectile point style changes, is probably related to general culture change through time.

The first Root separates 23CL131 from 23CL35 as well as separating these two sites from all the others. This separation is apparently on the basis of the interrelationships between flake separation angle and platform location.

The second Root separates 23CL131 from all other sites on the basis of amount of cortex present and all interval measures such as maximum length, width, weight, etc. In other words, this root seems to be primarily a reflection of differences in flake size.

Root 3 separates 23CL127 and 23CL33 from each other and from the other sites. Grouped are 23CL36 and 23CL34. These separations and groupings appear primarily to be on the basis of basal and distal size and the amount of cortex present.

Root 4 seems to group all the sites together as exhibiting (multiple) inverse relationships most strongly to bulb thickness, basal width, secondary facet location and time of secondary facet removal, distal thickness and weight.

As can be seen from the above discriminant functions,

Table 3.

DISCRIMINANT FUNCTIONS OF 20 VARIABLES FOR EACH OF FIVE ARCHAEOLOGICAL SITES

PARAMETERS

CCL 1- 5 = 20
CCL 6-10 = 5
CCL 11-15 = 0
CCL 16-20 = 1
CCL 21-25 = 0

DATA FORMAT = (A19,7F1.0,5F2.0,2F1.0,4F2.0,1F3.0,1X,1F2.0,14X)

GROUP 1 367 SUBJECTS. BCTM SITE 23CL35
GROUP 2 610 SUBJECTS. BLUFF SITE 23CL34
GROUP 3 156 SUBJECTS. SHRA FARM 23CL127
GROUP 4 186 SUBJECTS. PENCE HILL 23CL33
GROUP 5 19 SUBJECTS. POWRLINE 23CL131

PRINCIPAL AXIS ANALYSIS (ASYMMETRIC MATRIX).

TRACE = 0.3904

99.97 PCT. OF TRACE WAS EXTRACTED BY 4 ROOTS.

WILKS LAMBDA = 0.694

D.F. = 80. AND 5186.

F-RATIO = 6.290 P = 0.0000

ROOT 1 50.93 PCT. VARIANCE

CHI-SQUARE = 240.317 D.F. = 23. P = 0.0000

ROOT 2 28.34 PCT. VARIANCE

CHI-SQUARE = 139.065 D.F. = 21. P = 0.0000

ROOT 3 14.06 PCT. VARIANCE

CHI-SQUARE = 70.816 D.F. = 19. P = 0.0000

ROOT 4 6.66 PCT. VARIANCE

CHI-SQUARE = 34.005 D.F. = 17. P = 0.0093

Table 3. Cont'd.

CENT.	1	2	3	4
1	0.1285	-0.2433	0.6987	-0.5235
2	0.5592	-0.4703	0.6725	-0.5335
3	0.6534	0.0394	0.8473	-0.5637
4	0.5220	-0.3057	0.7661	-0.4087
5	0.8256	0.7272	0.1559	-0.4658
COREL.	1	2	3	4
1	-0.2444	0.3326	0.2349	-0.1650
2	0.1489	-0.3471	-0.1612	0.0915
3	-0.0736	-0.1224	-0.1334	-0.0418
4	-0.1927	-0.2234	-0.1605	0.0089
5	-0.0617	-0.0011	0.0930	-0.0479
6	-0.4264	0.0642	0.0200	0.2912
7	-0.5110	0.0863	-0.0053	0.1772
8	0.0821	0.7362	-0.1244	0.0608
9	0.0927	0.7656	-0.0768	0.0526
10	0.0450	0.7406	0.2176	0.1751
11	-0.1501	0.6208	0.2856	0.2806
12	-0.1674	0.6153	0.2875	0.3201
13	-0.1667	-0.1196	-0.0104	-0.3716
14	0.0688	0.2189	-0.0302	0.0609
15	-0.0436	0.7681	0.1778	-0.0631
16	-0.2066	0.7269	-0.0212	0.2977
17	0.0909	0.5794	0.2510	0.0103
18	-0.2292	0.5475	0.2761	0.3152
19	0.5801	0.1017	0.2120	-0.0745
20	0.0760	0.5769	-0.0475	0.3354

Table 3 Cont'd.

UNIVARIATE F-TESTS. DFB = 4. DFW = 1333.

VARIABLE	F-RATIO,	P
1	8.3646	0.0000
2	5.8453	0.0003
3	1.1226	0.3440
4	4.2080	0.0026
5	0.3815	0.8235
6	11.2774	0.0000
7	15.6423	0.0000
8	19.7722	0.0000
9	21.3428	0.0000
10	20.6017	0.0000
11	16.9366	0.0000
12	17.2610	0.0000
13	3.2073	0.0125
14	1.9099	0.1052
15	21.5831	0.0000
16	22.0162	0.0000
17	13.1967	0.0000
18	15.7170	0.0000
19	21.0245	0.0000
20	12.8290	0.0000

Table 3 Cont'd.

G MEAN	1	2	3	4	5
1	0.6785	0.4377	0.6795	0.5000	0.5263
2	1.6594	1.7754	1.6282	1.7312	1.6316
3	0.4741	0.4689	0.3846	0.4301	0.4211
4	1.5041	1.4426	1.2179	1.3817	1.2105
5	1.4632	1.4262	1.4487	1.4301	1.3158
6	1.1935	1.0279	1.0064	1.1021	1.0000
7	1.2316	1.0279	1.0064	1.0860	1.0000
8	5.6812	5.1623	6.6923	5.6720	9.7368
9	5.4360	4.9246	6.5321	5.4570	9.3158
10	4.0490	3.5951	4.8590	4.1882	5.7368
11	1.6567	1.3590	1.8013	1.6452	1.9474
12	1.6757	1.3639	1.8013	1.6667	1.9474
13	2.4196	2.3705	2.3205	2.2688	2.1579
14	0.2616	0.2541	0.3269	0.2849	0.4737
15	4.8420	4.1525	5.6410	4.6183	6.6316
16	1.6676	1.3180	1.7051	1.5753	2.3684
17	4.4142	4.1098	5.3718	4.5538	5.7895
18	1.5177	1.2328	1.5577	1.4785	1.6316
19	97.4768	104.3803	108.8526	104.4032	107.3158
20	1.8065	1.5131	2.3462	2.0753	4.0526

the interrelationships of the various attributes and the exact nature of what factors are separating what site from what site are extremely complex. A further refinement of variable selection and measurements will have to be done to try to better understand these differences and similarities.

SERIATION

A seriation analysis was performed to see if the sites could be separated and ordered through time on the basis of a few flaking attributes. The analysis generally follows the guidelines proposed by Ford (1972).

The relative percentages of the frequencies of occurrence of the following attributes were used in the analysis. The numbers across the top of the seriation graph, Figure 3, coincide with the attributes listed below.

Amount of Cortex Present:

1. None
2. 1-25 percent
3. 26-50 percent
4. 50 percent plus

Platform Location:

5. On cortex
6. On fresh surface

Platform Preparation:

7. None
8. Battered

Platform Morphology:

9. Flat
10. Concave
11. Convex

Flake Detachment:

12. Normal tear flake
13. Hinge
14. Hinge/step/tabular

Secondary Facet Location:

15. On Dorsal surface

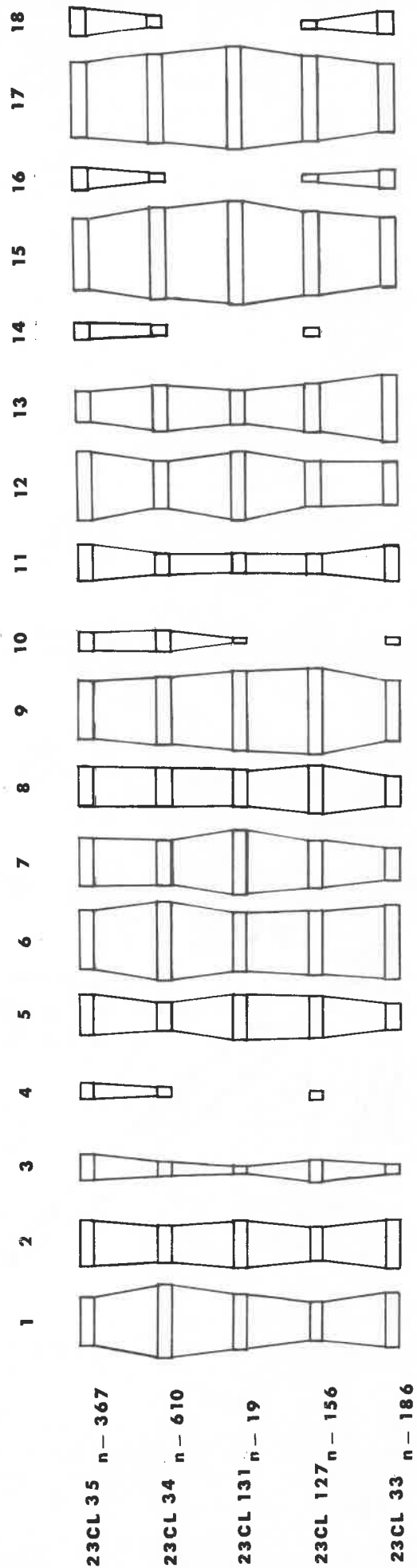


Figure 3

16. On Dorsal and ventral surface

Time of Secondary Facet Removal:

- 17. Before removal of primary flake from core
- 18. Before and after removal of primary flake from core

It is readily apparent that not all of the observations for any one variable were used in the seriation. The selection of those used was a result of an assessment of the frequency and percentage data as derived from SPSS program CODEBOOK (Nie, Bent and Hull 1970) for each site.

The seriation present in Figure 3 fits well for the chronological ordering of the sites as based on the changes in projectile point morphology, type of pottery and the C-14 date for 23CL34.

It should be noted that with respect to the seriation of such attributes as amount of cortex present and platform location, that 23CL35 and 23CL34 should be reversed to give the best "battleship curve." The remaining attributes from these sites would appear to be in the "correct" order, with 23CL35 being later in time than 23CL34.

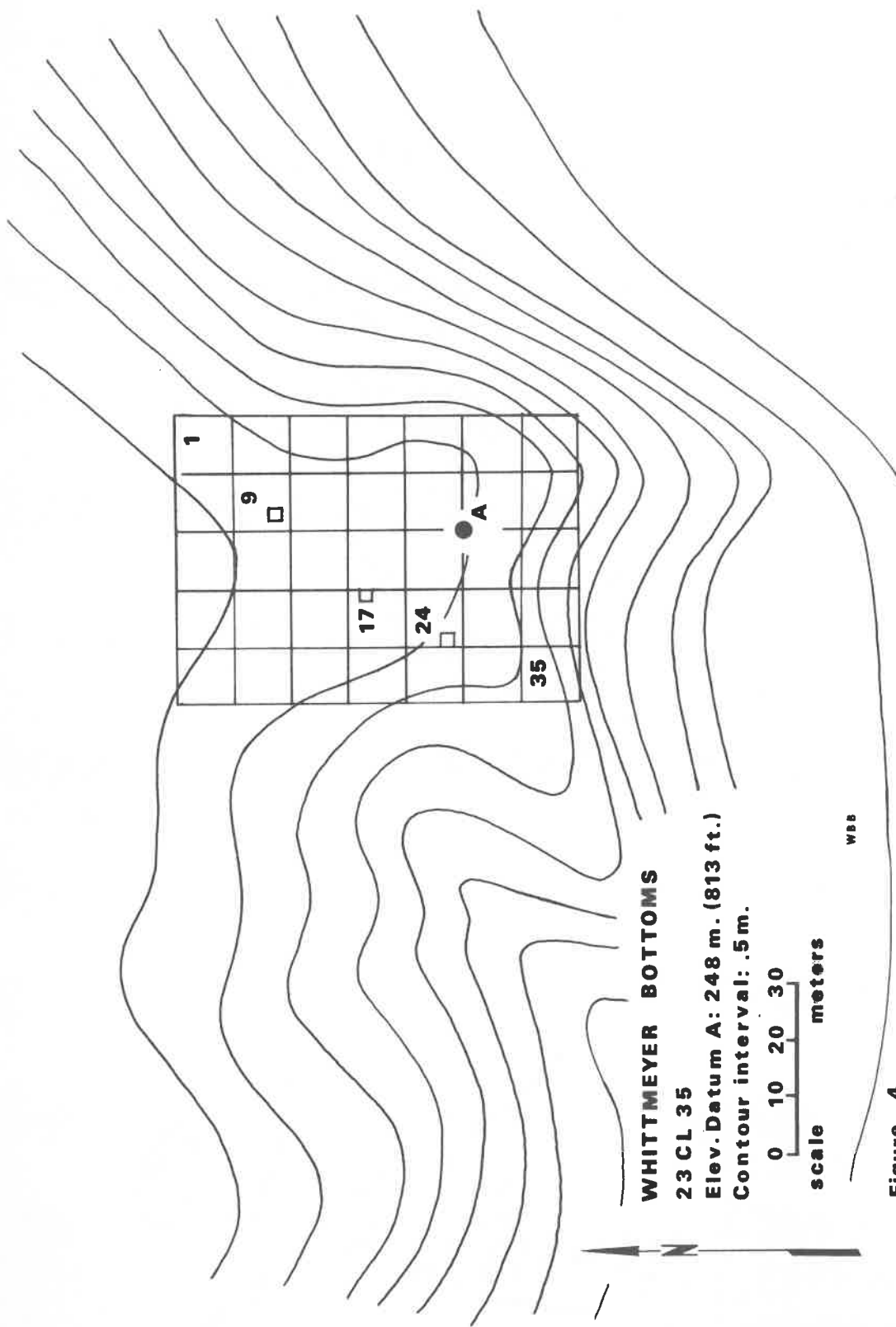
This inability to seriate in a "smooth" manner may be a result of several factors. The following ideas are suggested for further modification and testing, and are not put forth here as representing any conclusion or bias of the author.

