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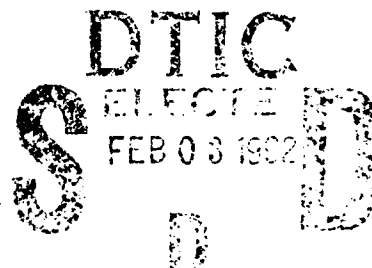


ST. LOUIS DISTRICT CULTURAL RESOURCE MANAGEMENT REPORT NUMBER 6

**Phase II Archeological Investigations at the
Fox Pup and Gravity Sites, Nutwood
Levee and Drainage District,
Jersey and Greene Counties, Illinois**

Contract No. DACW43-82-M-0893

by
James M. Batura and David S. Leigh
Harold Hassen, Principal Investigator
Center for American Archeology



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**US Army Corps
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St. Louis District

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SEPTEMBER 1983

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ABSTRACT

Phase II archeological evaluations were conducted by the Contract Archeology Program, Center for American Archeology at the Fox Pup site, Jersey County, and the Gravity site, Greene County, Illinois. These investigations were designed to assess site significance and determine National Register eligibility. More specifically, the studies attempted to identify site limits, degree of preservation, and chronological context. Questions related to regional importance and site activities were also addressed. The investigative techniques employed included controlled surface collection, test excavation, limited grading to remove portions of the plowzone to determine if undisturbed cultural deposits were present, and shallow surface geomorphological testing. Both lithic and ceramic diagnostic materials were recovered from each site. Materials from the Fox Pup site include Middle Woodland, Late Woodland, and Mississippian artifacts. The Late Woodland presence is the primary occupation (A.D. 600-1150), and is characterized by four pit features containing ceramic sherds similar to Early and Late Bluff materials. The Gravity site has been determined to have Early and Middle Woodland artifacts. It is recommended that further excavations be done at both sites prior to construction.

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PART I

INTRODUCTION

During May and June, 1982, personnel from the Contract Archeology Program, Center for American Archeology (CAA) conducted archeological resource evaluations at the Fox Pup and Gravity sites. These sites are located in the Nutwood Drainage and Levee District, Jersey and Greene counties, Illinois (Figure 1). The investigations were initiated through a contract between the CAA and the Army Corps of Engineers, St. Louis District.

An archeological survey had been conducted along a 45 meter corridor on the levee interior (Hassen and Batura 1983). That survey was designed to determine archeological site locations and provide preliminary archeological assessments. Based on that assessment and in anticipation of maintenance projects (i.e., height and width expansion of the levees and recovery of borrow and subsequent creation of interior impound basins) the Army Corps of Engineers requested that two archeological sites located in the impact area be evaluated regarding their significance and National Register eligibility.

Determining the eligibility of a site onto the National Register of Historic Places requires: 1) establishing site limits, 2) evaluating the degree of preservation, 3) assessing the integrity of the archeological remains, 4) identifying chronological context, and 5) evaluating the significance of the archeological deposits.

Since 1958 the CAA has focused lower Illinois River drainage research on two primary goals: 1) the compilation of a master inventory for prehistoric and early historic habitation and mortuary sites, and 2) to describe

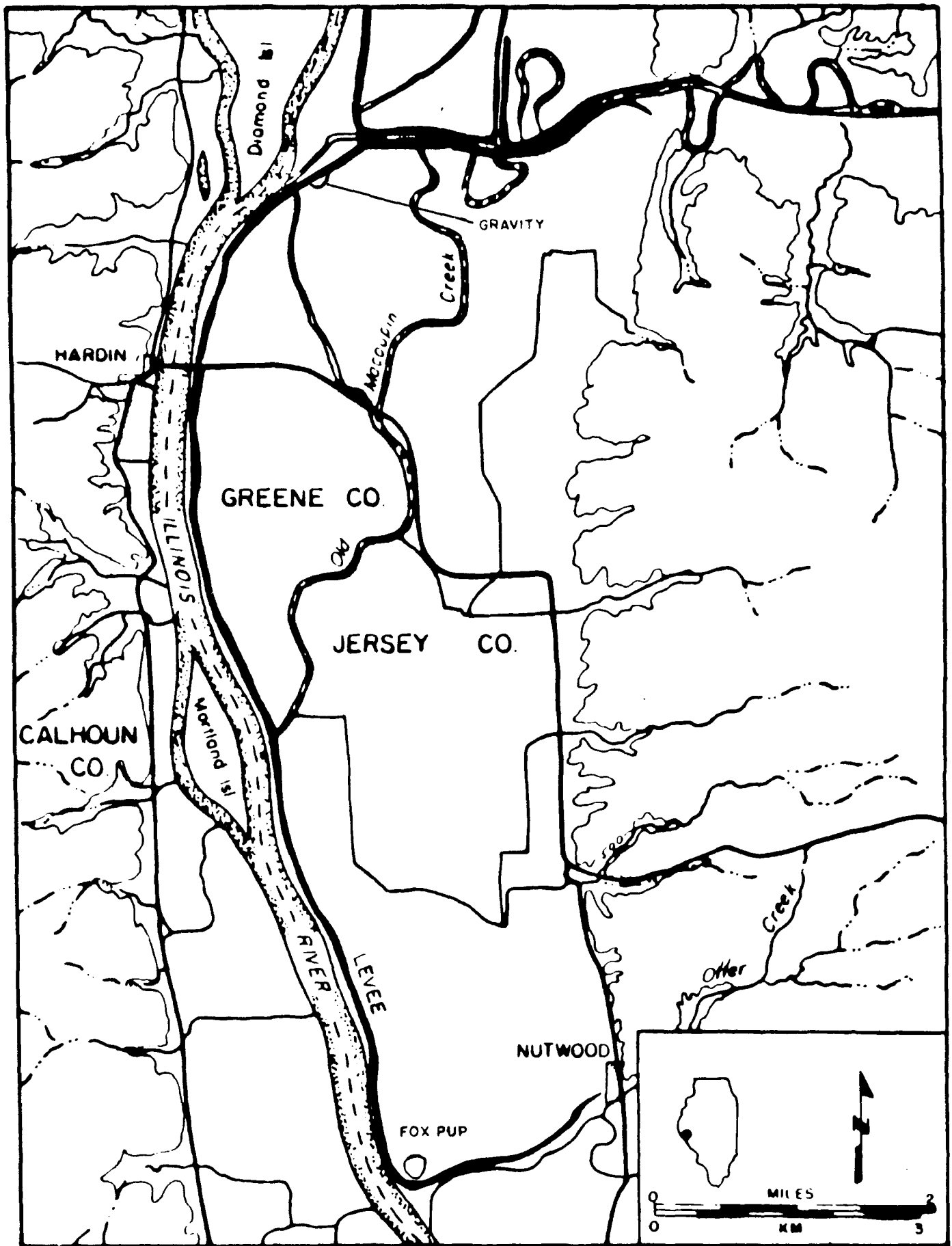


Figure 1. Nutwood Levee District showing location of the Fox Pup and Gravity sites.

and explain changes through time in prehistoric settlement patterns and subsistence strategies. The potential for the Fox Pup and Gravity sites to contribute toward these goals will be evaluated. In addition, recommendations will be provided to assist the Army Corps of Engineers in determining whether construction can proceed as planned in the site areas or whether additional archeological investigations are warranted.

The field survey and analysis was conducted under the direction of Dr. Harold Hassen. Field supervisor was James M. Batura. Field assistants included John Dorshek, David Leigh, Paul Goldstein, and Sara Swain. Laboratory processing including washing and curation were coordinated by James M. Batura. Artifact analysis was conducted by James M. Batura with assistance from Harold Hassen and David Morgan. Geomorphological analysis was conducted by David Leigh with guidance from Edwin R. Hajic.

All materials and records from the survey are filed and curated in the archeological repository and Contract Program Office at Kampsville, Illinois.

Previous Archeological Work

Both Fox Pup and Gravity were first identified during the Phase I survey conducted in 1980-1981 by personnel from the Center for American Archeology (Hassen and Batura 1983). The purpose of the Phase I survey was to locate prehistoric and early historic archeological sites within a 45 meter wide corridor along the interior edge of the Nutwood Levee. Fox Pup was described as a small site situated on a low ridge in the Illinois River floodplain adjacent to northward bend in the levee. Only non-diagnostic lithic artifacts consisting primarily of chert flakes and blocky fragments were observed (Hassen and Batura 1983:110). The Gravity site was described as located near the present confluence of Macoupin Creek and the Illinois River approximately 3.75 km north of the town of East Hardin. Material collected from this site consisted of two hammerstones and one hammerstone/mano (Hassen and Batura 1983:110). Based on the results of the survey, the surface materials from each site were determined to be characteristic of limited activity sites.

The 1980-1981 survey boundaries were in response to the needs of the Corps of Engineers and based on criteria not necessarily equivalent to survey boundaries chosen from strictly an archeological perspective. Information on site distribution and associated artifact assemblages at or near the 1981 project area is reviewed and synthesized in the Phase I report (Hassen and Batura 1983). Figure 2 illustrates the location of these and other archeological projects that have been conducted in the lower Illinois River Valley.

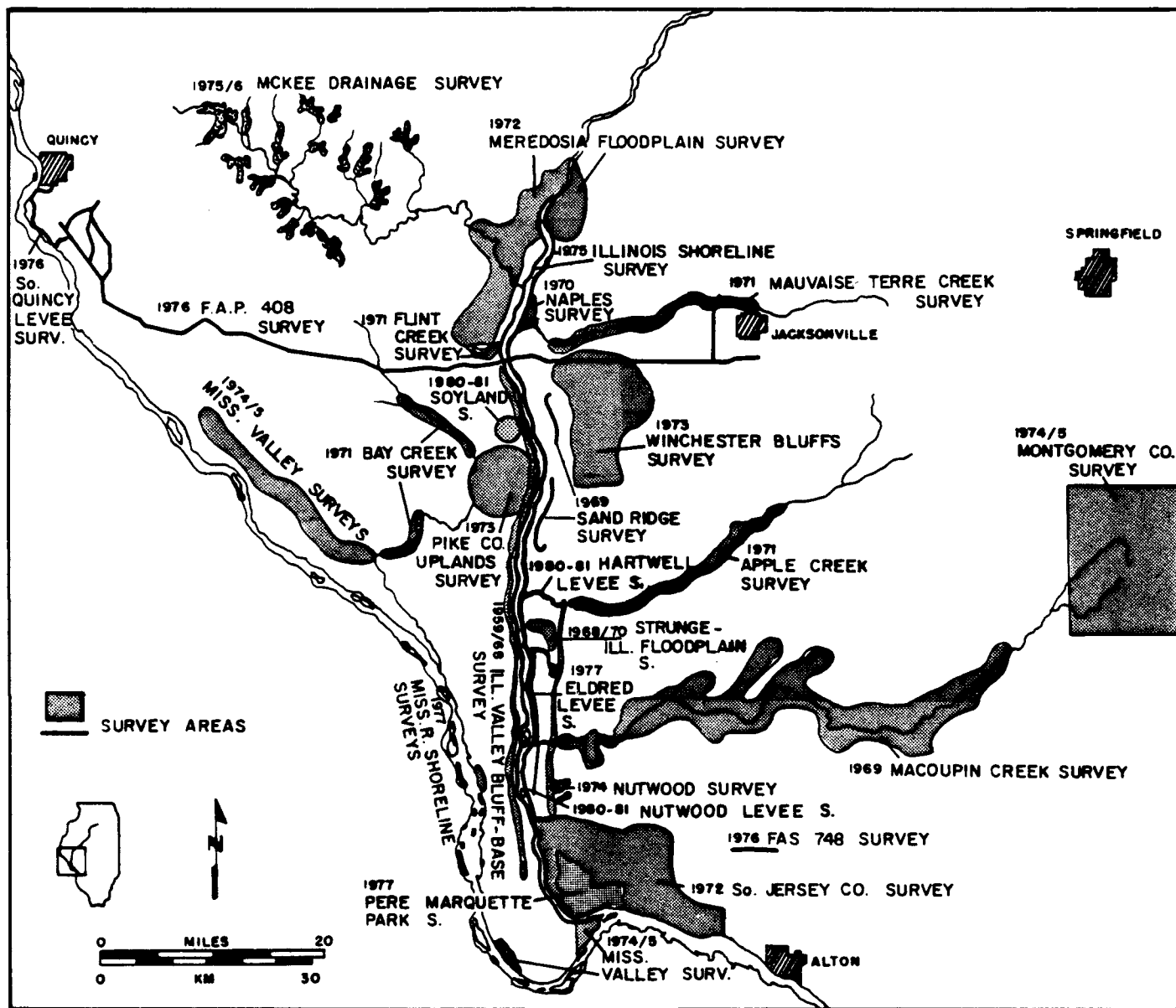


Figure 2 - Previous Archeological Investigations within the Lower Illinois River Valley

Project Goals

The archeological resource evaluations conducted at the Fox Pup and Gravity sites were designed according to specific aims as established by the Army Corps of Engineers and supplemented by long term research goals of the Center for American Archeology. Site information required by the Corps of Engineers is consistent with information required for assessing whether the sites are eligible for nomination to the National Register. Information pertinent to determining National Register eligibility include:

- 1) Determine accurate site limits. This can be achieved using a variety of field techniques including controlled surface collection and test excavations. In situations where the probability of buried deposits is high (i.e. natural levees), it is important to recognize the distinction between surface limits and those represented by buried archeological deposits.