- (1) 23CL35 is in its "correct" relative temporal position and that samples from more sites would verify what may be a (Mississippian) occupation much later in time than the (Woodland) occupation of 23CL34.
- (2) 23CL35 represents an Early Mississippian manifestation by peoples different from those occupying the area in the previous Woodland times.
- (3) 23CL35 is an Early Mississippian site occupied by Woodland peoples from the area who, for some reason, used some aspects of an earlier Woodland manufacturing tradition.

The more probable interpretation is possibly the first, except that it would be suspected that more shell tempered pottery should have been present on the site - not just the few sherds recovered.

As pointed out above (Settlement Patterns), the seriation supports the movement through time of peoples down from the high hills toward the bottom lands.

Limitations to this proposal are primarily of sample size. The luck of finding five sites which manage to fit this model (or have created it) should be viewed only in the context of the restricted nature of the testing along a pre-selected transect - the proposed highway right-of-way.



WHITTMAYER BOTTOMS

23 CL 35

Elev. Datum A: 248 m. (813 ft.)

Contour interval: .5m.

0 10 20 30

scale meters

W.B.B.

Figure 4

Site Description (Fig. 4).

This site is located on the southern end of a relatively long and flat north-south terrace. The southern end of this terrace is approximately 3 meters (12 ft.) above a flood plain which extends southward nearly 400 meters (1500 ft.) along the west edge of the East Fork of Shoal Creek. From the junction with the flood plain, the terrace extends about 400 meters (1500 ft.) north.

The surface of the terrace is underlain with a very dense reddish-orange clay, at a depth from 30 to 40 cm. at the southern end. Post holes dug in the bottom of the excavation units demonstrated that this clay layer is at least one meter thick.

Both the terrace and the lower flood plain have been farmed for over 100 years - initially by a man by the name of Whittmeyer. Lithic materials were found scattered as much as $\frac{1}{4}$ mile from the southern terrace edge. Although the farming activities did suggest great surface disturbance, it was hoped that some undisturbed area of the site might be found.

The site was believed to have been originally located on the terrace edge and that the greater depth of the soil above the clay layer would have preserved some of the site from plowing. This was based on (1) a greater density of lithic materials which appeared near the edge of the terrace

and (2) a greater depth of soil present above the underlying dense clay layer at the southern end of the terrace. This clay layer can be observed along the eastern edge of the terrace to dip from north to south. Approximately 250 meters north of the terrace edge, the clay layer outcrops at the surface and grades into the surface soil.

It was during the excavation of three, 2 meter by 2 meter test pits that it was discovered that the site had been plowed to a depth of about 40 cm. (18 inches). As the extensive plowing was not expected at the time of initial reconnaissance of the site, the plan had been to attempt to maximize the data which could be recovered from the site.

A ten meter by ten meter grid system, 70 meters long (north-south) by 50 meters (east-west) was staked out on the site over the area of greatest concentrations of lithic materials, to include the edge of the terrace and the upper level of the terrace. The ten meter square grid units were numbered consecutively in an east to west, then west to east manner beginning with number 1 in the northeast corner and terminating with number 35 in the southwest corner (Map, Fig.4). Everything except soil and corn sprouts was collected and bagged by grid square number.

The placement of excavation units within the grid system was by the use of a random numbers table to eliminate any personal bias. Ten, 10 meter by 10 meter grid units were first selected. Each of these 10 meter square units

was then divided into 2 meter by 2 meter squares which were numbered in the same manner as the larger grid. The random number table was then employed to select the 2 meter square within each of the previously chosen 10 meter grid squares to be excavated.

The first unit to be excavated (Square 9, Pit 17) revealed the deep chisel plowing marks to a depth of about 40 cm. This chisel plowing was also found in the next two pits (Square 17, Pit 10 and Square 24, Pit 16) at approximately the same depth. It was decided that any further excavation would not yield any more data than that which was recovered from the surface collection.

It should be pointed out that although only a few sherds of pottery were recovered from the surface (none in excavations) that all are crushed shell tempered with smooth surfaces, with one exception (Plate 1a) which appears to have been finished with a knotted cord-wrapped paddle. At least on the basis of shell tempered pottery, the site can probably best be assigned to the Mississippian period. Although Mississippian Period projectile points were present, the recovery of some Woodland style points might suggest use of the site by earlier peoples except that the lack of any sand or grit tempered pottery would suggest that any Woodland use of the site as being only limited and temporary. An alternate interpretation might be that the projectile point styles previously thought to be Woodland, might in actuality be just

one of many varieties of points associated with an Early Mississippian assemblage.

This site's position, on a terrace within and yet above a flat bottom land location, would suggest that its location may have been chosen in order to remain above high water resulting from the periodic flooding of the East Fork of Shoal Creek and for close proximity to the rich bottom lands immediately adjacent to the site to the south.

The range of artifacts recovered suggests a permanent settlement with activities such as (1) lithic tool manufacturing (Cores, blanks and Preforms); (2) butchering (knives); (3) skin dressing (scrapers). It seems possible to suggest that the absence of a quantity of pottery, the shell tempering of the pottery, and a mixture of point styles (predominately of Woodland affiliation), that this site may represent short-term occupation by Woodland peoples who were in the process of adopting the newer, Mississippian pottery and disbursed settlement pattern (Johnson 1974).

The seriation of attributes from the flake analysis suggests that although this site may be the latest temporally, many lithic manufacturing techniques are more similar to those of the Woodland site - 23 CL 34.

Artifact Description (Whittmeyer Bottoms 23 CL 35)

Projectile Points:

Most of the observations on the projectile points recovered from this site are summarized in Table 4.

(Plate 2i) A small triangular point with straight sides, side notches, and a basal notch is most easily associated with Mississippian sites in the region (Wedel 1943: Plate 26c; Shippee 1967: Figs. 6c, 12q, 14m, 16n, and 18n; Calabrese 1969: Plate 4).

(Plate 2h) Approximately two-thirds of a small biconvex point having a small basal notch is representative of Mississippian points such as those from Gresham (Shippee 1972: Fig. 18o) and Friend and Foe (Calabrese 1969: Plate 4b). The remaining projectile points fall within the Woodland Traditions..

(Plate 2c,f,g,k) These are triangular points with straight sides, flat bases, and corner notches.

(Plate 2d, j) These specimens are very similar to those described above, except they have side notches instead of corner notches. Most of these points have a greasy texture and appearance and some exhibit a pinkish cast, possibly indicative of heat treating. The shape approximates those of points from the Shields Site (23 CL 1) (Shippee 1967: Fig. 21d,e) except in having straighter sides. Shippee proposes that these points probably represent the Late Woodland occupations in the area (Shippee 1967: 33).

(Plate 2a, b) These points are supposed to be more indicative

Cat. No.	Wt. in gms.	Max. Lgth (mm)	Max or Blade Wdth (mm)	Base Width (mm)	Thickness (mm)	Notches-corner	Notches-side	Notches-base	Base-flat	Base-concave	Unknown	Stem	Blade Short/Curve	Fire Treated	Munsell Color Chart Name	Fragment missing
35-9	0.5	17.2	9.2	13.0	3.6	2	1	1			?	x	S		2.5YN4/dk gray	
184	8.5	42.4	32.0	17.0	9.2								S/C		2.5YN6/gray	
162	2.1	25.1+	18.2		4.3		1						C		10YR7/2 lt gray	
16-2	0.8	17.8	12.8		3.1					x					5YR4/2 dk reddish gray	tip
143	3.4	26.2+	26.0	17.1	5.5	2			x				S	?	10R6/4 lt reddish br.	1/2 tip
60	4.1	31.1+	27.8	20.0*	5.1	2			x				S	?	10R4/2 weak red	1/2 tip
142	3.2	31.2	22.9	16.3	5.4	2			x				S	?	10R5/1 reddish grey	one tang
73	2.5	45.3	28.1*	18.9	5.3	2			x				S	?	5YR8/1 white	one tang
7	2.6	34.7	19.4	18.0*	4.4	2			x	x			S	?	2.5YR6/2 pale red	base tang
54	6.1	52.6	21.9	20.8*	6.3	2			x				S		2.5YN5/ grey	one tang
62	17.8	56.4+	25.1	22.3	10.3	2				x			C		2.5YN3/5 very dk grey	tip broken
15	10.1	42.8	30.0		9.2				irregular				C		10YR7/6 yellow	
2	18.7	70.4	25.0		12.1						x		C		10YR6/4 lt yellow brn	
Knives																
16	15.8	65.2	34.2		7.9								S/C		10YR7/3 v pale brown	
166	7.6	51.4	29.0		5.7								S	?	10YR7/3 " "	
3	21.7	62.3	35.2		11.3								S/C		10YR7/3 " "	
Scrapers																
6	8.2	39.3	23.5		9.1										5YR8/1 bright white	base
191	3.8		22.1		9.3										5YR8/1 " "	

* = approximate
+ = frag. measure

Angle
75°
86°

TABLE 4. Chipped Stone Artifacts from 23CL35.

of Early Woodland times. Plate 2a is elongate, straight sided, with a thinned, somewhat concave, base with side notches. It is rather crudely flaked and not well finished. It is similar to those from the Shields site (Shippee 1967: Fig. 19b,c). Plate 2b, a large, thick stem, steeply flaked, straight sides with a triangular outline, characterizes the remains of another point which might represent Early Woodland occupation and fits well, morphologically, with those from the early occupation of the Shields Site (Shippee 1967: Fig. 19e,g).

(Plate 2e) Represents a point or drill made on a single flake. The base is concave with bifacial thinning and with only steep (85-90°) unifacial thinning along the remainder of the perimeter. The blade itself is excurvate-incurvate in outline, with most of the original flake surface still visible.

The basal fragments of four other projectile points were recovered. They are all too incomplete to make any assessment of them other than that they probably represent Woodland forms. The presence of both Mississippian and Woodland points on this site, along with shell tempered pottery might be suggestive of a site which was either transitional in nature (between Woodland and Mississippian peoples) or a site which originally contained at least two components which have been greatly mixed due to the 100 year plowing activity on the site. It is noteworthy that if what is reflected is truly a mixture of two separate components

(Woodland and Mississippian), then we should expect some Woodland sand-tempered pottery, however, only the shell tempered Mississippian pottery was recovered.

Knives:

(Plate 3c,e) Two complete bifacial knives were recovered which resembles those recovered at Mississippian sites such as Steed-Kisker (Shippee 1972: Fig. 15) and Friend and Foe (Calabrese 1969: Plate 5b,c). Both appear to have been heat treated as evidenced by a pinkish color near their tips. Plate 3e exhibits especially fine flaking and the surface has a glossy or greasy texture. Plate 3c is somewhat more crudely flaked which may be a result of the material itself or the material having not been heat treated to the correct temperature for more careful thinning.

(Plate 3b) An additional specimen very similar to the first specimen described, except that it is somewhat broader near the distal end and 3.4mm. thicker and not as well flaked.

Blanks and Preforms:

(Plate 3a) A long triangular piece of chert, apparently broken at one end, terminates in a point and may be a blank or preform for a point or drill. The edge of the blade appears ground or battered as might be expected to result from multiple platform preparation for further thinning. These dulled edges do not seem to be a result of wear as would be expected from a drill.

(Plate 3d) This item appears to be a blank or preform for a projectile point. It is ovate with one end terminating in a point. The broadest end is asymmetrical. The entire surface appears to have had large flakes removed and part of the surface seems to indicate heat treatment.

Bifacial Knives:

Four complete and seven fragments of chert bifaces, exhibiting use flakes on the lateral edges, were recovered. The complete specimens are ovate in outline.

(Plate 3i) One complete biface has a flat base and measures 65.3mm. x 40.7mm. x 8.2mm., weighs 25.1 grams. It is made of a banded, grey to brown chert.

(Plate 3g) A crudely flaked sub-triangular biface exhibits use flakes on a serrated edge. This end is also sinusoidal when viewed along the horizontal plane. The cone-like tip has use flakes indicating a function as a drill or auger. The use flakes extend about 10mm. along each edge. The tip blade edges inscribe an included angle of about 105° and would have been capable of making or widening a hole in wood or other substance to a diameter of about 18mm. The rotary motion was clockwise as seen from the wide flat basal end. Length: 55.6; Width: 40.5; Thickness: 17mm.; Weight: 33 grams.

(Plate 3f) The largest biface (75.1 mm. long x 40.4mm. wide x 13.1mm. thick, and weighing 38.8 grams) is roughly ovate in shape, with the edges of the blade being parallel for

two thirds of the total length. The base is flat to slightly convex with rounded corners. The material, a coarse-grained, very pale brown (10YR7/3) chert is fairly well flaked with some care being evident to attempt to thin the blade. The rough-grained nature of the material however evidences many step and hinge fractures which makes the blade appear crude. (Plate 3h) The smallest biface (48.9mm. long x 25.8mm. wide and 10.1mm. thick, weighs 11.2 grams) is made of a very fine grained (heat treated?) pale brown (10YR6/3) chert. The specimen is ovate in outline with a rounded base and a narrower rounded tip. The basal-most 23mm. appears to have been dulled, possibly for hafting. Use flakes are present along one edge and tip.

The seven fragments represent five bases, one tip and one midsection. Two of the basal specimens show definite evidence of having been heat treated and an additional base may also have been heat treated as well. One base, 42mm. wide, exhibits straight sides and blunt pointed base and platform grinding along the edge.

Blanks:

(Plate 4a-g) Seven specimens of brown chert exhibit large bifacial flake scars and no use flakes. Shape is ovate to elongated ovate. Platform preparation is evidenced on most specimens and appears to have resulted from grinding or controlled battering. Size range is from 45 - 80mm. long; 22 - 65mm. wide; and 14 - 35mm. thick.

Scrapers:

(Plate 5d,e) One complete and one distal fragment of two end scrapers were recovered. The complete and the remaining portion of the fragment exhibits careful preparation of the convex surfaces. The plane, or flat working base are unmodified. Similar tools are reported from Mississippian assemblages in the area such as the Avondale Mounds, Steed-Kisker and Cloverdale sites (Shippee 1972: Figs. 9e, 15i, 17d). These two end scrapers are included on Table 4. with the projectile points.

(Plate 5b) A plano-convex scraper similar to one recovered from the Cloverdale Site (Shippee 1972: 54, Fig. 7b) is made of a fine grained pale yellow (2.5Y8/4) chert. The item measures 62.2mm. long x 41.6mm. wide, and is 17.1mm. thick. Weight: 52.5 grams. The tool is flat to semi-convex on one end with the other end being very rounded with parallel sides. Use flakes are present along both ends as part of one side of the piece. Edge angle on the rounded end varies from 70-75° and on the opposite, flatter end, from 65-75°.

Miscellaneous:

Two items defy inclusion into any recognized class and are here described separately.

(Plate 5c) In outline, this item appears to look like the left one-half of a large stemmed point. One edge of the "stem" is an extension of the straight edge and is about $\frac{1}{2}$ of the width of the tool. The "stem" is about 15mm. long and 15mm.

wide and has a rounded end. The overall dimensions are: weight, 24.9 grams; length, 82.1mm.; width, 24.6mm., with the maximum thickness of 14.5mm. along the convex edge. Use and secondary flakes are present unifacially along the entire straight edge and "base" and have an included angle of between 62-72°, suggesting its use as a scraper. The curved, or convex edge also is unifacially use flaked on the same or upper surface. This edge is much more irregular in outline than the straight edge. Curve edge flake angle is 65-70°. The portion of the artifact between the two unifacially retouched and used edges is flat with no secondary or use flakes. Material is a fine grained and somewhat banded light grey (2.5YN7/) chert.

(Plate 5a) The other object is made of a very pale brown (10YR7/3) chert. It measures 84.9mm. long, 21.9mm. wide, x 12.8mm. thick and weighs 24.9 grams. Some of the cortex is present and the flaking seems to have been somewhat controlled. Long and narrow, and triangular in cross section, the object most closely resembles a drill, although no use flakes are in evidence. The broadest or basal end is flat and the thinner, or tip end appears to have been broken. The object is very similar to three objects recovered from the South Mound of the Avondale Bluffs (Shippee 1972: 38, Fig. 9f, h). The item may be a blank or preform for an elongate drill except that completed drills of that length are unknown.

Pottery:

General Observations.

Nine body sherds and one lug were recovered from the edge of the site. No sherds were encountered and only two pieces have decoration on their smooth surfaces. They are, unfortunately, small in size and any comparison with the surface treatment of vessels from other sites can only be minimal.

The paste in all the sherds is a fine clay, tempered with fine crushed shell. Shell, in all the specimens, has been leached out leaving small lens-like cavities in the sherds. Originally the shell temper size was from about .2 to 2.0mm. with a few specimens as large as 3.0mm. The number of holes seen per 10mm. along the broken edge of a sherd range from 30 to 60.

Most of the sherds are hard (3-4 on the Moh's scale) and thin in cross section (range: 3.2 to 9.8mm; mean = 6.18mm.).

Other than the two decorated sherds (described below) the remainder of the sherds recovered are summarized on Table 5.

This ceramic sample is too small to permit anything but a general comparison with the pottery reported from other sites. The following discussion should therefore be considered with a degree of caution.

The attributes of leached shell temper, thin vessel walls and smooth surfaces would appear similar to ceramics from

TABLE 5. MEASUREMENT OF CERAMIC SPECIMENS FROM 23CL35,

Cat.No.	Location	Depth	Lgth (mm)	Wdth (mm)	Thkness (mm)	Wt. (gm)	Munsell Color Chart			Ext.	Int.	Core	Temper *	Wentworth Rg. min. max	Surf. Tritumnt
							Exterior	Interior	Core						
23CL35	38	Surf	13.0	13.9	9.7	1.0	7.5YR4.5/7	7.5YR4.5/7	7.5YR7/8	2-3	2-3	2-3	E		leached, one smooth
41	Surf	Surf	29.1	19.0	5.3	2.7	2.5YN4.5/	7.5YN4.5/	2.5YN3/	4-5	3-4	3-4	E		smooth
49	SY 30	Surf	19.5	17.9	5.7	1.9	10YR7/3	10YR7/3	10YR4.5/1	4-5	2-3	2-3	A		smooth
51	SY 30	Surf	11.0	11.3	3.2	0.3	10YR6.5/3	10YR .5/	10YR3.5/1	4-5	2-3	3-4	D		smooth
72A	SY 30	Surf	16.5	16.5	5.0	1.2	5YR6.5/8	10YR6/2	10YR5/1	2-3	3-4	4-5	D		35 smooth
72B	SY 30	Surf	39.5	28.0	9.3	13.9	7.5YR6/6	10YR4.5/1	2.5YN3/	4-5	4-5	3-4	D		65 smooth
188A	SY 30	Surf	25.8	23.5	6.4	5.2	10YR6.5/4	10YR3/1	10YR3.5/1	3-4	4-5	4-5	D		cord-marked, unsmoothed
188B	SY 30	Surf	29.7	28.0	8.5	6.5	10YR6.5/5	10YR5.5/2.5	10YR5	4-5	2-3	3-4	D		paddling
195A	SY 30	Surf	21.0	18.3	5.5	2.1	10YR6/1.5	10YR5/1.5	10YR3/1	3-4	4-5	4	D		eroded
195B	SY 30	Surf	25.3	15.8	6.8	2.5	7.5YR5.5/2	7.5YR6.5/5	7.5YR6.5/1	2-3	3-4	4	D		eroded
Average					6.5					3.6	3.4	3.6			smoothed w/design
23CL34	92	Surf	51.2	48.0	9.5	30.0	2.5YR4/8	7.5YR5/4	2.5YN3.5/	3	4	4-5	B	.4-.3.4	16 very smooth
P2	P.Hole#2	Surf	31.9	31.0	7.9	8.5	7.5YR5/3	5YR7/1.5	7.5YN3.5/	4-5	3-4	3-4	B	.2-1.8	22 sand
Pit A	Pit A	10-20	25.3	16.4	8.2	4.0	10YR5/1.5	10YR3/1	10YR2/1	4-5	3-4	3-4	C	.2-1.1	13 sand
B			26.0	23.1	5.3	4.1	10YR6/2	10YR3/2	2.5YN3.5/	3-4	3-4	3-4	C	.6-1.0	10
C			22.2	17.4	4.2	1.7	7.5YR5/3	10YR4/2	10YR4/1	3-4	3-4	3-4	C	.7-1.0	13
D			17.4	17.4	5.0	2.0	5YR6/7	10YR4.5/8	5YR4/5	4-5	4-5	4-5	C	.1-1.7	13
(E			23.0	18.0	6.9	2.7	7.5YR6/4	7.5YR6/2	7.5YR5/2	3-4	3-4	4	C	.2-1.2	14 fine cord-marked
same pot			21.2	16.7	7.0	3.2	7.5YR5.5/6	7.5YR6/6	7.5YR5.5/5.5	4-5	4-5	4-5	C	.2-1.8	15 coarse cord-marked
F			18.1	20.0	6.0	2.7	5YR5/2.5	5YR4.5/1	5YR4/2	5-6	4-5	4-5	B	.2-1.6	23
G						6.0				4.1	3.8	4			15.4
Average															
75A	Pit A	20-30	19.0	20.0	7.1	3.5	2.5YR5/7	2/5YR5/8	2/5YR3.5/6	3	3-4	3	B	.3-2.5	17
B			22.2	20.1	7.9	4.0	10YR6/6	10YR5.5/6	10YR5/8	3-4	4-5	4	B	.2-2.0	20
C			29.5	24.2	5.0	4.5	7.5YR5/7	7.5YR4/2	7.5YR6/3	4-5	4-5	4-5	B	.2-2.1	18
(D			35.0	35.3	4.7	9.5	10YR5/2.5	10YR4/2	10YR2.5/1	3-4	4	4-5	C	.2-2.1	21 smoothed over cord-marked
E/F			39.7	23.7	5.5	8.3	10YR5/2.5	10YR4/2	10YR2.5/1	3-4	4	4-5	C	.2-2.1	21 smoothed cord marked rim
G			29.0	16.6	4.2	3.1	7.5YR3/2	7.5YR5/3	7.5YN2	3-4	4	4-5	C	.2-2.1	21 rim
Average					5.7					3-5	4.0	4.1			19.6

A= Shell

B= Water Rounded Sand

C= Fine Water Rounded Sand

D= Leached Shell

E= None

Steed-Kisker (Wedel 1943: 74, 76) and the Friend and Foe and Butcher sites (Calabrese 1969: 197-198).

The sherds from Whittmeyer do not exhibit a slip applied to the surface. Wedel (1943: 74, 76, 78, 95) points out, however, that slipped surfaces tended to peel from vessel surfaces on the ceramics from Steed-Kisker. Some of the sherds having smoothed, but not polished surfaces from Whittmeyer are not eroded in any manner, whereas a few specimens do reflect an eroded surface which may have been slipped since all the sherds from Whittmeyer were supposedly subject to the same leaching by ground water and soil acids.

Calabrese (1969: 199) has reported that shell tempered sherds with cord wrapped paddle impressions were found in small quantities from House 3 at the Friend and Foe Site. This surface treatment is apparently absent at Steed-Kisker for shell-tempered ceramics were found on only one sherd from Whittmeyer (23 CL 35).