- 2) Determining the degree of preservation. It is necessary to determine how well the archeological materials have been preserved. These materials need not be buried to be in a good state of preservation. Recently plowed fields can be a source of preserved archeological material, however, prolonged exposure often results in a deterioration of the material.

In determining site significance it is important to evaluate the potential for subsistence analysis. The recovery of preserved botanical and faunal remains at Fox Pup and Gravity would be of critical importance since the analysis of subsistence data at small limited activity sites has not been a major focus in contrast to larger more complex sites.

- 3) Assessing the integrity of the archeological remains. To assess site integrity it is necessary to determine if undisturbed cultural deposits are present. Field techniques such as surface reconnaissance can be used to

locate a site but are ineffective in assessing buried site integrity. Excavation techniques (i.e. excavation units and/or blading) are necessary to determine if undisturbed features and/or midden are present.

4) Determining chronological context. To evaluate the potential of a site for contributing toward an understanding of cultural development in the lower Illinois Valley drainage it is important to establish the chronological context of the archeological remains. This can be achieved by the recovery of temporally diagnostic artifacts, e.g., projectile points and/or ceramics, and by recovering sufficient quantities of charcoal to permit a C-14 dating.

5) Evaluating site significance. Determining site significance requires an evaluation of the materials in the context of long term research objectives regarding lower Illinois Valley drainage prehistory. It is anticipated that the Fox Pup and Gravity sites can contribute the following information.

- a) Increase our understanding of limited activity sites on the natural levees in the Illinois floodplain.

Results of the survey indicated that both sites shared a number of characteristics. These would include: 1) low density and diversity of artifacts, 2) no temporal diagnostics, and 3) no evidence for middens or features. These results lead to a conclusion that both Fox Pup and Gravity represent short occupations characterized by limited activities. Prior to 1981, knowledge about the archeology of the Nutwood district interior floodplain was based on large more complex sites. Excavations at the Macoupin site, surveys in the vicinity of the Macoupin site, and collector interviews have identified large, complex Early and Middle Woodland occupations near

Old Macoupin Creek. Recently the importance of small limited activity sites for studying resource procurement and expedient tool manufacturing has been examined at the Wendle site located in the uplands of the Illinois River drainage (Hassen in press). Located on the floodplain, Fox Pup and Grivity will provide an added dimension for understanding small sites.

- b) Improve our understanding of utilization of the regional landscape during specific cultural periods in the prehistory of the Illinois River Valley.

Frequently small limited activity sites fail to receive the attention usually accorded larger, more complex, multiple activity sites. As suggested above, however, smaller less complex sites can be equally informative and important.

If prehistoric resource procurement, technology and social interaction are to be understood, it is essential that the character of all types of sites be evaluated. Fox Pup and Gravity present the opportunity to evaluate sites that will add greater dimensions to settlement-subsistence studies in reference to utilization of the natural levees during specific time periods and the organization of settlement systems across the landscape.

- c) Increase our understanding of the relationship between surface and buried cultural remains on natural levees.

Conclusions, based on the results of the survey, suggest that both Fox Pup and Gravity represent short occupation, limited activity sites. Geomorphological studies conducted in several of the levee districts of the lower Illinois Valley (cf. Hajic 1981a,b) concluded that the potential for buried archeological remains on the natural levees is high. Under such circumstances it is possible that even Late Woodland material could be

buried in the natural levees.

Surface material observed at the Fox Pup and Gravity sites could originally have been buried and recently exposed as a result of continuous plowing. Therefore, what appears to be limited activity sites may represent exposed remnants of buried more complex components. Investigations at Fox Pup and Gravity will provide an opportunity to evaluate the relationship between surface and subsurface cultural remains in low energy environments characterized by rapid sediment deposition.

- d) Refine existing models regarding Holocene floodplain evolution and the potential for encountering surface and buried archeological sites.

A number of recent studies have discussed the Holocene evolution of the lower Illinois River Valley. These studies identified changing depositional environments, evaluated the effects of climatic fluctuations, and discussed the development of the Illinois River and secondary stream channel stability. Models presented in these studies are based on assessments of landforms, subsurface geology and the distribution of surface archeological sites. In addition, these studies predict the potential for encountering buried archeological sites based on landforms. Hajic (1981a) deals specifically with the Nutwood Levee and Drainage District.

The results of the excavations and soil coring at these sites will augment data previously generated for developing models of Holocene floodplain development. A drawback to the previously cited studies is that they deal with fairly extensive areas (i.e., an entire levee district). Soil coring at archeological sites can be more extensive and therefore increases potential for detecting minor variations in the shallow subsurface geomorphology.

- e) The Fox Pup and Gravity sites provide an opportunity (based on survey results) to study small lithic assemblages.

The sites are characterized by a narrow range of activities as indicated by the limited diversity of artifacts observed. Analysis of these assemblages, can provide information on resource procurement, tool manufacture and use, as well as the patterns of artifact discard.

Wiant (in press) suggests qualitative variation in Burlington chert may be temporally significant in the lower Illinois River Valley regarding procurement, technology and tool use. Hassen (in press) indicates that expedient tool manufacture is dependent in part on chert availability and quality.

By assessing chert quality and the degree of modification represented in tool manufacture, the Fox Pup and Gravity sites can contribute toward long term comparisons with more complex sites and can result in a more detailed understanding variation in lithic technology within and between cultural groups.

Limitations

The ability to adequately address the problems outlined above is often affected by uncontrollable factors. At Fox Pup and Gravity a number of factors imposed limitations.

- 1) Time constraints - At Fox Pup contract specifications limited the number of hand excavations and the size of the area bladed. Consequently, site limits as indicated by the distribution of subplowzone materials is tenuous until additional site portions can be bladed.
- 2) Machine tillage - Plowing and disking site surfaces effects both the preservation and integrity of archeological remains. Fragile remains (e.g. bone, shell, ceramics and lithics) can be destroyed, damaged or disturbed from their original context. Surface and subsurface features can be disturbed or destroyed. Despite vertical and horizontal displacement patterns of artifact discard it is unlikely that overall patterns will be masked.
- 3) Tree clearing - Examination of the 1904 Woermann maps and the environmental reconstruction provided by David Asch and Nancy Asch (Hassen and Batura 1983) indicate that forests originally stood at the site locations. The absence of these trees suggest that extensive clearing had occurred. This activity may have resulted in the artifact displacement and/or feature disturbance or destruction.
- 4) Blading - As part of the investigation at Fox Pup, a portion of the plowzone was mechanically stripped. While investigators were cautious and limited blading to only

the removal of the plowzone it is possible that undisturbed portions below the plowzone were removed. This would have resulted in the removal of any cultural materials present. However, since blading depth was restricted to only a few centimeters at one time, it is unlikely that the effect of blading upon previously undisturbed archeological material was significant.

PART II

INVESTIGATIONS AT THE FOX PUP SITE (11-Jy-141)

Physical Setting

The Fox Pup site is located on the west side of an abandoned channel atop a natural levee in the floodplain of the Illinois River (Figure 3) (W $\frac{1}{2}$, NW $\frac{1}{4}$, SE $\frac{1}{4}$, Section 6, T7N, Range 13W). The floodplain is approximately five kilometers wide at this point and is bounded by bluff-forming Mississippian limestone (Willman et al. 1975). The contact of the limestone bluffs and the alluvial floodplain is mantled by alluvial fans and alluvial-colluvial hillslopes derived from upland sediment sources. To the east of the floodplain lies the moderately dissected Illinoian till plain overlain by Roxana silt and Peoria loess. To the west of the floodplain across the Illinois River, lies the highly dissected unglaciated uplands of Calhoun County (Willman and Frye 1970). Otter Creek, a secondary tributary of the Illinois River, emerges from the bluffs and flows across the floodplain draining into the Illinois River immediately to the south of the site.

The local environment around the site is characterized by long subtle ridges in an otherwise flat floodplain. These ridges are natural levees that formed along broad sweeping meanders of a former channel of the Illinois River. Prior to the construction of the artificial levee around 1919, waterfilled sloughs occupied the lowlying areas between the natural levees. Tice silty clay loam, a soil characteristic of natural levee environments in the lower Illinois Valley, is the predominant soil type in the site area.

Aerial photographs and 1904 Woermann maps indicate the Fox Pup site lies on the banks of a natural levee situated on a distinct meander scar oriented north and south for approximately one and a half kilometers and

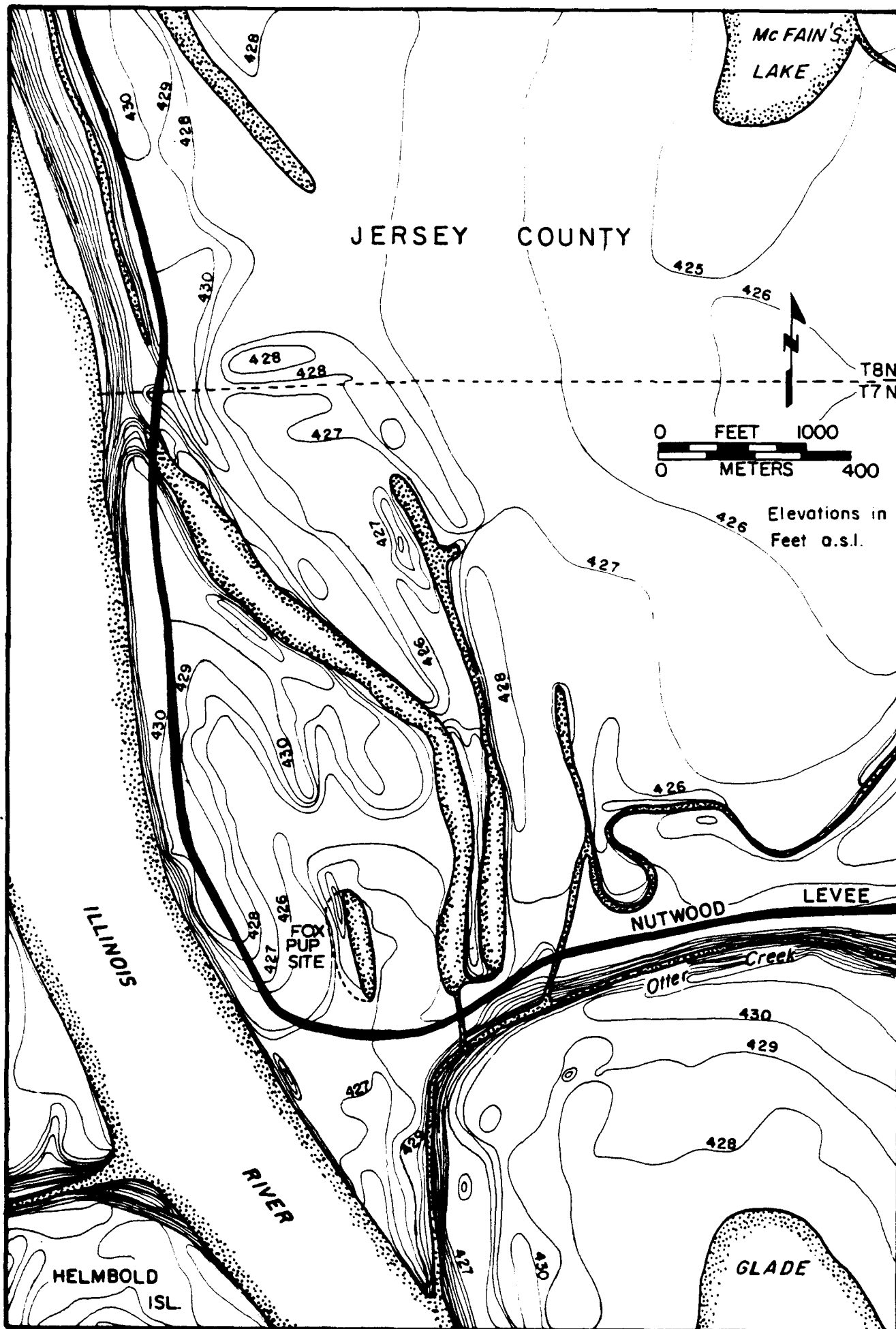


Figure 3 - Location of Fox Pup Site

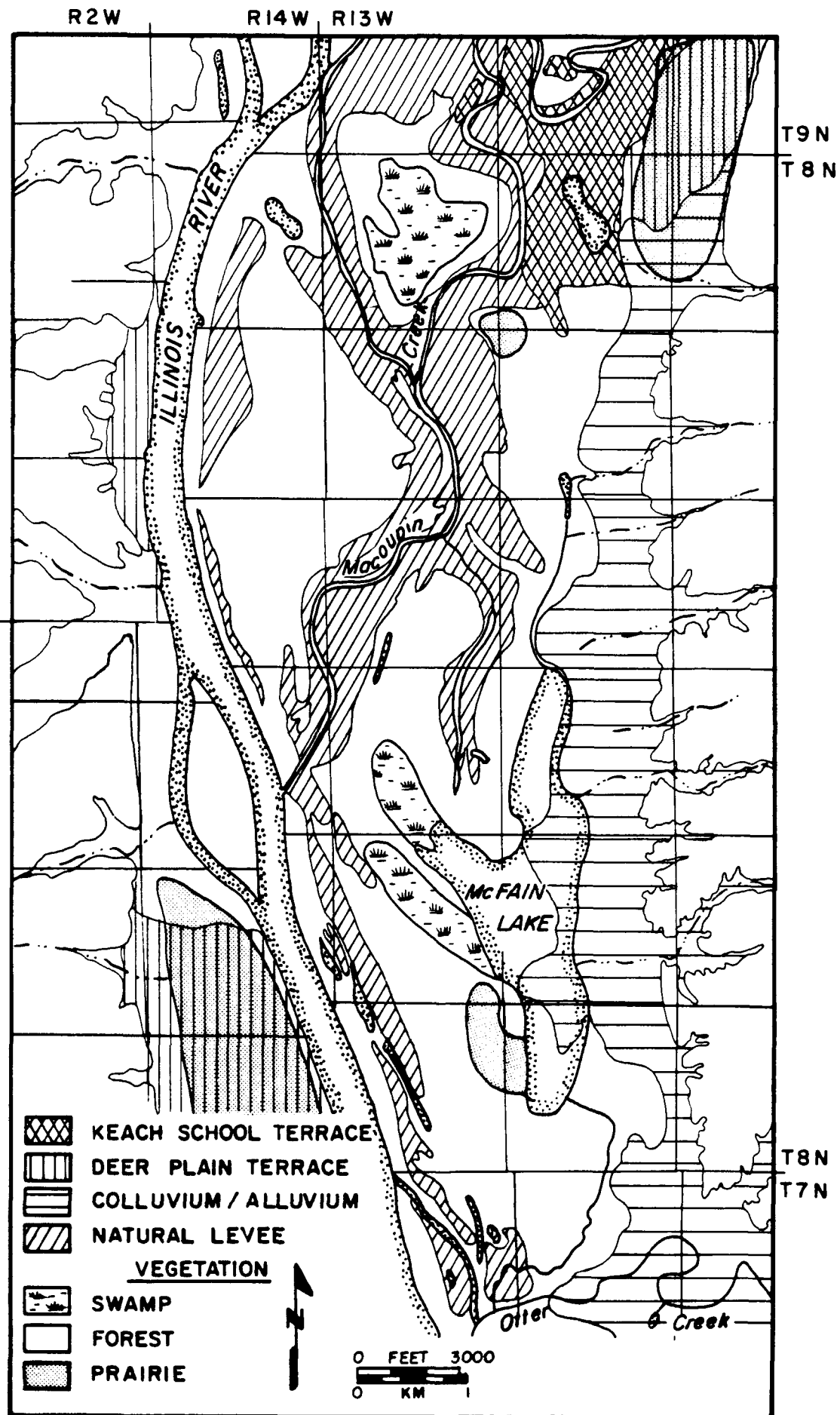
located approximately three-fourths of a kilometer to the east of the present river channel. The 1904 Woermann map illustrates the depression between the two natural levees as a slough. These observations were later substantiated in the field.

The vegetation in the lower Illinois River Valley have been greatly altered since presettlement times. Construction of the levees and drainage ditches had a substantial effect on the local vegetation and made it possible to cultivate most of the floodplain. U.S. Government land surveys completed in the early 1800s make it possible to reconstruct vegetation patterns in the region just prior to Euroamerican settlement. These surveys recorded information about the distribution of the dominant vegetation types at that time. A vegetation reconstruction for four contiguous levee districts provided by David Asch and Nancy Asch (i.e., Nutwood, Eldred, Keach School, and Hartwell) is presented in the Phase I survey report (Hassen and Batura 1983). Appropriate sections of that report pertaining to the Nutwood Levee district are summarized below.

The alluvial flats in the Nutwood District were occupied exclusively by forest and swamp vegetation. Wet floodplain forest had silver maples and cottonwood as the dominant species. American elm, willow, swamp privet, greenash, pecan boxelder and red mulberry made up the less dominant species in this environment. In more swampy areas, the vegetation was a combination of willow, buttonbush and swamp privet (Figure 4).

During those times when the Mississippi River approaches or exceeds flood stages, the lower Illinois River Valley becomes a floodbasin of the larger river. This has a substantial effect on the regional vegetation. If, for example, the flooding continues late enough into the spring after

Figure 4. Early nineteenth century vegetation of the Nutwood Levee District. Boundaries of McFain's Lake were drawn from U.S. government land surveys (April 1819) and the 1893 plat book of Greene and Jersey counties. Possibly the water was unusually high in 1819 since the surveyor described it as "a pond with trees in it" between sections 30 and 29. However, the 1819 surveys and 1893 plats essentially agree at the points where the lake crosses section lines. The 1902-04 Woermann topographic maps suggest that the lake should have been much smaller.



the time that trees begin to limb out, slough grass prairie species would be at a distinct disadvantage when compared to trees. This is probably why prairies are much less extensive in the areas around both the Fox Pup and Gravity sites than in the districts further to the north where such flooding is less extensive and less prolonged.

Organization of Fieldwork and Laboratory Analysis

Fieldwork

Fieldwork was conducted in five stages:

1) Systematic Surface Collection

The results of the 1980-81 survey had been inconclusive because of only fair surface visibility. During the 1982 investigations the first task was to determine site boundaries based on the distribution of surface materials. The 1980-81 survey determined the site is located on what would later be defined as the east facing slope on the western natural levee adjacent to an abandoned river channel.

When fieldwork was initiated in mid-June 1982, the field was under cultivation. Soybeans that had been planted in rows had grown a couple of centimeters. It had been some time since the field had been plowed and the mid-season cultivation had not yet occurred. This had the affect of reducing surface visibility though only minimally.

Following an initial walkover across the site it was determined that artifact density and quantity did not warrant a gridded collection of surface material. Consequently, personnel were spaced at five meter intervals and cultural materials were pin-flagged to observe for artifact clusters. Since no clusters were observed the material was collected as a single unit.

2) Geomorphology

Three soil/stratigraphic sample cores were taken from the site and its immediate surroundings using a trailer mounted Giddings soil probe. This machine allows the removal of a solid, virtually undisturbed, column

of soil from the core hole. A transect of three core holes was located perpendicular to the natural levees so that an understanding of the natural levee formation could be gained. One core was located on the crest of each of the natural levees and the third was placed in the depression between these two banks. Core holes were drilled to a depth at which the machine refused in sand (ca. 5 meters).

In addition to information derived through the use of the Giddings soil probe, other stratigraphic profiles were observed on the walls of the test units. Also, a hand held Oakfield soil probe was used to core beneath the floors of these units.

3) Test Excavation

Two, 2 x 2 meter test units were excavated to establish the vertical limits of cultural material and to assess the degree of subsurface preservation and integrity. The size of the units was reduced to 1 x 2 meters after the plowzone had been excavated.

The distribution of cultural material was used in locating the two test units. It is recognized that the chances for encountering subplowzone features while hand excavating a 2 x 2 meter unit is directly related to the quantity of features present on a site and assuming a correlation between surface and subsurface remains. The absence of subplowzone features in a single excavation unit does not imply their absence from the site. Test Unit 1 was located on the slope of the western levee in an area of relatively high surface debris density. Test Unit 2 was located some 30 meters to the south on the crest of the same levee. Unit 2 was located on the crest to determine if the lack of surface material was a good indi-

cation of what was below the surface (Figure 5).

The excavation strategy for the test units was designed to answer four questions: 1) if cultural materials (pit features, midden or artifacts) are present in the subplowzone, 2) determine the depth to which cultural material existed, 3) did undisturbed portions of pit features or midden still remain, and 4) what was the preservation condition. Descriptions of the test units are presented elsewhere in the text, however, it should be noted that no evidence for features and/or midden was found and vertical distributions varied between the test units. Further testing was not possible because of time constraints.

4) Blading

To insure that no features or midden were buried under shallow sediment deposits a portion of the site was bladed. Blading the plowzone exposes larger portions of the site that is not otherwise possible during the more time consuming hand excavations. Exposing the undisturbed 'B' horizon substantially increases the chances of locating shallow cultural deposits. Blading was accomplished using a highway road grader. An area approximately 200 x 10 meters was stripped. This portion corresponds to the highest density of surface artifacts. As a result of the blading, four features were exposed and excavated.

5) Feature Excavation

All four features exposed during blading were mapped and completely excavated. Soil and flotation samples were also recovered.

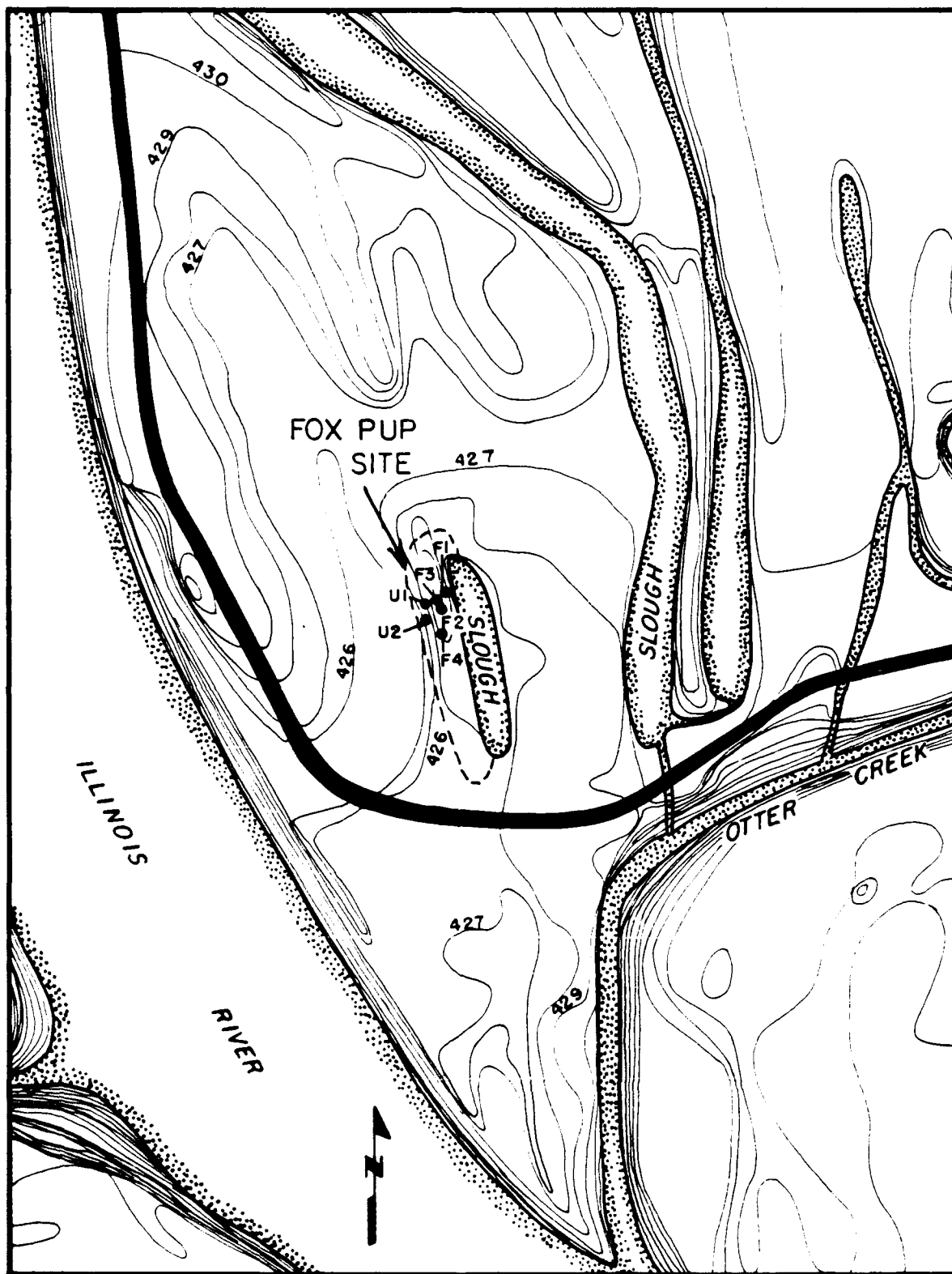


Figure 5- Fox Pup Site Boundary with Location of Excavation Units and Features

Laboratory Procedures

Geomorphology

The soil cores were examined in the field and in the laboratory using U.S.D.A. soil terminology (Soil Survey Staff, 1975). The following characteristics were noted: depth, color (moist Munsell), texture, structure, boundary and other miscellaneous information such as soil mottling, the presence of shells and/or organic and carbonized matter. Notations were also made as to whether the soil was leached or unleached of carbonates and oxidized, deoxidized, or unoxidized. Following the descriptions, the cores were arranged in stratigraphic profiles illustrating the types and characteristics of the sediments at the site. Aerial photographs and topographic maps were used to define surficial features in the area. Core descriptions are presented in Appendices B and D.