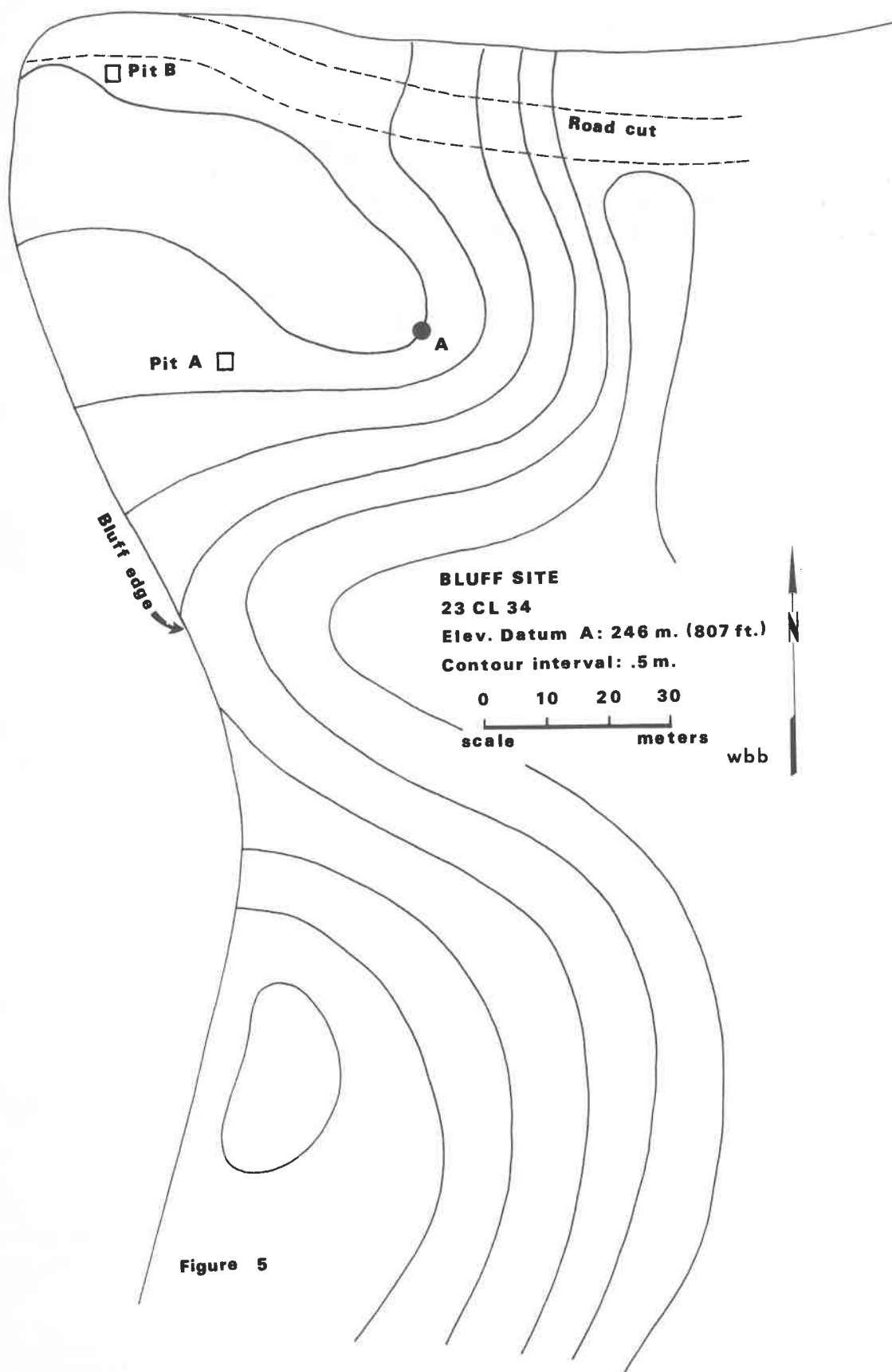


Figure 5

BLUFF SITE 23 CL 34 (Figure 5)

The site is located high on a bluff, directly overlooking the East Fork of Shoal Creek. The creek makes a right angle bend at this point, changing direction from west to south. A continuation of the dirt road paralleling and cutting through the Schroeder Farm Site (23CL127) cuts through the northern edge of the site along the steep bluff face toward the creek bottom. Lithic debris has eroded from the site in this road cut while the site also extends over two small rises approximately 50 meters apart and parallel with the south flowing creek and bluff edge.

The carbon 14 date (CWR 142) of A.D. 960 $\pm$ 90 -55, from the 20-30 cm. level of Pit B, along with the projectile point styles and pottery identify this site as an early Late Woodland occupation.

This site was investigated by general surface collection and two 1.5 x 1.5 meter test pits. The artifacts will be discussed by general surface materials, pit(s), and level within a pit. Dimensions of artifacts may be found in Table 6.

General Surface and Road Cut (Plate 6a, b, c, d, e, f, g, h, i)

Six complete projectile points and/or knives were recovered from the surface as well as eroding out of the road cut. A complete drill, a flake knife and approximately half of a large bifacial knife were also recovered.

Cat.#	Wt(gm)	Mx.Lgth.	Width	Max base width	Neck thkness	curve st edge	Stem	Side Notch S Conv.	Base Color/Name
Surface and Road Cut									
34-6	46.1	103.5	38.0	16.9	12.1	x	x	C	S 10YR7/4 v.p.br
132	25.5	76.2	34.6	20.7	12.8		x	C	B 2.5YR5/2 wk.rd
2	4.2	53.2		18.1	4.4	x			C 10YR5/2 gr.br.
3	1.5	30.0*		15.7	4.1	x			C 5YR5/2 rdsh gry
18	1.2	26.3		16.9	2.9	x			C 10YR4/2 dk gr br
5	4.7	43.5		24.0	4.2	x			C 10YR7/2.5 pl br gry
22	24.4*	*	*41.1	24.9	11.2		x		S 7.5YN8/ wht
10	5.2	52.5	14.0+	22.9	6.2				F 10R6/4 pl rd
19	3.9	49.2	13.2		4.1				10R3/6 tan rd
Pit A 10-20 cm									
78	2.2	38.8	15.2	13.0	3.7	x		S	C 10YR8/1 white
40-55 cm									
40	16.7	*61.2	33.6	18.7	10.2	x	x	C	S 10YR8/2 white
51	14.0	58.5	43.1		5.1				S 10YR7.5/2 lt gr
46	3.2	31.1	25.0	18.2*	6.7			S	S 10R5/4 wk rd
Pit B 10-20 cm									
112	0.8	27.2	12.3	9.1	3.2	x		S	S 10YR6/2 lt m gr
103	3.2	31.9		21.8	4.3				S 10R6/3 pl rd

*Measurement of fragment

TABLE 6. Areas of Chipped Stone Tools from 23CL34.

Points

(Plate 6a) This large stemmed point exhibits large flake scars with bifacial retouching primarily in the area of the tip. The point is thick in cross section, with the basal stem well thinned (5.7 mm.). One edge is straight and the other curved toward their common point. It is made of coarse, grained chert.

(Plate 6c) This point is made of a fine grained fossiliferous chert. The base and one tang are broken. The sides are incurvate with the tip being slightly rounded.

(Plate 6f) This specimen is triangulate in outline, with the last 5mm. of the tip being somewhat constricted. Well made from a thick chert flake, this item is similar to the triangular knives described for 23 CL 35). Use flakes are evident along the full extent of each edge.

(Plate 6d, e) Are leaf shaped points and bear evidence of having been made from chert which was heat treated. Plate 6 e has a broader basal end and is shorter and the edges are more curved than the specimen shown in Plate 6d (which has essentially straight sides). The tip has been broken, but probably terminated in a sharp point. Both points are thin and well made from small flakes.

Drill

(Plate 6h) This complete drill is carefully flaked from heat treated chert. The base is flat and well thinned for hafting. In cross section, the working element is diamond shaped. The thickness of the bit is from 5.1 to 5.4 mm.

Knives

(Plate 6g) This item is most probably a knife. It is thin and well made. The gently curving edges contain numerous use flakes. The base is rounded and the tip, although missing, probably ended in a sharp point.

(Plate 6i) This flake knife was made from a flake from a prepared core. The bulbar end retains some battering marks which probably represent platform preparation. The blade is straight (side view) for 35 of its 49.2mm. length with the last 14mm. curving away from what was originally the outer part of the core; (in other words, it curves ventrally). Use flakes are present along all the edges and the pointed tip. The fine grained, banded, red chert appears to have been heat treated. Flake knives of this sort are described by Wedel (1943: 54, Plate 14a, b, c) from the Middle Woodland Renner Site.

(Plate 6b) Approximately the proximal one half of an extremely fine grained white chert, carefully bifacially flaked knife was recovered. The base is flat and the sides expand toward the broken end. Some cortex material on the basal end appears to reflect the material having been heat treated. Likewise, the lustrous, greasy surface of the flake scars also reflect heat treating. The base and about 30mm. of the sides are ground - probably for hafting purposes.

Surface and Road Cut - Bifaces and Knives (Plate 8a,b,c,d,e)

Fragments of two thin bifacial knives, a thin, irregular edged flake knife, two complete bifaces and six large biface fragments were recovered from the surface.

The two, thin, heat treated knife fragments are bases. One ovate (Plate 8b) (36.8mm. wide), the other triangulate (Plate 8d) (31.1mm. side) with ground edges. The irregular edged flake knife (Plate 8e) exhibits rough, primary flaking with some cortex remaining. The edge shows some use and the base appears slightly ground, although the blade is large enough to be hand held (55.8cm. long, 25.0cm. wide and 7.8 cm. thick; weight: 9.5 grams.

Of the two complete bifaces, one (Plate 8c) is ovate shaped, about 56mm. in diameter, 18mm. thick. The other has a bipolar tapering ovate shape (Plate 8a) and is 100mm. long x 53mm. wide x 23mm. thick. Both are percussion flaked and probably represent blanks. No use flakes are evident.

Hammerstone (Plate 9a,b)

(Plate 9b) A chert cobble (55x53x30mm.; weight: 91g.) exhibits multiple large flake scars, a small amount of cortex, and two edges which reflect its use as a hammerstone. These battered edges are on curved edges and measure 40 x 9mm. and 27 x 11mm. respectively.

(Plate 9a) One large sandstone cobble (150x71.5x41.5; weight 455 g.) is smoothed on both surfaces; one flat, the other convex. Three-fourths of the periphery shows battering.

Artifacts by Level (Plate 7a,b,c, e, g)

PIT A (Points, knife and drill)
0-10 cm.

(Plate 7g) This projectile point was made with a minimal amount of flaking on the edges of a long thin flake. The tip area exhibits the most flaking on the entire point and it would appear to have been done with a minimal amount of effort. A portion of the bulb remains at the base although it has been thinned. Two broad (6mm.), shallow side notches are present.

40-55 cm.

(Plate 7c) The tip (approximately 20mm.) of a coarse grained, white chert, stemmed point is missing from this large point. There is some indication of heat treating (pink edges) although the flakes do not reflect the lustrous or "greasy" texture associated with heat treated material. The stem is thinned (6.3mm.) and slightly expanding. The edges are straight and the point is biconvex in cross section.

(Plate 7e) The tip (40mm.) of what probably was a large point was recovered. The fragment is triangular with straight sides and a biconvex thickness at its broken end of 10.1 mm.

(Plate 7b) A drill, which evidences pink coloration and greasy flake surfaces was recovered. The drill may have been made from a broken, side-notched projectile point. It has a tang and one side notch, a flat, thinned base; the other side-notch and tang had probably been unifacially flaked away. The bit is rather short and contracts rapidly from the basal hafting element. The bit has a rather rounded end and is

diamond shaped in cross section.

(Plate 7a) A large flake knife, which had been utilized on both of its straight sides. Made on a large, thin, hinge flake, one surface reflects multiple thinning flakes. The bulb of percussion is present and the margin of the edge, at this point, resembles a stem -- which could have been used for hafting. There are no use or secondary flakes along the edges of this "stem". The distal, or hinge end, had not been modified. The tool is large enough to have been hand held.

The tip of a thin, (2.8mm.) bifacial knife (?) was recovered. The item is too fragmented to make any further observations.

PIT A (Debitage)(No illustrations)
0-10 cm.

170 pieces of chertdebitage, 14 pieces of burned clay, 8 river cobbles, and 15 pieces (under 10 x 10mm.) of pottery, were found in this level.

10-20 cm.

16 pieces of this level contained only fired clay (no temper, and not pottery), 541 pieces of chertdebitage, and 47 small river cobbles.