Archeology

All archeological material was returned to the laboratory and processed according to guidelines outlined in the CAA laboratory manual (CAA n.d.). In general, the initial processing consists of washing, cataloging, and tabulation. In the initial stages of the analysis, tabulation is a method of sorting the material into classes or categories (i.e. lithic, ceramic, etc.). In each of the general categories more detailed distinctions are then made. In the case of lithic material, retouched materials are separated from the non-retouched items and in the case of ceramics, rim/lip sections and decorated sherds are separated from the undecorated body sherds.

Lithic Analysis

The non-retouched lithic debris is sorted into a number of categories including: blocky fragments; primary, secondary, tertiary, and bifacial reduction flakes. The retouched lithic material is initially divided into three large categories: 1) unifacially retouched items, 2) bifacially retouched items, and 3) groundstone (Figure 6). Further distinction within each of these general categories were then made (Figure 6). Each of the retouched items are described in detail in Appendices A and C noting type of raw material, degree of modification, and the location of modification. Additional descriptions and typing of the projectile points is presented in the text. Definitions used in distinguishing these categories are presented in Appendix F.

Ceramic Analysis

Ceramic material is described noting the following characteristics: color, temper, surface treatment, and description of the surface decoration. Ceramic material from both sites was very fragmentary preventing classification of vessels into vessel form categories. It was also not possible to make statements about shoulder and basal forms.

Using these descriptions, the ceramic material is then compared with previously reported assemblages in the region. The analysis is designed minimally to provide information related to the types of ceramics that are present and placement of the material into the appropriate chronological context.

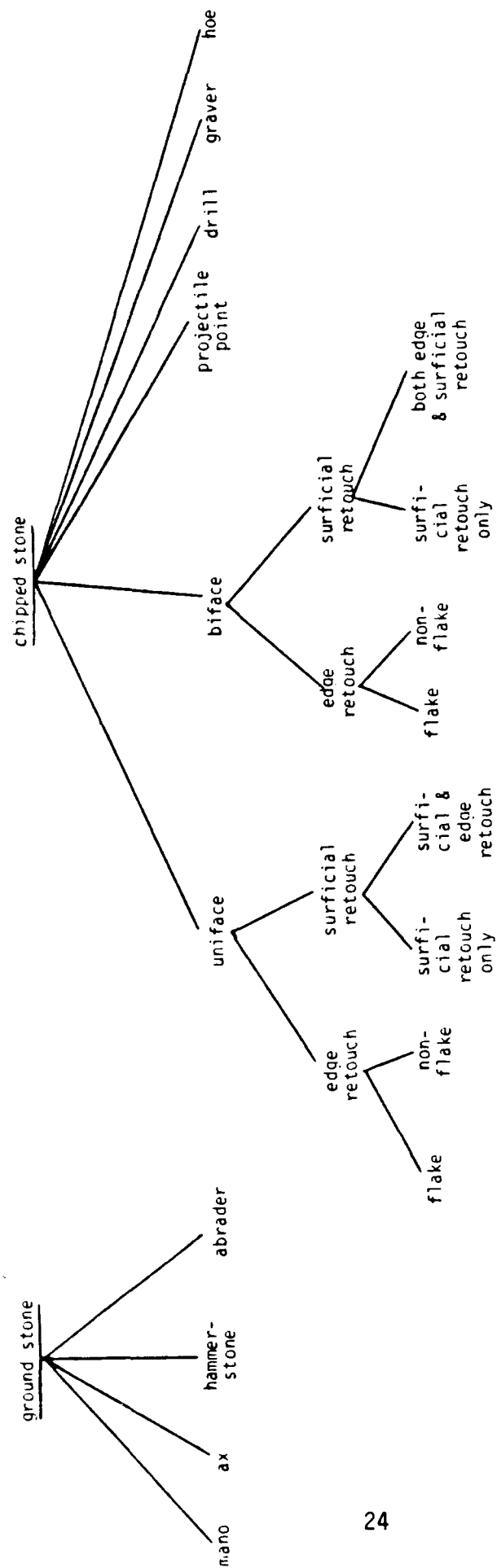


Figure 6. Lithic Artifact Classification

Fauna and Flora

Chemical flotation samples were processed from all features.

These materials were not identified or analyzed due to contract restrictions. However, the quality of preservation and the potential for future studies will be assessed.

Results

Geomorphology and Stratigraphy

The natural levees in the vicinity of the Fox Pup site probably represent overbank deposits of a branch of the Illinois River channel as it once flowed through areas indicated by broad meander scars. This channel is represented in the cross section of Figure 7 as U-shaped paleochannel fill deposits that overlie sand. This U-shaped channel branch would have been responsible for initiating the deposition of sediment during times of high water. Once the natural levees had begun to form, slow moving, sediment filled water would have gradually built the levees up. The slough shown on the 1904 Woermann map shows the presence of standing water in the depression between the natural levee banks. This suggests that depositional processes during times of high water could have continued until the construction of the artificial levee in 1919.

In general, two stratigraphic units are represented at the site. These are paleochannel filling sands and silts occupying the lowest stratigraphic positions in the cores which are overlain by natural levee and finer textured slackwater deposits (Figure 7). In addition, within these stratigraphic units, sediments range from oxidized to unoxidized. The soils are leached of carbonates at depths ranging from 155 centimeters to 342 centimeters below the ground surface. The overbank natural levee sediments reflect the form of the U-shaped paleochannel fill deposits in that the crests of the levees lie directly above the banks of the paleochannel deposits (Figure 7).

FOX - PUP SITE

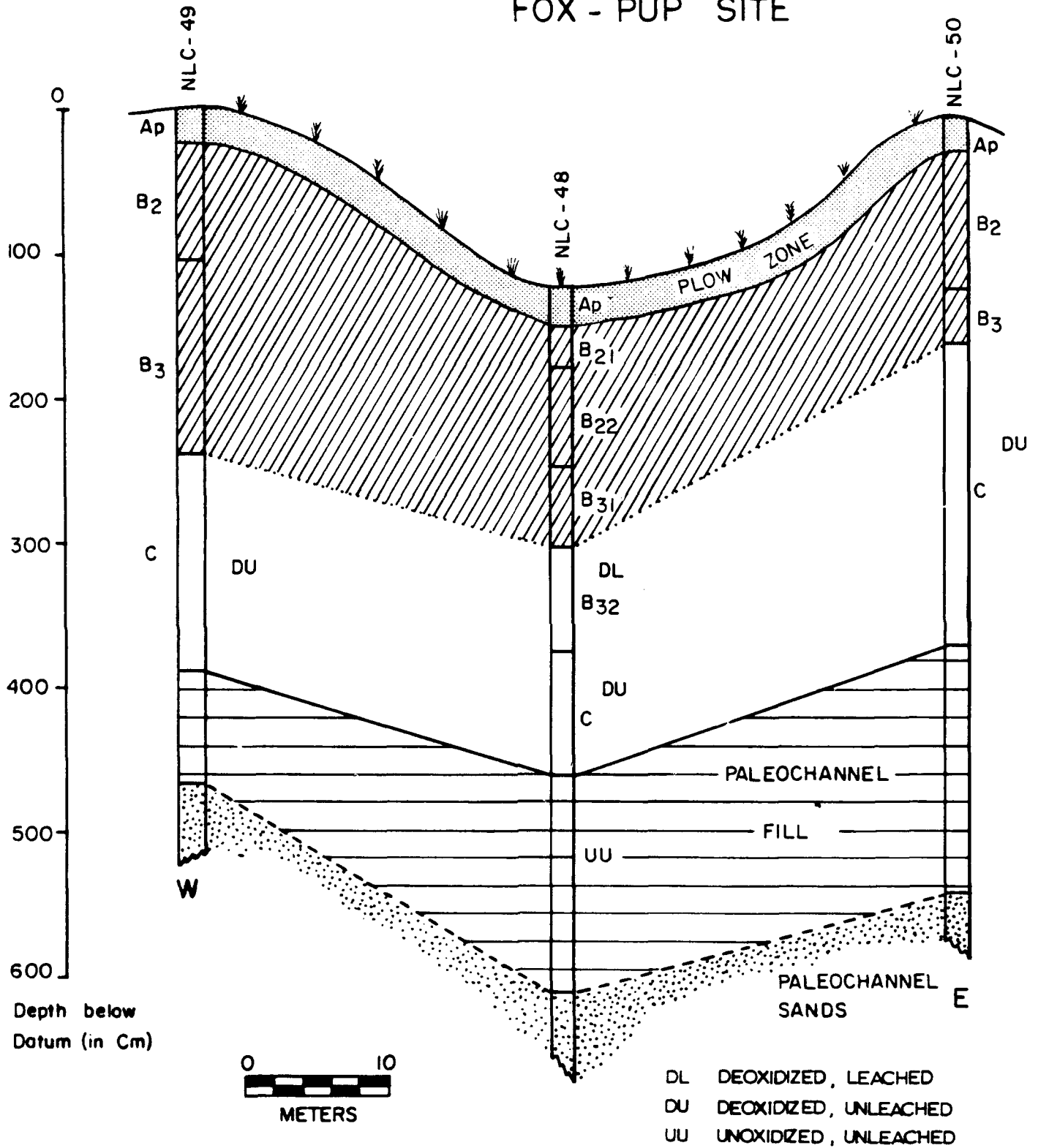


Figure 7 - Fox Pup Cross Section

Paleochannel Sands and Silts

The paleochannel sands and silts observed are characteristic of those defined by Hajic (1981a and b). At the Fox Pup site they are represented by massive, unoxidized, unleached greenish gray (5GY 5/1) to dark greenish gray (5GY 4/1) stratified sands and silts which contain moderate amounts of mollusk shells and carbonized or uncarbonized organic matter. These paleochannel deposits lie between 3.5 to 4.0 meters below the ground surface, and they exhibit a U-shaped form of a branch of an atrophied river channel. The lower boundary of the paleochannel deposits is represented by fine sands pointing toward the existence of higher energy stream conditions required to move sand sized particles, possibly originating as channel lag deposits. The upper boundary of the deposits shows an abrupt contact with the overlying natural levee deposits which contrast sharply in color and texture with the stratified sands and silts.