20-30 cm. (Debitage, core, and (Plate 10a,b) flakes)

231 pieces of chertdebitage; 16 river cobbles, 2 pieces burned clay, 2 small chert cobbles were found here. A core remnant of grey chert (heat treated?), 78mm. x 45mm. x 32mm., with multiple large primary flakes removed bifacially was

recovered as well as one large chert cobble with 90% of its cortex having a few flakes removed (75 x 50 x 40mm.)

(Plate 10b) A large utilized flake; unifacially retouched, with evidence of use along 30mm. of its 60mm. edge. Probably a knife or scraper.

(Plate 10a) A thin, utilized flake with some cortex which was probably used as a knife. One straight edge has multiple use flakes. 621.mm. long, 24.9mm. wide and 11.0mm. thick. Edge thickness averages 2.0mm.

30-40 cm. (Cores)

Four chert cobbles, some with cortex, exhibit multiple primary large flake scars as evidence of their use as a source for tool manufacture. Two show battering along their edges indicating some platform preparation. Size range: 35-70mm. long, 30-40mm. wide, 25-30mm. thick. None show any heat treating.

(Bifaces, cores, utilized flakes and misc.)(Plate 11b - h)

(Plate 11h) A large biface, 90mm long x 48.9mm. wide x 26.1 thick (98 grams) has one straight and one slightly incurvate side which converge in a point. The opposite end has a flat base. The surface exhibits large flake removal with some finer secondary flakes near the tip. The item probably represents a blank.

One small, crudely bifacially flaked piece of chert, may have served as a blank. The piece has parallel sides, flat base and terminates at the opposite end in a point. It is 66.1mm. long, 30.1mm. wide and 10.9mm. thick.

(Plate 11b) A rounded piece of a crude biface shows one serrated edge with two notches, suggesting its use as a spoke shave. Width of notches: 6.9mm.; Depth: 5mm. Cobble length: 50.1mm, width 21.2mm., thickness 14mm. Weight: 11 grams.

(Plate 11g) A flake with 90% of the cortex exhibiting a 12mm., slightly concave, bifacially used edge, which could have been used as a spoke shave or as a scraper. Weight: 51 grams; length 44.1mm., Width 16mm, Thickness 7.1mm. Use edge angle averages about 30° .

(Plate 11f) A small, primary decortication flake, 38.1mm. long, x 16.2mm. wide x 3.9mm. thick and weighing 1.9 grams, exhibits bifacial use flakes along its 38.1mm. straight edge. Angle of flakes is about 68° .

(Plate 11c) Another primary decortication flake, 62.9mm long x 33.2mm. wide and 14.1mm. thick; weight, 26.5 grams. It is pointed at one end and flat on the bulbar end. The pointed end reflects unifacial flakes, opposite those on the more lateral edges of the flake.

(Plate 11d) A proximal (?) portion of a biface exhibits steep unifacial flaking on its sides. The nature of the use flakes and the fact that the distal end is broken, with one large flake scar, suggests that the item was originally intended for modification into a biface before it was broken. The primary and secondary retouched edges are straight and slightly incurvate. The incurvate edge exhibits an angle of approximately 45° , the straight edge about 80° . Its use was probably that of a scraper.

(Plate 11e) A secondary decortication flake (cortex less than 50% of the surface) measures 64.6mm. long x 38.0mm. wide and 10mm. thick (weight: 36.5 grams). The bulbar end reflects multiple battering as in platform preparation. The distal end (opposite the bulb of percussion) is thin (about 3mm.) with a flake angle of about 20°, and use flakes reflecting its use as a knife. One large concave edge, 35mm. long by 10mm. deep, contains a few use flakes suggesting use as a spokeshave.

40-55 cm. (Hammerstone) (Plate 11a)

A small, quartzite cobble (168.2 grams) measuring 75.1mm. long x 42.9mm. wide, and 35.1mm. thick, exhibits battering on both ends and along one edge. The amount of battering on the ends approximates 11.5mm. x 14.2mm. and 15.5 by 21.2mm., respectively; the edge 35.0 x 6.0mm.

(Hammerstone) (Plate 12a)

A small, sandstone cobble, 72.1mm. long x 47.9mm. wide and 35mm. thick (weight: 159 grams) shows battering completely around its horizontal perimeter and especially on the ends of the long axis. There is some battering on a slight peak in the center of the convex surface of the item.

Also recovered were: 364 pieces of chert debitage, 6 igneous rocks, 6 pieces of burned clay and 5 pieces of fire broken quartzite.

(Bifaces) (Plate 12b-h)

Three complete bifaces were recovered and only one of which (Plate 12d) exhibits any use flakes. Ovate in shape, it is 89mm. long x 47mm. wide x 20.3mm. thick (weight: 79g.)

Thirty-one millimeters of one edge was used. It is made of a grey (10YR5/1), slightly fossiliferous chert with some 10% of the brown (7.5YR4/4) cortex remaining. Large, primary percussion flake scars are present over the entire surface.

(Plate 12c) Is an expanding ovate biface, 67mm long, x 46mm. wide, x 19.8mm. thick (weight: 61.5 grams). It is grey yellow (2.5Y7/2) in color, with numerous large primary flakes removed from the surface.

(Plate 12f) This incurvate edged biface with a flat base exhibits numerous large flake scars, with the edges battered completely around the horizontal perimeter, suggesting platform preparation. Measuring 93.1 x 37.8 x 21.9 and weighing 63.8 grams, the item was probably a blank or preform for a projectile point. My removal of a flake from the surface did not indicate any heat treating.

Four bifacial base fragments, all apparently heat treated and with use flakes present along the remaining edges were found. The chipping ranges from coarse primary flakes (Plate 12e) on the expanding flat based specimen, to fine flakes on the two rounded end specimens (Plate 12b,6) and on the square ended specimen (Plate 12h).

(Utilized Flakes) (Plate 13a, b, c)

Three flakes, used in the flake analysis paper, exhibit use flakes on their edges.

(Plate 13a) Bifacial use flakes on the edges of this specimen suggest use as a knife. (58.1mm long x 22.2mm. wide and 8.3mm. thick. Weight: 8.4 grams. Color: pale yellow, (2.5Y7/3).)

(Plate 13c) Larger than the above specimen - 74.4mm. long x 41.9mm. wide x 5.1mm. thick (weight: 16.9 grams) it exhibits a pink (5YR8/3) color and greasy surface suggesting that it was probably derived from a large heat treated cobble. The flake retains the natural separation surface on the bulbar, or ventral surface, with numerous large shallow flakes having been removed from the dorsal surface. Use flakes are present around the entire perimeter.

(Plate 13b) The smallest specimen, 24.0mm. long x 18.2mm. wide x 3/8mm. thick (weight: 2.4 grams), also exhibits a weak red color (10R4/3) and greasy surface from heat treating. Use flakes are unifacial on the edges and are more steeply angled than the other specimens (at about 70-75°) suggesting use as a small scraper.

(Core)

A light brownish grey (10YR6/2) chert core was recovered, which has large primary flake scars over the entire surface. No use flakes or platform preparations are in evidence. 79.1mm. long x 42.6mm. wide and 32.2mm. thick (Weight 10.8 g.)

55-65 cm.

Recovered in this level was: One pink, sandstone rock, 57 pieces of chert debitage, one peice of pottery (less than 10 x 10mm., one erroded surface and the other, interior/?, smoothed, very dark grey (2.5YN3/) with water rolled sand temper).

Also uncovered here was a small 15mm. long x 7mm. wide and 7.3mm. thick concentration of red (10R4/6) clay-like

material. It has a much smoother texture than pieces of ochre found in other parts of the excavation units. The surrounding matrix was a pale brown (10YR6/3) clay. In texture, it is much finer and smoother than the surrounding matrix. When first uncovered, it looked like red lipstick, and it is suggested that it may originally have been hematite which had been ground into a grease or water base carrier for use in decoration.

65-75 cm.

Twelve pieces of chert debitage were recovered from this, the deepest penetration into the site. Only one piece appears to have been possibly heat treated.

The only utilized specimen is of very dark grey (5Y3/1) fine grained chert. All the other pieces of chert are some shade of light brown or tan. Bifacial and unifacial use flakes are present along the edges of the irregular shaped object. The bulbar, or proximal end is flat and exhibits much battering along its perimeter, probably as a result of platform preparation. (48.1mm. long x 42.6mm. wide and 17.6mm. thick. Weight: 31.9 grams.)

PIT B

0-10 cm. (Plate 7f, Point; Plate 7d, Knife)

One small serrated projectile point (Plate 7f) was recovered. It is triangular in shape with straight sides, side notches, an expanding stem with a flat base and rounded edges. The flaking was well controlled.

(Plate 7d) This specimen is made of a chert which bears the pink coloration and greasy texture of heat treatment. This item is probably a knife and is roughly triangular in shape, with flat base, rounded point and thin cross-section. Use flakes are present along the edges.

114 pieces of chert debitage, 21 pieces of miscellaneous river cobbles were recovered. One piece of chert exhibits unifacial flakes along 27mm. of a flat edge. The edge angle ($75-85^{\circ}$) suggests use as a scraper. (35.2mm. long, 21.8mm. wide, and 18.7mm. thick. Color: light grey (10YR7.2.)

(Plate 13d) (Hammerstone)

A small, square piece of sandstone exhibits some battering along one rounded end, indicating use as a hammerstone. (36.1mm. long x 33.8mm. wide and 14.2mm. thick. Weight: 28.7g. Use area: 19.5 x 8mm.)

10-20 cm.

209 pieces of lithic debitage, 50 pieces small miscellaneous rock, 1 small piece red ochre, 18 pieces of burned clay (not tempered/not pottery) were recovered.

A small piece each of historic window glass and concrete were found in this level. A modern post hole was discovered

in the edge of the pit. The glass and concrete are small enough to have been present as a result of rodent activity. It is also possible that the edge of the cliff, where this pit was located, may at one time have been the location of a small trash dump. These two items are the only historic items on this site.

(Bifaces) (Plate 13j, i, h,)

(Plate 13j) A fragment of a biface manufactured from a chert nodule by the removal of large flakes. The material is of a fine grained chert, very pale brown (10YR7/4) and may have been heat treated. (57.0mm. long x 38.1mm. wide, and 20.5mm. thick. Weight: 63.1 grams).

(Plate 13i) A smaller piece of mottled grey and brown chert retains some of its reddish brown cortex (5YR4/3). It is 45.1mm. long x 28.4mm. wide x 15.2mm. thick. Weight is 19.8 grams. Numerous large flakes have been removed bifacially and the specimen may be a blank for a point or other tool.

(Plate 13h) A piece of pinkish grey chert (2.5YR7/2) is pyramidal in shape and has one edge which may have been used as a spoke shave. This worked edge is 14.1mm. wide and 3.1mm. deep with unifacial use flakes at about an 85-90° angle. It is 48.9mm. long x 41.9mm. wide and 29.1mm. thick with a weight of 43.2 grams. The item at one time may have been a core, as all the flakes which originate on the flat surface, or base of the pyramid, are large and converge toward a common point where some brown cortex (7.5YR4/4) remains.

(Scraper-Plane)

(Plate 13g) A scraper-plane (49.2mm. long x 30.1mm. wide and 28.1mm. thick; weighing 42.1 grams) is made of a dark brown mottled chert. It retains most of the cortex (7.5YR4/4) including the flat base. Unifacial use flakes are present on three sides adjacent to the flat rectangular base at about 73-88° angle.

20-30 cm.

Two fragments of projectile points were recovered in this level. They are too small to give anything more than the following cursory remarks.

The tip of a point, 17mm. long, 11mm. wide, was made on a flake of weak red (10R5/4) chert.

The base (?) and one edge of a fragment of a bifacially flaked piece of chert, which also was apparently heat treated was found. The remains of this fine grained, light grey (5YR7/1) specimen are too fragmentary to determine what the original shape was.

(Plate 13e) (Spoke Shave)

A small mottled brown flake (37.7mm. long x 17.1mm. wide x 5.5mm. thick; weight: 3.7 grams) has unifacial use flakes in a small lunate notch 18.5mm. x 3.0mm. deep, indicating use as a spoke shave.

(Plate 13f) (End Scraper)

A small primary decortication flake, triangular in cross section exhibits unifacial flaking along its flat distal end (28.1mm. wide). The use flakes are at an included

angle to the base at about 90°. It is 33.4mm. long x 15.1 mm. wide x 9mm. thick and weighs 5.5 grams. The item could have been hand held and was probably used as an end scraper. It is apparently not heat treated.

Also recovered were: 394 pieces of chert debitage; 74 pieces of miscellaneous rock - mostly limestone and sandstone, 12 pieces of burned clay (largest lump 40 x 20mm.) and 26 pieces of small pottery fragments (under 10 x 10mm.; water rolled sand tempered).

Carbon 14 date: (CWR-142) A.D. 960 +90 -55 from this level.

30-40 cm.

(Cores) (Plate 14a,b)

Two chert cores were recovered. The largest core (Plate 14b) is white chert, mottled, with small limestone inclusions. It is 98mm. long x 65mm. wide x 51mm. thick and weighs 285 grams. The specimen is triangulate in cross section with the flat side retaining unmodified cortex. The other sides converge to form a ridge which exhibits much battering, indicative of platform preparation.

The smaller core, also retains some cortex, (Plate 14a) and is similar to the larger one. It is a very pale brown (10YR8/3) fine grained chert and measures 57mm. long x 42mm. wide x 32mm. thick. Weight: 71 grams.

(Cobble Scraper/Knife)

A small chert cobble, which may have been a core, measures 49mm. long x 33mm. wide x 20mm. thick and weighs 55.1 grams.

Flakes have been removed from a flat platform - rather than from a ridge as in the previous examples. The material is a fine grained, very pale brown (10YR8/3) chert with some cortex (including the flat platform) remaining. Unifacial use flakes on a curved retouched edge inscribe an included angle of between 60-75°.

A fragment of a small piece of chert is unifacially flaked at a steep angle of 72° and may be part of a scraper. It is 18mm. long x 19mm. wide x 4.1mm. thick.

Also recovered were 4 pieces of red ochre, 5 pieces of burned clay, 98 pieces of chert debitage, and the first right upper molar of a Beaver (Castor canadensis).

40-50 cm. (Plate 14c, d, e, f)

(Plate 14c) This bifacial blank is triangulate in cross section 123.2mm. long, and has roughly parallel, straight sides for some 85mm. from the point end. The base then expands to 42.2mm. from 28.2mm. and terminates with a roughly flat base which has been thinned to approximately 14.2mm. Thickness at mid-point is 23.2mm. Large, primary flakes are present over the entire surface, with only the edges of the narrow blade having smaller secondary flakes. The coarse grained, very pale brown (10YR8/4) chert object was probably a blank for a point or blade. The specimen does not appear to have been heat treated. Weight: 71.5 grams.

(Plate 14e) A flake, 45.1mm. long x 24.0mm. wide x 5.3mm. thick, weighing 5.3 grams, shows reddish brown coloration (2.5YR6/4) on one end of its very pale brown (10YR8/4)

surface, indicating heat treating. The surface scars reflect a slightly greasy texture. About 29.2mm. of one thin straight edge has been unifacially flaked at about a 45° angle and was possibly used as a knife.

(Plate 14d) A core, 46.1mm. long; has a ragged edge on the flat, reddish brown cortex (5YR5/4) platform which measures 49.9mm. x 35.2mm. Long flakes removed from the platform join along a ridge, 45.2mm. from the platform. The ridge is unmodified. (Color of matrix: grey (5YR6/1), weight: 62.2 grams.)

(Plate 14f) A scraper-plane. In cross section this item is dome-shaped with steep sides and a flat cortex base. It measures 42.0mm. long x 26.1mm. wide and 23.9mm. thick (weight 25.7 grams). It is very pale brown (10YR7/3) with a weak red (2.5YR4/2) and reddish brown (10YR4/4) cortex. Flakes originate from the reddish brown platform and from other fresh facets. About 33mm. of one curved edge has use flakes at approximately an 85° angle, away from the adjacent, flat, cortex base. It was probably used as a scraper plane.

Also recovered: 52 pieces of debitage, 2 miscellaneous river cobbles (sandstone), 5 pieces burned clay, and two pieces of the acetabulum from the right pelvis of a White Tailed Deer (Odocoileus virginianus).

(BLUFF SITE, continued: 23 CL 34)

Soil Analysis

Column samples were taken from the surface to the lowest excavation level in Pits "A" and "B". The samples were taken from the side walls and measured 20cm. x 20cm. x 10cm. each.

The laboratory analysis involved washing approximately 2 kilograms of soil from each sample through U.S. Standard Sieve Series screens, size #6, 8, and 20. Observations were made on both the residue in the screens and from the fine mud which remained.

The slightly acid soil pH was probably responsible for the almost total absence of faunal remains. Other than very small pieces of calcined bone, one beaver tooth and an acetabulum from a deer were the only preserved bone found.

The major concentration of minute pieces of chipping waste occurs from about 10 cm. to 50 cm. in both pits. Minute flecks of charcoal were recovered at all depths, but the heaviest concentration is between 20-40 cm. Chipping waste and charcoal may be taken as being indicative of the levels of major occupation of the site.

Pottery - General Comments (Plate 15a-i)(Table 7)

Some 49 pottery sherds were recovered from Pits A and B. Six of these were rims and are shown in Plate 15a-i.

In general, all sherds contain water rolled sand temper in a fine clay paste. Most of the body sherds are smoothly finished, but some are cord marked (Plate 15a-i).

Observations on thickness, grain size, grains per 10mm.

(as measured along the edge of the sherd), color, and hardness are summarized on Table 7.

Most of the pottery is a 10YR brown in exterior color, although some 2.5 YR, reddish-orange, colors are present. Color of the interiors vary from brown, black or dark grey. Core color is generally grey or black. Penetration of surface color from firing to the interior core color differential is usually under 1.5mm. in depth.

Depth (cm)	No. of Sherds	Thick Av. (cm)	Thick Rg (mm)	Grain Size Rg (mm)	Av. Grain per 10 mm	Hardness Average		Predominate Cclor	Minor Color
						Ext.	Int.		
Pit A	0-10	6	7.16	.2-3.1	31	5.3	5.9	10YR5/ 5YR6/	5YR6/
	10-20	7	6.08	.2-1.8	15.4	4.1	3.8	10YR5/ 5YR5/	5YR5/
	20-30	6	5.7	.2-2.5	19.6	3.5	4.0	10YR5/ 2.5YR/	2.5YR/
One vessel		4	4.8	.2-1.8	21	3.5	4.0	10YR5/	
	30-40	4	5.95	.1-2.3	20.3	3.7	3.3	7.5YR5/ 2.5YR4/	2.5YR4/
	40-55	4	7.05	.1-2.2	23	4.5	4.7	7.5YR5/ 7.5YR5/	7.5YR5/
	55-65	minor small sherds							
Pit B	0-10	3	9.86	.2-3.0	19	4.3	4.5	10YR5/ 5YR6/	5YR6/
	10-20	6	5.55	.2-3.5	18.5	3.8	4.2	10YR6/ 2.5YR4/	2.5YR4/
	20-30	8	7.12	.2-3.1	17.0	4.2	4.2	10YR6/ 2.5YR4/	2.5YR4/
30-40	3	5.8	.2-0.9	21	5.1	4.8	10YR6/ 7.5YR3/	7.5YR3/	

TABLE 7. OBSERVATIONS ON POTTERY RECOVERED FROM 23CL34.

POWERLINE SITE, 23 CL 131

"Powerline" was felt to be an apt name for site 23 CL 131, since the Kansas City Power and Transmission line access road crosses the site. In fact, it would appear that the road has eliminated as much as 80% of the site. The site is off the right of way and lies 100 meters west, along the same hill as the Pence Hill site (23 CL 33). It initially was thought that the site might be an extension of 23 CL 33, however, on the basis of the seriation and flake attribute analysis, this site is not an extension of 23 CL 33.

The complete projectile point recovered fits well into either a Woodland or Mississippian context. The seriation of attributes from some flakes recovered indicates that this site best fits within a Woodland context. The three sand-tempered pottery sherds recovered would make this interpretation consistent with the previously established relationship of sand-tempered pottery with Woodland peoples.

Projectile Points

One complete projectile point was recovered from the road cut, near the powerline (Plate 16c). The point is triangular, made of fine-grained chert, and has a slightly convex base. It is light orange to pink in color (2.5YR6/7). The surface has the greasy feel and texture of heat treated chert. It is 23.5mm. long, 15.3mm. wide at the base and 3.2mm. thick. Weight: 1.2 grams.

This point style has been found in Woodland sites, such as the Deister Site (23PL2) (Wedel 1943: 42), Renner (23PL1) (Shippee 1967: 56, fig. 35) and in Mississippian contexts such as Steed-Kisker (Wedel 1943: 52; Shippee 1972: 50, fig. 15m) and at Friend and Foe (23CL113) (Calabrese 1969: 100).

(Plate 16b) A small, triangulate, chert flake with minor rough unifacial and bifacial edge flaking was recovered. The bulb of percussion and striking platform are present and the specimen probably represents an unfinished projectile point. Color: light brownish grey to white (10YR6.5/2). It is 37.2mm. long x 18.9mm. wide and 6.7mm. thick at the base. Weight: 3.8 grams.

A non-diagnostic point tip was also recovered. It is 30.2mm. long, 20mm. wide and 3.2mm. thick and weighed 2.6 grams. Some cortex remains on both the tip and the base. The item looks as if it was broken during the manufacturing process.

Bifaces and Blanks

(Plate 17 a-e) Five specimens were recovered which have heavy primary percussion flaking on the surfaces. Two with rough flaking are square on one end. Size range: 4-9mm. long, 3-5mm. wide. Two specimens are roughly ovate in outline (5 x 7mm. and 3 x 6 mm.). The last specimen, a base (?) 56mm. wide, appears to have been heat treated.

Hammerstone

(Plate 16d) A fragment of a pink quartzite cobble, 90mm. long, 45mm. wide and 40mm. thick, has a flat battering pattern

along its entire perimeter. The tool was probably broken by road cutting activities.

Awl Sharpener

(Plate 16a) This piece of compacted, fine-grained sandstone, with multiple straight grooves on both flat surfaces has the edges unmodified and the grooves vary between 1-2 mm. deep and from 1-3mm. wide. In cross section, the grooves are subtriangular to round. The largest groove is approximately 50mm. long. (Length: 85mm., Width: 70mm., Thickness: 36mm., Weight: 240 grams.)

Pottery

Three body sherds were recovered from the road cut. The observations are summarized below:

Cat. No.	Length (mm.)	Width (mm.)	Thick (mm.)	Weight (grams)	
9A	55.0	40.0	6.8	21.5	)
9B	29.1	25.7	7.3	5.8	) --same vessel
9C	31.7	24.2	5.0	4.6	

The surfaces of 9A, and 9B are severely eroded and 9C is smoothly polished.

Temper: All contain water rolled sand as a tempering agent. Specimens 9A and 9B have a temper grain size from 0.2-3.0mm. with approximately 30 grains per 10mm. of exposed edge surface visible. Specimen 9C grain size is from 0.2-4.1mm. with approximately 15 grains per 10mm. of the edge cross-section.

Color: Color range on specimens 9A and 9B for the exterior is brown (7.5YR5/5); the interior is 7.5YR3.5 - 5.5/1-7, and

the core is 7.5YR3/1 - 7.5YN3.5/. Specimen 9C has a dark greyish brown exterior (10YR4/2); brownish grey interior (10YR5.5/2) and a dark grey core (10YR3.5/1).

Hardness: For specimens 9A, 9B - Exterior: 4-5, interior: 5; Core: 4. Specimen 9C - Exterior 3-4; interior 4-5; Core: 5.

SCHROEDER'S FARM 23 CL 127

The northern edge of 23 CL 127 roughly parallels what in aboriginal times was a free flowing creek. A large pond now exists in this creek valley as a result of an earth dam. The site lies on a fairly flat terrace, immediately below and 100 meters west of 23 CL 126. The bluff Site (23CL34) is located at a slightly higher elevation and about 100 meters to the west.

The area between and including 23CL126 and 23CL127 has been plowed for at least 50 years. Broken historic artifacts (glass, tin) were found to be concentrated around an abandoned water well at the eastern edge of 23CL 127. The mixture of prehistoric and historic materials occur together near this well.

It was attempted to determine the exact extent of the prehistoric surface debris. Small colored plastic flags on long metal staffs were placed beside each lithic tool on the surface. The concentration of material occurred along the northern edge of the cultivated area, paralleling a dirt road. Next, flags were placed wherever six or more flakes or obvious clusters of tools occurred. Again, the distribution followed a similar pattern, but there was also a concentration on a small rise in the northwest corner of the site.

All flakes and tools were then picked up and bagged. A record of the tools recovered can be found in the descriptive section which follows. No pottery was recovered from

the site and its proposed Woodland affiliation is on the basis of the projectile points recovered and its seriation by means of the flake attribute analysis.