Natural Levee Deposits

The natural levee deposits are characterized by deoxidized and oxidized gray (5Y 5/1) to grayish brown (2.5Y 5/2) silty clay loams. They exhibit weak to moderate soil development throughout, indicating probable brief surface exposures of the sediments through time as they were being laid down. Soil development in the deposits consists of a very dark grayish brown (10YR 3/2) plowed A (Ap) horizon which overlies a weak to moderately developed dark gray (10YR 4/1) to grayish brown (2.5Y 5/2) and light brownish gray (10YR 6/2) silty clay loam. B horizons on the crests of the natural levees (core holes NLC 49 and NLC 50) are slightly different from the B horizon seen in the depression between the levees. They are composed

of light brownish gray to grayish brown silty clay loams with Fe mottles. In contrast, the B horizon soil found in the depression is texturally similar but darker in color, and it is more deeply developed than the B horizon soils of the levee crests (see Core Descriptions, Appendix B). These developmental differences can be explained as being due to the erosion of soil particles off of the levee slopes and into the depression, and differing drainage conditions. Generally, B horizon development depths under these geomorphic conditions in the lower Illinois River valleys range from approximately 1.5 to 2.5 meters below the ground surface. The soil grades gradually into a gray (5Y 5/1) to grayish brown (2.5Y 5/2) silty clay loam C horizon with weak, fine subangular blocky soil structure and few to common, fine to very fine Fe mottles. Boundaries separating B and C horizons are very gradual.

The United States Department of Agriculture, Soil Conservation Service maps the soil found at the site as Tice silty clay loam. Tice silty clay loam is predominantly found on natural levee positions and is characterized by a weak to moderately developed subangular blocky to blocky structured, very dark grayish brown (10YR 3/1) to dark grayish brown (10YR 4/2) silty clay loam exhibiting few to many iron (Fe) mottles. B horizon development reaches to a depth of approximately 90 cm with gradual smooth boundaries.

Surface Collection

Upon completing the surface pick-up it was noted that cultural material was distributed mainly along the east facing slope to the west of an abandoned river channel for a distance of approximately 200 meters. While it appeared there were areas of relatively higher debris density, the dis-

tribution of material was continuous along this portion of the field. Virtually no material was found on the crest of this levee and only a single blocky chert fragment was found on the natural levee east of the abandoned river channel. Two projectile points were recovered during the surface collection, a Middle Woodland, Gibson/Norton and a Mississippian, Madison Triangle. A gridded total surface pick-up was not used given the low-density of cultural material. It was determined that this would not significantly affect the results of the analysis.

Test Excavations

Test Unit 1 - 238N40W (Figure 5)

Unit 1 was located on the east facing slope of the western natural levee in an area that had a high density of surface material. It was excavated to a depth of approximately 75 cm in four levels. The 00 level (ca. 25 cm) was excavated to the base of the plowzone. Levels 01, 02, and 03 were excavated as arbitrary 15 cm levels. Level 04, which was to have been a 30 cm level, was only partially excavated and was sterile of cultural material. Excavations were terminated at this level.

Cultural material was restricted to the 00 level and upper 2-3 cm of the 01 level (Table 1). In addition to the 75 pieces of non-diagnostic chert (e.g., flakes) from the 00 level, a Late Woodland Koster corner notched projectile point and five Late Woodland ceramic sherds were also recovered. Only five chert flakes were found below the 00 level, all of which occurred in the upper several centimeters of the 01 level. The location of the juncture between the base of the plowzone and the underlying B horizon was questionable and it is possible that all cultural material can be associated

Table 1: Cultural Debris - Fox Pup Site (counts)

	Provenience	Ceramic	Blocky frag.	Biface thin. flakes	Primary flakes	Secondary flakes	Tertiary flakes	Biface	Bifacial ret. fl.	Projectile point	Drill	Groundstone	Bone	Limestone
Walkover Area	1	24	12		1	9	295	4		1			2	
	2		1											
	3		7	1	1	6	66	1		1				1
Square 1	00	5	1			1	72			1				
	01						5							
	02													
	03													
	04													
Square 2	00	2				1	4							
	01			1			2							
	02	10				1	4							
	03						2							
	04													
F.1		35	5	6	1	26	1605		1	1			237	148
F.2		22	3	1		8	574	2					16	15
F.3		27	8		2	10	536	2					51	5
F.4		13	3			1	46						24	
Total		138	40	9	5	63	3211	10	1	3	1		330	169

with the plowzone. No evidence for pit features or undisturbed components was noted during the excavation of Unit 1.

Test Unit 2 - 210N42W (Figure 5)

Unit 2 was located on the crest of the western levee in an area that had a relatively low density of surface material. It was excavated to a depth of approximately 75 cm in four levels. The 00 level (ca. 30 cm) was excavated to the base of the plowzone. The juncture between the base of the plowzone and underlying B horizon was more distinct than in Unit 1 and therefore the problems associated with discerning the base of the plowzone in Unit 1 were not repeated in Unit 2. Levels 01, 02, and 03 were excavated as arbitrary 15 cm levels. Similar to Unit 1, excavations were terminated prior to the completion of the 04 level.

The overall debris density was much lighter in Unit 2 than had been observed in Unit 1 (Table 1); however, it should also be noted that the vertical distribution of artifacts was also significantly different. The 00 level contained one Late Woodland ceramic sherd and six non-diagnostic pieces of chert. Levels 01, 02, and 03 all contained cultural material. In fact the highest density of material was recovered from the 02 level (15-30 cm below the base of the plowzone). The significance in the vertical distribution of cultural material between Units 1 and 2 is discussed below.

Features Excavation

In an area of high surface lithic density the plowzone was removed using a highway road grader. The plowzone was removed to determine if evidence for an undisturbed midden and/or pit feature was present directly

below the plowzone. The plowzone was removed from an area of ca. .2 hectares along the slope of the western natural levee. Four cultural features were identified at that time. These areas were circular in shape with diameters less than one meter and much darker in color than the surrounding B horizon soil. Cultural material (i.e., ceramics, and lithic material) was also noted to be present in these features.

Excavation followed procedures outlined in the Center for American Archeology field excavation manual (CAA n.d.). The feature is bisected and one-half is excavated either in arbitrary levels or as a single level depending on the depth of the feature. Excavation was limited to trowling and material was not screened. Excavated cultural material was removed and returned to the lab for processing. It soon became apparent that the features were no more than twenty-five (25) cm. in depth. To increase the chances of retrieving all cultural material, the entire half of the feature was collected as a series of flotation samples.

After the first half had been removed, the resulting profile was mapped, photographed, and checked to determine if there was any evidence of internal stratification. Internal stratification was not present in any of the features and therefore the remaining halves were removed as single levels. Again, excavated cultural material was removed and the entire half of the feature was collected as series of flotation samples. These features are summarized in Table 2. Features were defined as dark stains nearly circular in shape on the recently bladed surface. In the vertical profile, the features were parabolic in shape.

TABLE 2. Feature Summary Information - Fox Pup Site.

Feature Number	Grid Location	Horizontal Dimensions (cm)		Vertical Dimensions	Volume (est) m ³	Ceramic		Buttface	Primary Flakes	Secondary Flakes	Tertiary Flakes	Thinning Flakes	Blocky Frags	Limestone	Burnt Bone	Charred Nutshell	Comments
		Length	Width			Length	Width										
1	238.85N	95	80	15-20 cm	.04269	35	9.8g	1	8.4g	26	1605	6	5	148	237+	P	A total of 851 g of unseparated material consisting primarily of small chert flakes, burnt bone, and charred nutshell is present.
	33.97W																
		80	71	1.13		9.5g				92.3g	449.6g	15.2g	30.7g	858.4g	26.2g		
2	236.89N	95	80	5-10 cm	.04302	22	11.3g	2	0	8	574	1	3	15	16	P	A total of 224.8 grams of unseparated material is present.
	33.52W																
						9.3g				15.2g	127.9g	1.4g	12.7g	58.2g	2.7g		
3	239.2N	75	70	15 cm	.05956	27	21.8g	2	4.2g	10	536	0	8	5	51	P	A total of 532 grams of unseparated material is present.
	33.62W																
						20.9g				20.2g	208.4g	0	97.2g	9.0g	9.7g		
4	192.04N	70	55	7-8 cm	.01233	13	17.3g	0	0	1	46	0	3	0	24	P	A total of 99 grams of unsorted material is present.
	21.48W																
						0				1.4g	8.7g	0	20.6g	0	1.9g		

Within the .2 hectare area that had the plowzone removed, four Late Woodland pit features (based on the presence of Late Woodland ceramic material) were identified and excavated. Features 1, 2 and 3 were located within two meters of each other (Plate 1). Feature 4 was isolated from this group by a distance of ca. 48.5 meters. The volume of the features (Table 2) is relatively low and yet debris density is relatively high, though variable. Feature 1 which had only the third highest volume of the four features, contained the highest amount of material (Table 2). A majority of the material consists of small tertiary chert flakes, ceramic sherds, burnt bone, and charred nutshells. A substantial portion of this material was recovered from the flotation samples. The matrix was separated from archeological remains using chemical flotation (Wiant, CAA n.d.). The archeological material was separated into material class categories (i.e., flakes, sherds, etc.). The quantity of unseparated material is reported in the comments column of Table 2. Therefore the counts and weights reported should only be considered as low estimates of the feature contents.

Artifacts

Ceramics

A total of one hundred thirty-eight (153.6 gr) ceramic sherds were recovered during the 1982 fieldwork at the Fox Pup site. A vast majority of this assemblage consisted of small indistinct body sherds. Given both the quantity and quality of the ceramic material, it is possible to make only general statements about the assemblage.

One hundred thirty-seven sherds are classified as body sherds. The remaining sherd represents a small portion of a heavily weathered and

undecorated lip/rim (lip - 4.1 mm; rim - 4.1 mm) portion of a vessel. The body sherds had either cordmarked or smoothed over cordmark surface treatment. Most of the body sherds were also heavily weathered. This condition resulted in masking the cord marked surface treatment preventing a more detailed analysis of surface treatment techniques. Surface treatment is restricted to the exterior surface. The sherds were orange brown to gray brown in color. Dark areas noted on several of the surfaces apparently resulted from direct exposure to fire as opposed to firing clouds. Tempering material is predominantly grit with an occasional piece of chert. Sherds were not large enough to permit estimation of vessel shape or size. It is also not possible to determine the number of vessels represented.

The characteristics described above are similar to those described by Munson and Harn (1971:9-10) in their description of Early and Late Bluff ceramics. However, the condition of the Fox Pup ceramics prevents a confident assignment as Early or Late Bluff. Instead, the material is classified as Late Woodland, type indeterminate.

Retouched Lithics

The quantity of retouched tools from the Fox Pup site is small (13) and consists totally of bifaces. In general, retouched tools were broken and in the latter stages of manufacture. They share a number of characteristics which include: a) relatively thin cross-section, b) shallow flake scars, and c) edges exhibit increase thinning and are straight rather than sinuous.

A number of conclusions can be drawn based on these data. Since the pieces are broken it could be concluded that they had been discarded as

their use life was exhausted. It is also interesting to note the lack of hammerstones and bifaces representing the early stages of reduction. Based on these data, the conclusion drawn above which suggested tool maintenance, appears to be supported. No groundstone tools, usually associated with food preparation, were found. Except for a single case, a biface found during the surface pick-up made of Chouteau chert, all tools were manufactured from locally available Burlington chert.

Projectile Points

Three projectile points (Plate II) were recovered, two during the surface collection and a third during plowzone excavations in Unit 1. During the initial surface collection a Middle Woodland projectile point was found and has been identified as a Gibson point (Perino 1968). A second projectile point was found on the site surface during blading and is identified as the lower three-fourths of a Mississippian Madison triangle (Perino 1968). This specimen is similar to two points recovered on the Burlingame Sandridge (Hassen and Batura 1983). The third projectile point was recovered from the plowzone during the excavation of Unit 1. It is small, has an expanding stem and straight base and is classified as a Koster Corner Notch (Perino 1971).

Debitage

In a multicomponent site such as Fox Pup, where spatial segregation between the components does not exist, or has not been established, this material class will be considered as a single unit. It is possible that this approach

will produce a composite of the various occupations and could result in a misleading interpretation. Such constraints will not necessarily apply to lithic debitage excavated from features. Feature material provides an opportunity to conduct analysis where there is a higher degree of contextual control.

Certain interpretations can be made about the lithic debitage assemblage as a whole. Out of a total of 3,288 flakes (Table 1), 3,211 or 98% have been classified as tertiary flakes. The unsorted material from the feature flotation samples contain large numbers of small tertiary/percussion flakes which have not been included in the above counts. Primary (.15%) and secondary (2%) flakes are scarce by comparison. This scarcity of primary and secondary flakes would seem to support a conclusion that the initial stages of tool manufacturing were not conducted at the site. The high number of tertiary flakes suggests that the predominate activity related to tool manufacture centered on the maintenance of tools. Similar conclusions can be drawn when the lithic debitage assemblage from the features, where mixing is not a problem, is examined.

Fauna and Flora

Contract limitations provide only for an assessment of the preservation and integrity of recovered fauna and flora. Both burnt bone and charred nutshell were present in all four features. To date this material has not been identified. The presence of this material in previously undisturbed features greatly enhances the potential for analyzing uncontaminated subsistence remains.