Projectile Points

One complete projectile point and the bases of 3 others were recovered from the surface. Four pointed, triangular tips were also found, which may have been from large projectile points or knives. (Plate 18a) The complete specimen, a projectile point or knife, is made from a large light yellowish brown (2.5Y6/2) chert flake which is plano-convex in longitudinal cross section. Most of the flaking is on the convex surface with additional flaking near the tip on the concave surface. One corner notch is present. The base is primarily flat to slightly convex, and bifacially thinned. The opposite basal corner is rounded with one small flake removed at about the same axis as the corner notch and may have served as part of the hafting element. The blade itself is excurvate in shape. Length: 75mm.; Width: above corner notch, 28.1mm.; maximum width at the midsection: 30.1mm.; basal width: 17.8mm.; maximum thickness: 6.0mm.; weight: 14.9 grams. This point closely approximates those from the Renner Site (23PL1) (Shippee 1967: 56, Fig. 35).

(Plate 18d) This basal $\frac{1}{2}$ of a point is made of a coarse grained, pale brown (10YR7/3.3) chert. Flaking is coarse with step and hinge fractures present on the surfaces. The flat based, corner-notched fragment is 45mm. long. One tang of the base is broken and the original width was probably

about 22.5mm. Blade width at the broken end is 27.2mm. and 31.5mm. wide immediately above the corner notch. Thickness near the broken end: 9.0mm. Weight of fragment is 13.2 grams. It approximates Fenenga's (1953) large point tradition and is probably of Middle to Late Woodland affiliation (cf. Shippee 1967: 31-34; Figs. 19-21).

(Plate 18b) A fragment of what may have been a short stemmed point is essentially a flake with retouching along one edge and stem. The specimen is too incomplete for any further interpretation. Length of fragment is 22mm., width at what would have been the base of the blade (?) is 11.6mm. It is 4.1mm. thick and weighs 1.9 grams. Color: N4.5/, a dark grey. This specimen may have been heat treated.

(Plate 18c) This is the basal $\frac{1}{2}$ of a small side notched projectile point. The material is a very fine grained, white (5YR8.1) chert. The point, when complete, was triangular with a ground, bifacially thinned, slightly convex base and small side notches. The point was made from a flake and was probably slightly plano-convex along its longitudinal axis. Length of fragment is 10.1mm; immediately above side notches, it is 8.7mm. wide and 11.1mm. wide at the base. It is 2.2mm. thick and weighs .3 grams. The complete point would fit into a small point tradition (Fenenga 1953). This fragment seems comparable to points from Steed-Kisker (Skippee 1972: 45, Fig. 12q) and the Friend and Foe Site (23CL113) (Calabrese 1969: Plate 4 m,q).

Large Knives

Three bases, one square, the other two convex in shape, one midsection and one excurvate tip were recovered and probably represent bifacial knives.

One convex base fragment, 30mm. wide, is of a fine grained grey (N6.5/) chert. It has a glossy flake scar surface, probably resulting from heat treatment. All other fragments are tan to dark brown in color and evidence no heat treatment. All specimens are thin, bi-convex in cross-section.

Crude Bifaces

Thirteen specimens of large, crudely percussion bifacial chert objects were recovered. One specimen was possibly heat treated. Size range: 40-110mm. long x 35-50mm. wide and 15-19mm. thick. Color ranges from a pale white to dark grey with various shades of brown and tan.

Blanks and Preforms

Although the two specimens in this category might be subsumed under Crude Bifaces, they are discussed separately as they exhibit the basic outlines of a finished point.

(Plate 19b) One specimen, a pale brown (10YR6/3) chert with some cortex remaining has been percussion flaked and in outline resembles a stemmed point. Weight: 72 grams. Length: 81.1mm., width of "blade": 45.2mm.; width of "stem": 23.4mm, and 21.5mm. thick.

(Plate 19a) The other is made of a pale brown (10YR7/4) coarse-grained chert. It is 96.2mm. long, 62mm. wide, and 25mm.

thick, weighing 114 grams. The basal portion is crudely flaked with one corner notch. The tip is sharp and pointed and exhibits finer secondary flaking. The tip could have been used as a tool without further modification but no use flakes were observed.

Miscellaneous

(Plate 19c) An object, 117mm. long, 19.3mm. wide and 21.2mm. thick (weight 44.1 grams) was recovered which, in general shape, looks like a large drill. It is made of a fine grained (heat treated?) pale brown (10YR6/3) chert. The specimen is triangular in cross section with the base having some cortex. A few flakes have been removed from this basal surface but it is essentially unmodified. Use flakes are present along one entire steep face, adjoining the unmodified base, which suggests its use as a scraper. The included angle on this edge approximates 84° . The item can be held fairly securely with the fingers of one or both hands. As a large surface area can be covered with the tool, its function was probably as a plane for wood.

No aboriginal pottery was recovered from the site.

Complete Bifaces

Six complete bifaces were recovered. One (Plate 19g) is 115mm. long, 41mm. wide and 24mm. thick, weighing 86 grams. It appears to have been made from a naturally thin and elongate cobble and exhibits multiple bifacial flake scars. The other five specimens are ovate to round in shape and range in size from 50-70mm. long, 38-45mm. wide and 50-70 grams in weight. (Plate 19d, e, f, h, i) All may have been heat

treated and exhibit some care in flaking. No use flakes were evident and the specimens may represent blanks.

Ground Stone

(Plate 20a) A large quartzite cobble, 105mm. long x 72.9mm. wide x 49.2mm. thick (weight, 545 grams), is broken on one end, slightly battered around the remaining perimeter and is ground flat on one surface. The ground surface was apparently battered before much of the grinding took place. The battering on the face may have been to facilitate achieving a degree of flatness desired by the makers.

(Plate 21a) A small, diagonal, limestone cobble is battered around the edges. The tool is wedge-shaped in cross section. The original shape was probably almost square. (78mm. long; 79mm. wide; 35.2mm. and 20.1mm. thick and weight: 340 grams.)

Palette

(Plate 21b) A small triangular piece of sandstone with a small oval concave surface which has been pecked and ground. The ground surface measures 42 x 33mm. and is about 3mm. deep. The overall size is 71.2mm. long, 52.3 and 22.0mm. wide and 34.1mm. thick and weighs 145 grams.

The size of the cobble and the nature of the abraded surface suggest that this was the original size of the item which may have been used for grinding small quantities of material. The item may have been subjected to heating.

Hematite

A piece of weak red (10R4/4) hematite was recovered. It

exhibits a convex (ground?) surface with multiple shallow striations. The surface curvature almost approximates that of the palette described previously. (39.2mm. long, 14mm. wide, 12.2mm. thick. Weight: 13.8 grams.)

Chopper Knife

(Plate 22d) Two rather straight edges, joined by a rounded corner, have multiple large and small use flakes and small hinge flakes suggesting use as a chopper and/or knife. The item (61mm. x 55mm.) has been thinned with multiple bifacially applied flakes to a thickness of 17.3mm. (Weight: 69.9 grams).

Flake Knives

(Plate 22e-h) Four flake knives were found. Three exhibit unifacial use flakes on a blunt to slightly rounded edge, as well as use flakes along straight edges.

Auger

(Plate 22b) A triangular piece of chert, 58mm. long x 32mm. wide x 9-15mm. thick and weighing 18.8 grams, exhibits use flakes on two edges of a blunt tip approximately 11mm. in length. The tip probably represents an auger which was turned counter clockwise (as viewed from the base) and capable of enlarging a hole to approximately 15mm. in diameter. Unifacial use flakes, evident from the tip down one serrated edge, for a total of 37mm. suggests use as a scraper. Included angles for the worked bit faces: 63° and 72°; unworked bit face: 98°. Included angle of scraper edge: 83-89°.

ners of the narrow ends (or sides) of the rectangle. The included angle of the use flaked edges and the adjacent flat, unmodified surfaces, range from 74-78°. The base of the triangle also exhibits unifacial use flakes along the entire edge at an average angle of between 75-80°.

One "corner" of the base contains the rounded tip with unifacial flakes on opposite faces, indicating primary use as an auger capable of expanding a hole to 24mm. in diameter. Twist was primarily counter-clockwise.

Flake Scraper

In addition to those described in the flake attribute analysis, the element common to all these tools are steep unifacial use and retouch flakes along a single straight, flat, edge, adjacent to a flat surface. Included edge angles from the 5 examples range from 78-92°, with a mean of 84°. Length of use edge: 29-41mm.; mean 36mm.; tool size range 50-65mm. x 35-49mm.; thickness range 9-23mm.

Most of these tools are large cobbles with a minimum amount of flaking. Two specimens appear to have been heat treated. Their reason for inclusion here and not in the flake attribute study is their large, thick size and absence of a bulb of percussion.

Gouge/Drill/Auger

(Plate 22c) The use flakes on this tool suggest a multi-purpose tool probably used for working wood. Made of a piece of banded, mottled grey chert which is 78.2mm. long, 33.5mm. wide at the flat, cortex covered (basal) end, and 22.9mm. thick (weight: 74.1 grams). Greasy flake scars indicate that heat treating had probably been applied to this cobble before its flaking.

The blunt, or rounded, tip is bi-convex in cross section, 15.2mm. wide and 8.5mm. thick and shows primary unifacial use and retouch flakes. At the tip's widest point, some use flakes are present suggesting its use as an auger, twisted counter-clockwise, and capable of enlarging a hole to approximately 18mm. in diameter. The primary use, however, would seem to have been as a gouge. One deeply serrated irregular edge (which is a continuation of one worked edge of the tip), has bifacial use flakes suggesting its use as a knife. Included angles on tip for gouge: 78° and 76° . Angles for auger/drill: 79° and 82° . Serrated edge included angle: 71° .

(Plate 22a) The unifacial use flakes on the rounded tip of this item and its adjacent area of oppositely flaked surfaces may also be classified as a multi-purpose wood working tool. Made on a large, flat, chert cobble, the triangular specimen is 98.1mm. long, 65.2 and 22.2mm. wide, and 12.2 mm. thick (weight 92 grams). It retains almost all of its reddish brown (5YR4/4) cortex. The tool is rectangular in cross section with unifacial use flakes on the opposite cor-

Scattered throughout the eastern end of the prehistoric site are items attributable to a 19th century historic structure. Plowing has destroyed any remains of features which may have been helpful in determining the identity of the structure, although among the various items recovered were pieces of farm implements (i.e. mowing machine parts) as well as horse shoes, domestic items (glass, wire, nails, parts of children's dolls) and ceramics. The ceramics are all attributable to production after the 1870's. Among the various pottery marks recovered were: "Alfred Meakin, Tunstall, England" after 1881 (Thorn 1947: 74, Fig. 3.). One specimen may possibly be: "J.G. Meakin, Hanley, England" after 1891 (Kovel 1953: 202, Fig. j).

Many of the pottery marks are incomplete. The following American companies may be represented from the fragments recovered:

- Peoria Pottery Co., Illinois (1873-1894) Thorn 1947: 142, Fig. 14).
- Ott and Brewer, Trenton, New Jersey (1867-1892) (Thorn 1947: 141, Fig. 18-32).
- Wheeling Pottery Co., Wheeling West Virginia, est. 1879 (Thorn 1947: 155, Fig. 1).
- Steubenville Pottery Co., Steubenville, Ohio, est. 1879 (Thorn 1947: 149, Fig. 2).
- East End Pottery Co., East Liverpool, Ohio (Thorn 1947: 125, Fig. 30).

(Some companies copied the same pottery mark or identification, such as: "Royal Ironstone China" over a rampant lion, shield and rampant unicorn.)