Summary and Conclusions

As discussed earlier a primary goal of the CAA has been to document and explain changes in settlement and subsistence strategies within the lower Illinois River drainage. The contributions of information obtained from the Fox Pup site toward this goal and others related to National Register eligibility are evaluated below.

1) Site limits. The Fox Pup site, as it is currently defined on the basis of the distribution of surface archeological material, is located on the banks of a natural levee. The majority of the surface material was located on the east facing slope of the western natural levee adjacent to an abandoned river channel. The results of the limited test excavations do not support the contention that the distribution of surface materials accurately reflects the limits of the site. Unit 1 was located on the slope of the levee in an area of high surface debris density. In this unit, cultural material was restricted to the plowzone. Unit 2 was located on the crest of the same natural levee in an area of low surface debris density. In this unit, cultural material continued to a depth of approximately 45 cm below the base of the plowzone. The densest concentration of material was from the 02 level (15- 30 cm below the base of the plowzone). The results indicate that determining site limits along natural levees based on surface material is tenuous at best.

2) Degree of preservation. As a result of the limited blading four partially undisturbed pit features were located. Material from these features, including botanical and faunal material, appears to be well preserved. Therefore the potential for subsistence related studies is present.

3) Assessing the integrity of the archeological material. The presence of four pit features enhances the potential for studying in situ, undisturbed cultural remains. Questions regarding artifact discard, site organization and lithic edge wear studies are possible if additional sub-plowzone features are present.

4) Determining chronological context. Based on the presence of cultural material that can be assigned to a particular cultural period it has been determined that Fox Pup is a multicomponent site. A majority of the cultural material including material from the four features has been assigned to the Late Woodland period. This assignment is based on the presence of both diagnostic lithic (i.e., projectile points) and ceramic artifacts. A minor Middle Woodland and Mississippian presence has also been designated. Based on the presence of a single projectile point from each period, these artifacts probably resulted from hunting loss.

5) Determining site significance.

a) Increase our understanding of limited activity sites on natural levees. Based on the results of the Phase I survey, Fox Pup was classified as a short occupation limited activity site. This assessment was primarily based on the limited diversity and low quantity of archeological material observed on the surface during the survey. The artifacts recovered and features excavated indicate the range of activities are more extensive than originally suspected. The presence of broken bifacial tools, predominately tertiary flakes which were in the latter stages of manufacture, ceramics, pit features, and botanical and faunal remains would tend to suggest a wider range of activities and longer period of occupation than

originally suspected. The presence of at least partially undisturbed features increases the potential for more extensive studies related to site activity at Fox Pup.

b) Improve our understanding of the utilization of regional landscape during specific cultural periods. Middle Woodland, Late Woodland and Mississippian artifacts have been identified at the Fox Pup site. Minimally then it can be inferred that natural levees were being utilized during both these time periods. As additional small sites are excavated along the natural levees, the results can be compared with the assemblages and facilities reported for larger, more complex sites situated in the floodplain, bluffbase and uplands.

c) Improve our understanding on the relationship between surface and buried cultural components on the natural levee. Results of the Phase I survey and systematic surface collection indicated that the site was located on the east-facing slope of the natural levee. The boundaries of the site have to be modified as a result of the test excavation. The probability that buried components may exist on the crest of the levee has been demonstrated. Therefore, this study has shown that the surface distribution may not accurately reflect the true limits of an archeological site on a natural levee.

d) Refine existing models regarding Holocene floodplain evolution in the lower Illinois River valley. Previous studies (Hajic 1981a,b) have proposed that the probability of encountering buried archeological

components on the natural levee is high. Excavations at the Fox Pup site support this hypothesis at least on the crest of the natural levee. In addition, the presence of diagnostic Middle and Late Woodland artifacts along the crest of the natural levee provides an indication for the antiquity of this landform.

e) Opportunity to study small lithic assemblages. The utility of analyzing small lithic assemblages from limited activity sites has been recently proposed (Hassen, in press). This study was based on material collected during the test excavation at a small upland site in Jersey County, Illinois. Use-wear analysis on the undisturbed lithic assemblage from Fox Pup features could be an important complement to the earlier study.

The recovery of a portion of the lithic assemblage from historically undisturbed pit features provides an opportunity for functional analyses based on an examination of edge damage. If additional features are present at the site their excavation could potentially increase the lithic assemblage and thus address Late Woodland lithic procurement strategy. With a larger sample it would be possible to examine the raw material used and to correlate the results with specific tool categories.

Recommendations

The results of the limited blading during the Phase Two investigations succeeded in locating undisturbed portions of four Late Woodland pit features. Both charcoal and bone are well preserved in these features. In addition, ceramic and lithic materials were also recovered. Based on the presence of these Late Woodland features and given the potential for recovering well preserved subsistence remains, it is recommended that the Fox Pup site be nominated onto the National Register of Historic Places. To date, Late Woodland subsistence remains from sites located on the natural levees along the eastern floodplain of the lower Illinois River have not been systematically excavated and analyzed. The subsistence information obtained from the Fox Pup site will contribute toward an understanding of 1) Late Woodland subsistence strategies, 2) spatial diversity in Late Woodland settlement, 3) changes in subsistence and settlement through time. For these reasons an effort should be made to design future levee construction and maintenance so that the Fox Pup site is avoided. If it is impossible to avoid the Fox Pup site, it is recommended that prior to disturbing the site, the surface should be bladed to determine if other subplowzone features are present. This should include areas east of the abandoned river channel. Even though there was a lack of surface material and no excavations were conducted, the absence of a strong correlation between surface and subsurface material and features on the west side should illustrate the potential for subplowzone features on the east side. Indeed this is true for most aggrading surfaces on the floodplain.

If feature density outside of the area bladed in 1982 reflects density

within that area, the number of features which would be located during the more extensive blading would be low. These features could be easily removed or sampled prior to the extensive disturbance that would occur as a result of borrow activities.

PART III

INVESTIGATIONS AT THE GRAVITY SITE (11-Ge-142)

Physical Setting

The Gravity site is located on the floodplain of the Illinois River (S $\frac{1}{2}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 31, T9N, Range 13W) (Figure 8). The floodplain is approximately 4.8 km wide at this point and is bounded by bluff forming Mississippian limestone (Willman et al. 1975). The contact of the limestone bluffs and floodplain is mantled by alluvial fans and alluvial-colluvial hillslopes. To the east of the floodplain lies the moderately dissected Illinoian till plains overlain by Wisconsinan Roxana silt and Peoria loess. West of the Illinois River lies the highly dissected unglaciated uplands of Calhoun County (Willman and Frye 1970). On the floodplain, the canalized Macoupin Creek emerges from the bluffs to the east and flows westward converging with the Illinois River immediately to the northwest of the site (Figure 8).

The natural environment in the vicinity of the site is represented by subtle topography of floodplain landforms such as natural levees and back-water lakes. Immediately to the west of the site lies Macoupin Slough. This slough is oriented north/south and is choked off by the artificial levee of the Illinois River and the canalized Macoupin Creek. Approximately 520 meters south and extending an additional 605 meters southeast of the site lies the low floodbasin surface depression of the old bed of Stiles Swamp. The old channel of Macoupin Creek lies between 915 to 1,125 meters to the east as it meanders southward across the floodplain. The site is situated on a surface only slightly higher (.61 to .91 meters) than the land occupied

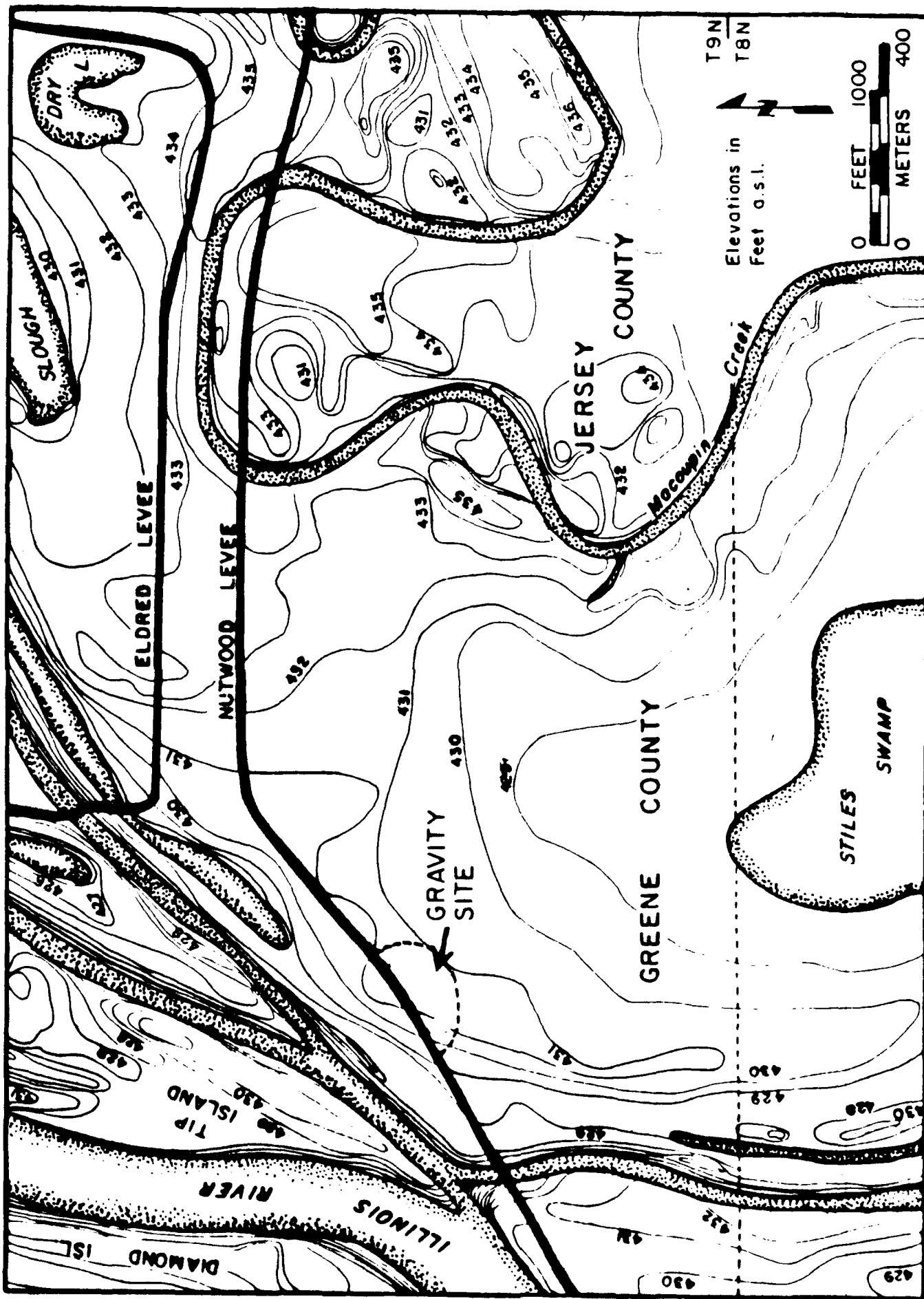


Figure 8. Location of Gravity Site.

by the water bodies that surround the site. This surface is probably higher than the surrounding areas because it has escaped the scarring erosional activity of the previous channels that once occupied the sloughs and Macoupin Creek and is in fact a constructional surface associated with natural levee formation.

The ground surface of the site is relatively flat to the eastern edge of the site then dips toward the western portion of the site to a lower elevation (Figure 8). This gentle dip toward the west is probably a result of fluvial activity which occurred when the sloughs were actually active river channels. The soil type present at the site is a grayish brown silty clay loam on the eastern edge of the site and very dark grayish brown silty clay loam to silty clay in the west.

Similar to the Fox Pup site, the vegetation in the area of the Gravity site has been greatly altered since presettlement days. The construction of the Nutwood levee had a significant effect on the vegetation and made it possible to cultivate much of the floodplain primarily by preventing the almost annual spring floods. U.S. Government Land Surveys prepared in the early 1800s were used to reconstruct the vegetation patterns of the region just prior to Euroamerican settlement. The vegetation summary presented in Part II for the Fox Pup site is equally relevant for the presettlement vegetation at the Gravity site (Figure 4).

Organization of Fieldwork and Laboratory Analysis

Fieldwork

Fieldwork was conducted in three stages.

1) Systematic Surface Collection

The results of the Phase I survey had been inconclusive because of only fair surface visibility. The first task was to determine site boundaries based on the distribution of surface material.

Fieldwork began at the Gravity site in June 1982. At that time the site was under cultivation. Soybeans planted earlier that spring were up several centimeters by this time. The field was planted using a method called "drilling". This method eliminates rows and the individual plants are placed closer together. This method can result in a much higher yield than normal, however, there is at least one major drawback when archeological investigations are attempted under such conditions. The lack of unplanted rows prevented cultivation once the planting had been completed. Therefore, by the time the archeological investigations were scheduled to begin, the beans were up several centimeters and the surface soil had become compacted. Both of these conditions combined to produce conditions that were not ideal for surface collection. Surface visibility at this time can only be described as fair. It should also be noted that at the time of the original survey the previous year, the field conditions were no better. At that time no diagnostic materials were located and the area of surface scatter was not established with any certainty.

The field was walked at intervals of approximately 5 meters and surveyor pin flags were used to mark the location of all cultural material. Similar to the Fox Pup site, this method was used to determine if artifact clustering patterns could be observed. As discussed below, three areas were defined based on the distribution patterns that were observed after completion of the

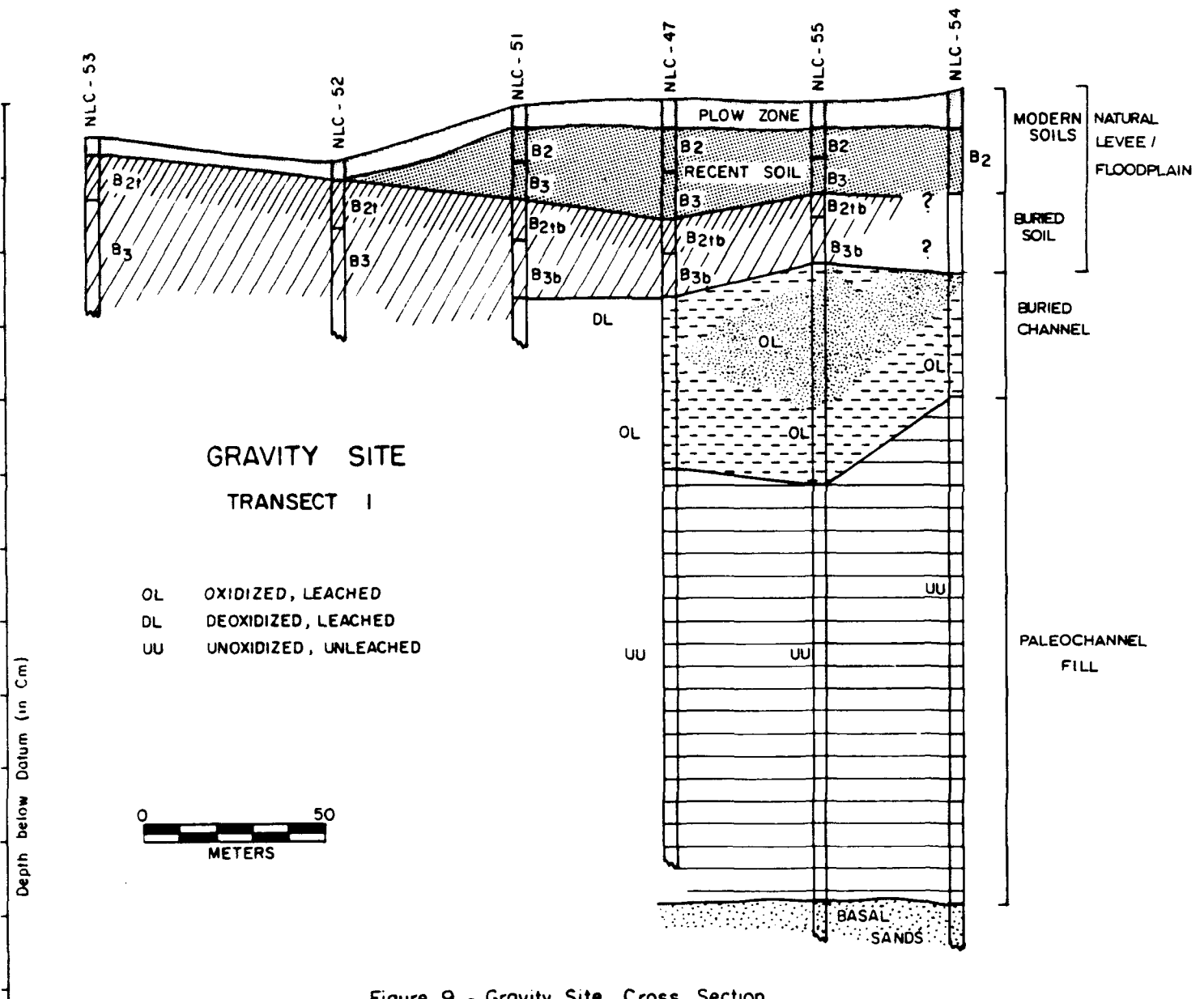
systematic surface pick up. Again similar to the Fox Pup site, the low density of surface material negated the need to do a gridded pick. Each of the three areas were collected as individual units.

2) Geomorphology

Eight soil/sediment cores were removed from the site using the trailer mounted Giddings soil probe (see section in Part II for description of this process). A transect of six core holes was located along an east/west axis of the site to trace a buried soil found during hand excavations and to develop a clear understanding of the subsurface alluvial sediments (see Figure 9). In addition to this transect, two additional core holes were placed to the southeast of the transect. This was to check for horizontal continuity of the sediments and a paleosol. Core holes were taken to a maximum depth of 10.5 m to the base of paleochannel fill deposits (Hajic 1981c) or until the sediments beneath the buried soil were reached.

The soil cores were described using the U.S.D.A. soil terminology (Soil Survey staff 1975). Using the core descriptions a stratigraphic profile showing the different sedimentological units at the site was prepared (Figure 9).

In addition to the information derived through the soil cores, profiles exposed during hand excavations were checked to assure continuity of the sediments in the surrounding area. No mechanical analysis was conducted on the samples removed from the site. Aerial photographs and topographic maps were used to define surficial features in the surrounding area of the site.



Test Excavations

After completing the systematic surface collection three areas were defined at the Gravity site. These areas had been established on the basis of the clustering pattern observed in the distribution of surface material. It was decided that three 1 x 2 meter units should be excavated, one in each of the cluster areas.

During the excavation of these units differences were noted between Test Unit 1 and Units 2 and 3. These differences were related to vertical distribution and density of archeological material. Two additional 1 x 2 meter test units were excavated to confirm these trends.

Laboratory procedures were identical to those described for Fox Pup (page 22).

Results

Geomorphology and Stratigraphy

As evidenced by the Woermann (1904) one-foot contour maps and the 1944 War Department maps with two-foot contour intervals, the Gravity site is situated on a surface created by natural levee and floodbasin sedimentation. These previous depositional environments include: first, a natural levee building channel of the Illinois River which is represented on the Woermann maps as the Macoupin Slough; second, another previous channel of the Illinois River which is referred to as Miller's Slough on the Woermann maps. Actually, the Macoupin and Miller's Sloughs are related and should be considered contemporaneous channel reaches of the Illinois River. These abandoned channels are most likely responsible for the present local geomorphological configuration. A third active erosional/depositional agent to be considered would be Macoupin Creek. Finally, a fourth agent would be the present Illinois River channel as it would have deposited sediments during flood stages.

In general, the geomorphic surface on which the site is located probably developed from depositional activity of a previous channel of the Illinois River and a channel of Macoupin Creek. A previous channel of the river encompasses the site area in its concave oxbow from the north and around to the west of the site. This channel was probably responsible for depositing overbank sediments in which a recognizable paleosol developed. Good evidence of natural levee building by the previous channel is illustrated by the characteristics of the soils which were formed in and on the deposits. For example, the ancient surface marked by a buried soil is representative of the backslope of a natural levee bank formed by the old channel. As seen in Figure 10, the early soil dips from west to east as

it becomes buried below more recent sediments and the modern soil in the eastern portion of the site. This paleosol development indicates that the natural levee was stable long enough for a soil to form before buried by more recent sediments.

The sediments in which the modern soil is formed were probably deposited as additional overbank deposits by the previous channel of the river during flood periods or as overbank deposits of Macoupin Creek. A relatively abrupt drop in the slope of these sediments which expose the buried soil on the western edge of the site (Figure 10 between Core 51 and 52) represents a channel margin.

Five sediment stratigraphic units were recognized at the Gravity site. These include the following units from the oldest to the youngest: 1) unoxidized, unleached dark gray silts and clayey silts; 2) oxidized, leached dark grayish brown silty clays; 3) oxidized, leached medium grained yellowish brown sands; 4) deoxidized, leached grayish brown laminated silts and clays; 5) oxidized, leached silty clays and silty clay loams. In addition, two soil stratigraphic units are recognized: 1) a buried soil is developed in oxidized and deoxidized leached silty clays and silty clay loams at the eastern portion of the site and slopes upward to become the surface soil at the western end of the site; 2) the modern soil which, in part, is developed in sediments that bury the above unit and developed in an oxidized to deoxidized very dark grayish brown to grayish brown silty clay to silty clay loam.

The five stratigraphic units discussed in this section can be grouped into three somewhat broader units which represent three separate geomorphological events. These units would include: 1) paleochannel fill similar

to that recognized by Hajic (1981a, 1981b); 2) a buried Macoupin Creek or Illinois River channel which includes the dark grayish brown silty clay, the medium grained yellowish brown sands, and the laminated silts and clays; and 3) recent natural levee/floodplain deposits which include the sediments that have what will be referred to as buried and modern soils developed in them.

For the purpose of the report, only the relatively recent natural levee floodplain deposits will be dealt with in detail because they are the only deposits which have the potential for containing archeological material.

Paleochannel Fill Deposits

The paleochannel fill deposits, lying in the lowest stratigraphic position, are typical of those described by Hajic (1981b, 1981c). These deposits lie above the sands in which the Giddings soil probe would normally refuse and are characterized by massive unoxidized, unleached, greenish gray silty clays containing very few to moderate amounts of shells and carbonized or uncarbonized organic matter. The upper boundary of these deposits are found between 4.20 and 5.10 meters below the ground surface at the site. The upper boundary of these deposits shows an abrupt contact with the oxidized, leached, dark grayish brown silty clay.

Dark Grayish Brown Silty Clays

The dark grayish brown silty clays are characterized by a layer of massive, oxidized, leached, silty clays which are interbedded with some lenses of clays and sandy clays (see Core 55). This unit probably represents the base of a previous channel of Macoupin Creek which had been cut into the paleochannel fill. These deposits are overlain by medium grained

yellowish brown channel sands so that the upper boundary is quite abrupt. The thickness of this deposit is approximately one meter.

Fine Yellowish Brown Sands

These deposits probably represent the channel fill of a buried meander channel of Macoupin Creek. They are characterized by an oxidized, leached, medium grained yellowish brown sand with no shells and a thickness that ranges from 20 cm (see Core 54) to two meters (see Core 55).

Grayish Brown Laminated Silts and Clays

The medium grained yellowish brown sands are partially overlain by deoxidized leached grayish brown laminated silts and clays. These laminants have a maximum thickness of 30 cm in a depression within the sands that lie below. These laminants are probably representative of silts and clays which were washed into depressions in the channel sands after the abandonment of the now buried Macoupin Creek channel. These deposits only partially overlie the sands and are restricted to a depression at the western portion of the site. The upper and lower boundaries of these laminants are abrupt (Core 54).

Silty Clays and Silty Clay Loams

Above the sediments related to the buried channel lie silty clays and silty clay loams of natural levee/floodplain deposited origin (Hajic 1981a). The two distinct soils are represented in these deposits: first, a buried soil, characterized by a well developed B horizon that dips from west to east, and second, the modern soil, which exhibits weak to moderate development. It is developed in sediments that have buried the well developed B horizon of the earlier soil.

Buried Soil Horizon

The buried soil is characterized by an oxidized, moderate, medium subangular to angular blocky, dark gray (10YR3/1) to very dark grayish brown (10YR3/2) silty clay loam to silty clay in the A and B horizons which is developed down to a weak to moderate fine subangular blocky to massive deoxidized grayish brown (2.5Y5/2) to light brownish gray (2.5Y6/2) silty clays to silty clay loam of the B3 and C horizons. The boundaries between the B and C horizons are gradual and are expressed in weak subangular blocky ped structures with Fe mottles which grades down to a massive structure of the C horizon with fewer Fe mottles than in the B horizon.