PENCE HILL 23 CL 33 (Fig. 6)

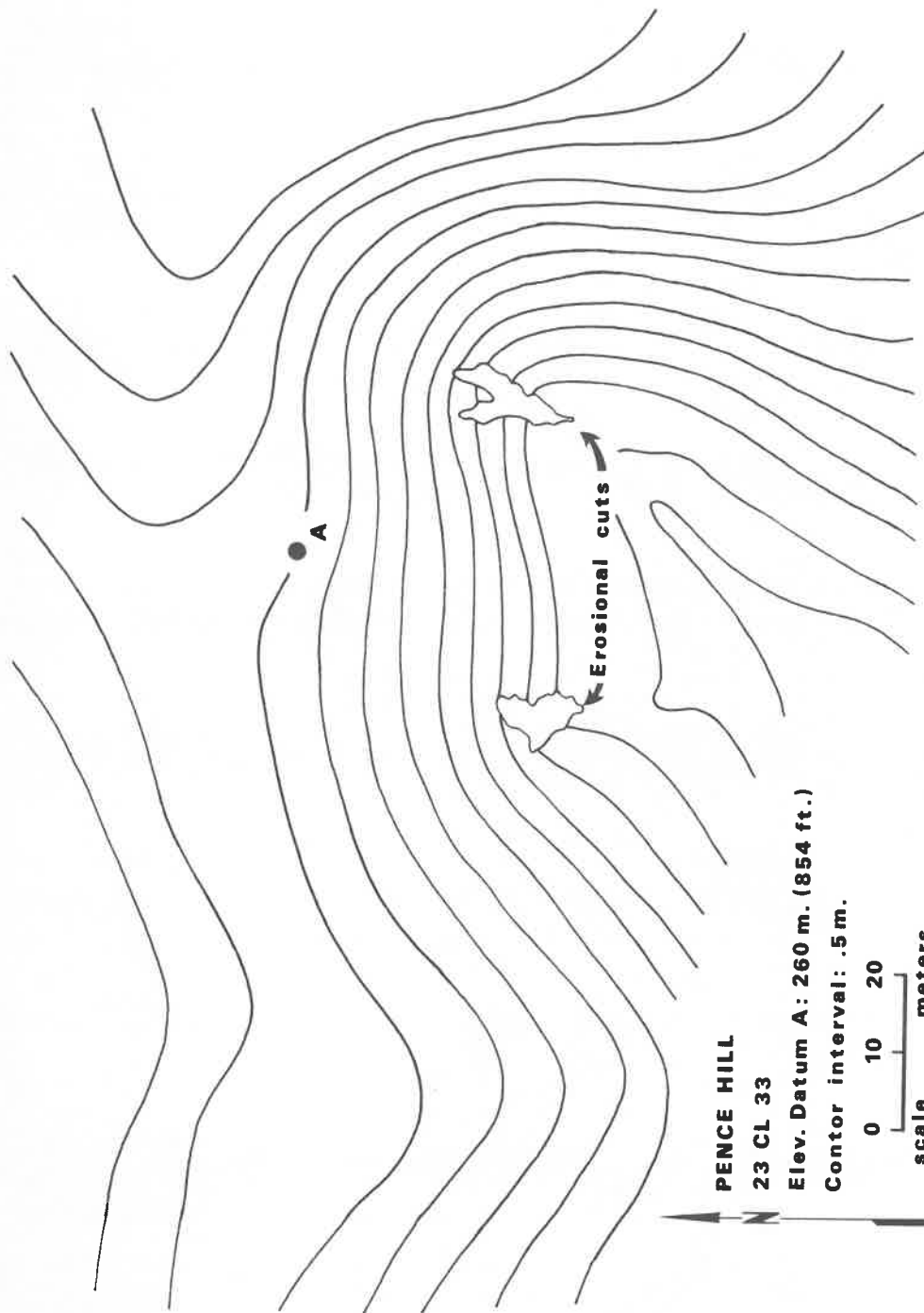
The placement of some 39 post hole tests revealed that this site is predominately located between 255 and 265 meters above mean sea level (840-865 ft.) on the top and south facing slope of a large hill. Some lithic debris was recovered from the lower margins of the opposite, westerly facing slope. The lithic debris recovered from the excavations on the hill-tip and the depth of concentrations seem to increase down the slope of the hill. Much of the depth of material on the lower slopes may be a result of slope wash from above.

On the basis of projectile point styles this site is identified as Middle or Late Archaic. The recovery of two small pieces of sand tempered pottery sherds from a post hole on the top of the hill, as well as surface recovery of a small projectile point (Plate 23b) suggest the area was used by Woodland peoples.

Projectile Points (Plate 23a, b, c, d)

Four projectile points were recovered from the surface of the site.

(Plate 23b) The tip and a portion of the base are missing. The remaining portion of the point is 27.5mm. long with a maximum blade width of 24.2mm. and 5mm. thick. Weight is 2.9 grams. It is triangular with slightly incurvate edges, a flat base with side notches and ground base. The point is of white chert (10YR8/1) and may represent a late Woodland variant (Shippee 1967: Fig. 21).



PENCE HILL

23 CL 33

Elev. Datum A: 260 m. (854 ft.)

Contor interval: .5 m.

0 10 20

scale meters

wbb

Figure 6

The bases of three projectile points bear an overall similarity to each other.

(Plate 23d) A base made of a medium grained tan chert with about two thirds of the specimen present (tip missing). It is 71mm. long; 41.5mm. wide at the distal end, 9.5mm. thick at the point of greatest width. The blade base width just above the corner notch is 37.5mm. The expanding stem is 28.5mm. wide at the margins of the flat base. The stem base and 40mm. of the sides are ground. Chipping is crude except in the area of the base where numerous small flakes have been removed. (Weight: 35 grams).

(Plate 23a) This is similar to the previously described point or knife in that it is broad with straight edges. The base is slightly convex with side notches and appears to be slightly ground. Less than the proximal-most one-half of the blade is represented and is made of fine-grained grey (5Y5.5/1) chert with fossiliferous inclusions. (42.5mm long, 34.1mm. wide, above the notches, 30.1mm wide at the base and 8mm. thick. Weight: 22 grams.).

(Plate 23c) The remaining specimen is of a light grey (5Y7/1) non-fossiliferous chert. This base is also broken but bears a close resemblance to the point (Plate 23a) described above. The base is slightly convex. (37.0mm. long, 31.2mm. wide above the notches, 63.mm. thick, 26.3mm. wide at base. Weight: 9 grams.)

The points in Plate 23a, c, and d are very similar to those described by Shippee from the Early Woodland component of the Shield's Site (23CL1) Shippee 1967: 30, Fig. 19b).

Scrapers

(Plate 23e) One specimen of a thick plano-convex scraper was recovered from the surface. It is well made of a fine grained tan (10YR7/3) chert with numerous secondary flakes around 75 percent of the perimeter. Most of the flaking is on the dorsal or convex surface. Limited flaking is present on the ventral or flat surface. The unmodified portion of the edge was probably the original platform end for the removal of this large flake from a core. Some cortex remains. The edges are flaked at a fairly steep 75° included angle. Overall dimensions: Length, 52mm. (as measured from the unmodified cortex base), 50mm. maximum width (occurring 35mm. from the base), 35mm. maximum thickness (also 35mm. from the base). Weight: 53.1 grams.

Similar scrapers are reported as being found on numerous Hopewellian sites near Kansas City (Shippee 1967: 76; Katz 1972: 32) and also from sites of Mississippian affiliation (Wedel 1943: 53; Shippee 1972: 57).

The occurrence of these scrapers in contexts earlier than Middle Woodland (Hopewell) is yet to be demonstrated in the Kansas City area, although their precursors are suggested as being at least as early as with the Nebo Hill Complex (Shippee 1964: 15, Fig. 6d).

Bifaces and Blanks

Two blanks were recovered. One appears to have been heat treated (Plate 23f) and is a dull to shiny pink (10R6/5). The specimen is 80mm. long, 37mm. wide and 17mm. thick. Cor-

tex remains on one end of the flat base with large flakes removed. No use or secondary flakes are present. Weight: 44.5 grams.

The second specimen is slightly pointed ovate in shape and also exhibits large, crude flake removal. Grey-brown (10YR5/3) in color, it is 56.5mm. long, 41mm. wide and 15mm. thick. Weight: 47.2 grams.

Four other large pieces of chert show primary percussion bifacially and are roughly ovate in outline. No secondary or use flakes are present. (60-90mm. long and 20-70mm. wide). One piece shows heat treatment around its perimeter.

23 CL 33 Pottery

Two pieces of pottery were recovered from post hole #7 along the western most edge of the site. No pottery was recovered from the surface. Both specimens are body sherds and are probably of Woodland affinity. The observations on each sherd are summarized below:

	Length(mm.)	Width(mm.)	Thickness(mm.)	Weight(grams)
P-7A	29.5	21.6	8.0	10.2
P-7B	20.0	17.8	9.5	9.5

Surface Treatment: Smooth interior and exterior, slightly erroded and pitted.

Color: Exterior: yellowish red (5YR5.5-6.5/8)
Interior: dark reddish brown grey (5YR2.5-6/3)
Core: dark reddish grey (5YR3.5-4.5/3)

Hardness (Moh's scale): Exterior - 3; Interior - 4; Core - 3-4.

Temper: Water rolled sand 0.2-2.1mm. in diameter, approximately 15 grains per 10mm. of broken edge.

This site was originally thought to be a mound, although test excavations around the edges of the rocks indicated a probable historic structure. Excavation trenches oriented along what appeared to be the axis of a wall foundation soon confirmed this belief. Figure 7 depicts the wall footing or foundation of an historic cabin.

Mr. William E. Eldridge, Clay County Recorder, has provided the following additional information on the site in a letter dated 9 October 1973:

"The only information which I have been able to find on this property is that it was patented to Adam Pence in 1825. One of the descendants of this family gave it as his opinion that there was at one time a log house there occupied by a Mr. and Mrs. Wills, who were the parents of Mrs. Adam Pence."

A detailed description of the historic items recovered will not be attempted. Below is a listing of those artifacts recovered with comments.

Caulking

Numerous pieces of an off white plaster/cement were recovered. Many of the larger fragments are triangular in cross section with concave sides. Some of these concave surfaces have striations and impressions suggesting use as a caulking agent between the logs of a log cabin.

Nails

Square cut nails (245 specimens) ranging in size from about 1 inch to 4 inches were recovered. Wire nails (more than 80 specimens) were found, along with two wire "U" fencing staples. The occurrence of square cut nails agrees

well with the nineteenth century building date for the cabin.

The 1914 Standard Atlas of Clay County, Missouri (Geo. A. Ogle and Co., Chicago) shows a structure existing at about the location of the present foundations. The patent for this land at this time was to a Gilbert Pence (Whittmeyer), a son-in-law of the Wills family.

Whetstone A broken piece of a rectangular gneiss whetstone (32.0mm. wide and 10.1mm. thick) was recovered.

Weapons

A fired percussion cap (4.8mm. diameter) of a size No.11 or 12 was recovered. One brass ram-rod ferrule, 32mm. long with an original diameter of about 6mm. was also recovered. The metal thickness is about .9mm.

Buttons

1. Round, flat, black, 2-hole, hard rubber, .75 inches in diameter with a shallow groove around the edge, at about a 45° angle on the button front. On the back is the notation: "N.R.Co." Goodyear's P=T 1851.
2. Round, .375 inch diameter, four hole shell button.
3. Conical, white ceramic button, round edges and metal loop (9/16" Dia.). Maximum thickness: 5/16 inch.
4. A black, circular button with flat outer face, metal loop cast into a raised section of the back, 3/4 inch diameter. Maximum thickness: 3/16 inch.
5. A black, circular button with two holes in an oval trough on the front. Plain back, raised face, 1/2 inch in diameter. Four dotted lines cross at right angles equidistant from each other on the raised exterior surface.

Crockery

Fragments of about 1/3 of a vessel (whose mouth originally measured about 11 inches) with a slightly convex base, (7 inches in diameter) which had an original height of about 4.75 inches was recovered. The exterior of the rim expands outward some .9 inches from the body at a point about 1.5 inches below the rim, forming a brace or collar. This was a low fired crockery vessel and probably served many functions. Small fragments of another crockery vessel were also recovered.

Glass

Numerous pieces of unidentifiable glass were recovered. Bottles, drinking glasses, and window glass are represented. Most of the containers appear to have been blown into a mold. Free-hand blown glass containers may have been present but the fragmentary nature of the remains precludes a definite conclusion.

Metal

In addition to the nails described above, fragments of what originally was a square container with a round metal lid were also recovered.

Slate

Some fragments of a thin slate which may have originally been part of a small black board were found in the foundation.

Tack

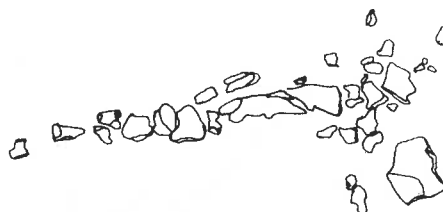
One curb bit was recovered just outside the wall foundations to the north and west.

Bones

The following species of animals are represented.

Deer - Odocoileus sp.
Cat - Felis domesticus
Squirrel - Sciurus sp.
Rabbit - Lepus sp. or Sylvilagus sp.

Various unidentified rodent and bird bones were recovered.



WILLS CABIN

23 CL 125

Wall footings ca. 1825



Figure 7

wbb

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