The buried soil which is found at the ground surface in the western portion of the site becomes buried beneath the recent soil in the eastern end of the site (Figure 9). Where buried, the B horizon is characterized by a deoxidized grayish brown (2.5Y5/2) moderate to strong medium subangular to angular blocky silty clay with faint clay skins on the ped faces. The top of this buried soil is easily distinguished because the massive structure of the C horizon of the modern soil simply peels off of the well structured, more clayey buried B horizon.

This buried soil seems to have developed on a natural levee depositional system of the old channel for the Illinois River which is now seen on Woermann (1904) maps as the Macoupin slough. Evidence for this is the slope of the buried soil relative to the abandoned channel, the relationship of the sediments and soils to the abandoned channel, and the similarity of the sediments to other natural levee deposits.

The modern soil is characterized by a very dark grayish brown (10YR3/2) to light brownish gray (2.5Y6/2) silty clay loam to silty clay. The upper

horizons (A and B) of this soil are oxidized and grade down to a deoxidized light brownish gray C horizon. The structure of this soil ranges from moderate, medium subangular blocky in the A and B horizons to a massive C horizon. This soil overlies the buried B horizon of the early soil in the eastern portion of the site and ranges in thickness from approximately one to two meters. In some places, certainly the buried B horizon has been pedogenically altered from this recent soil overlying it.

Surface Collection

The systematic surface collection was used to locate and recover surface archeological material at the site. In addition, surveyor pinflags were used as an aid in determining if distributional patterns (i.e. clusters of artifacts) were present. Three areas based on such distributional patterns, were designated at that time. Cultural material from each of these units was collected as separate units. A gridded pick up was not employed because of the low density of surface material and it was determined that results would not be affected.

As indicated above, the density of surface material was low (Table 3). Only two tertiary flakes and a Middle Woodland Gibson/Norton projectile point were found in Area 1. In Area 2 a blocky chert fragment and 16 tertiary flakes were recovered. Area 3 had the widest range in artifact diversity. Material from this area included: one ceramic sherd (Black Sand phase, 300-150 B.C.), one broken type-indeterminate projectile point, one biface, one mano, and nine tertiary flakes. Walkover 4 was not limited to any specific area. Included in this collection is a Middle Woodland Gibson projectile point.

Results of the Phase I survey the previous year indicated a short

Table 3: Cultural Material - Gravity Site.

Provenience	Ceramic	Blocky frag	Bifacial thin- ning flake	Primary flake	Secondary flake	Tertiary flake	Uniface	Biface	Projectile point	Groundstone (mano)	Bone	Limestone
Walkover Area 1						2			1			
2		1				16						
3	1					9		1	1	1		
4							1	1	1			
00						7						
Square 1 01	20	4			2	39	1	1				
02	3					16						
03	2					4						
Square 2 00	8					3						
01												
02												
Square 3 00	7					1						
01						1						
02												
03												
04												
Square 4 00		1				14						
01	2				2	22	2	2				
02						6						
03						8						
SQ 5 00	13					13						
01												
TOTAL	56	6			4	161	4	5	3	1		

occupation limited activity site. After the completion of the systematic surface collection, previous interpretations were in need of some modification. At least two components have been identified from the material recovered during the systematic surface collection. Two projectile points were identified as Gibson/Norton and assigned to the Middle Woodland period. Three hammerstones recovered during the Phase I survey would indicate some type of lithic tool manufacturing was being done. In addition the presence of the groundstone mano, usually associated with food preparation, would indicate a wider range of activities than previously thought.

Excavation Units

Initially three 1 x 2 meter test units were opened at the site. The location of these units was selected on the basis of the results of the controlled surface collection and the preliminary geomorphological investigations. After completing these three test units a pattern of artifact distribution began to emerge. In Units 2 and 3, cultural material was restricted to the plowzone while in Unit 1, cultural debris continued to a depth of approximately .5 meters. It could not be determined if cultural material was present below .5 meters in Unit 1 as the water table was reached at that point and excavations had to be terminated. In addition, the Unit 1 plowzone level contained less cultural material than either the 01 or 02 level, the two levels immediately below the plowzone. Finally, the artifact density was significantly higher in unit 1 than in either Units 2 or 3. This is exactly the opposite of what had been expected after completion of the controlled surface collection. The highest material densities were located in the areas of Units 2 and 3. Two additional units were then excavated to

confirm these patterns. Unit 4 was located near Unit 1 and Unit 5 was located near Unit 3 (Figure 10).

Test Unit 1 - 110S120W

Unit 1 was excavated to a depth of 48 cm below ground surface. The plowzone was excavated as a single unit (i.e., 00 level) which was approximately 18 cm in depth. The remaining three arbitrary levels were approximately 10 cm in depth (levels 01-03). Cultural material was present in all four levels, however, the unit was terminated at the base of the 03 level because the water table was reached.

Unit 1 was terminated at the top of the B-2 horizon which is discussed in detail in the geomorphological section to follow. Material from the unit consisted of 74 non-diagnostic lithic flakes and blocky fragments and 25 Early Woodland Black Sand Phase ceramic sherds. Cultural material was concentrated in the 01 and 02 levels in a well developed B horizon soil.

Test Unit 2 - 40S30W

Unit 2 was excavated to a depth of approximately 66 cm below the ground surface. Similar to Unit 1, the plowzone was excavated as a single unit which was 35 cm in depth. Two additional arbitrary 15 cm levels followed. In Unit 2, levels below the plowzone were sterile of cultural material. Material from the plowzone was limited to eight Early Woodland ceramic sherds and three non-diagnostic lithic tertiary flakes.

Test Unit 3 - 80S30W

Unit 3 was excavated to a depth of 130 cm. The 00 level (30 cm) consisted of the plowzone. Four additional arbitrary levels of varying depth

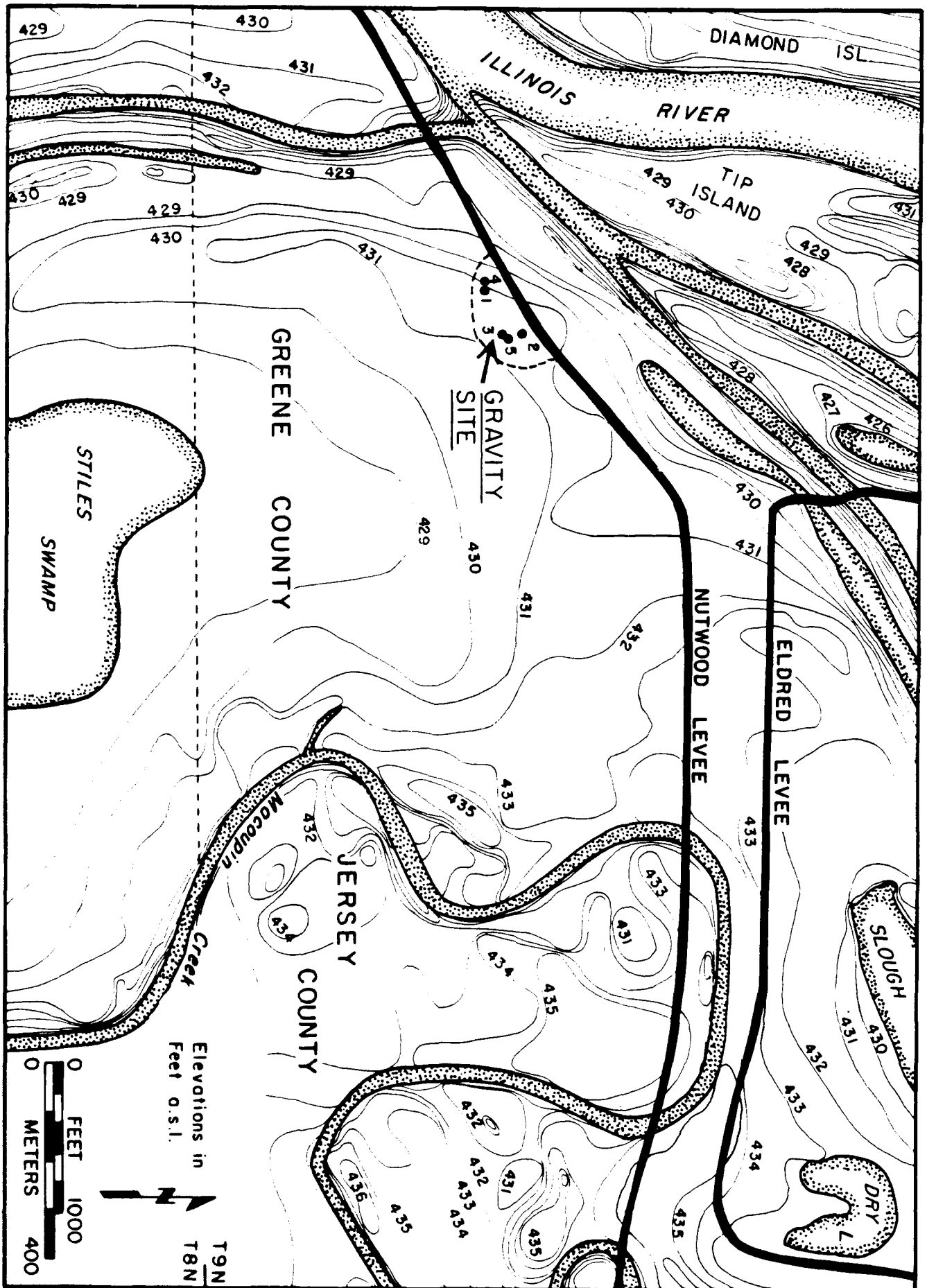


Figure 10 - Location of Test Units at Gravity Site

were then excavated. Except for a single tertiary flake that was found at the very top of the B horizon (i.e., top of the 01 level), all cultural material was located in the plowzone. Material from the plowzone was limited to seven Early Woodland ceramic sherds and a single tertiary flake.

Test Unit 4 - 110S124W

Unit 4 was excavated to a depth of approximately 50 cm in three levels. A debris distribution pattern similar to Unit 2 was observed. Material was similar in both type and density to Unit 1 (Table 2). Cultural material included two ceramic Black Sand phase sherds and 69 pieces of lithic debris including two unifacially and two bifacially worked items. The highest debris density was again in the 01 level in well developed B horizon soil.

Test Unit 5 - 74S28W

Unit 5 was excavated to a depth of ca. 45 cm below ground surface in two levels. The distribution and density of cultural material was similar to what had been observed in Units 2 and 3. Cultural material was limited to 13 ceramic Black Sand phase sherds and 13 tertiary flakes. Cultural material was restricted to the plowzone level (00 level, Table 3).

Artifacts

Ceramics

Fifty-six ceramic sherds were recovered from the Gravity site during the 1982 test excavations. Of the total, all of the sherds except one were found during the test excavations. The remaining sherd was found during the controlled surface collection. This almost complete lack of ceramic material on the surface should not be considered significant given surface conditions

at the time of the fieldwork. In addition to the low surface visibility that resulted from crop cover, the presence of ceramic material may have been masked by the dry and compact condition of the field.

Ceramic material from this site consisted primarily of small and relatively indistinct body sherds. These sherds are orange to orange/brown in color and have a large amount of sand tempering. Included in the tempering material are occasional pieces of chert. The surface treatment is either plain or heavily weathered cordmarking on a majority of the sherds. On the remaining sherds, smoothed over cordmarking was observed. Only those sherds have any surface decoration. In all three cases, this decoration is restricted to small punctates on the exterior surface of the vessel. These punctates appear to have been made with a small circular tipped object. The angle at which the object was held relative to the surface of the vessel varied. In one case this object was apparently held near perpendicular to the surface resulting in punctates that were circular in shape. In the remaining cases, the punctates are oblong in shape indicating that the object was held at an acute angle to the vessel surface.

Based on the characteristics described above, the Gravity site ceramics have been tentatively classified as being a decorated variety of Liverpool ware, a type of ceramic which dates to the later portions of the Early Woodland period in the lower Illinois River valley (Morgan 1981). Probably the most prominent decorative unit of this ceramic type is a variation of geometric linear and parallel linear incised designs. The presence of punctates has been previously noted though only as a minor decorative unit (Griffin 1952:100) or in conjunction with incised lines (Munson and Harn 1971:62). Analysis of Early Woodland Black Sand ceramics from the Bushmeyer

site located in the Mississippi River valley of westcentral Illinois (Morgan 1981) demonstrated that punctating appeared more frequently in that assemblage (58%). It was also observed that in only 20% of these cases were incised lines found in conjunction with the punctating. Material from the Gravity site appears to possess similar characteristics with the Bushmeyer site material. Not a single case of incised line decoration was observed in the Gravity material, however, this may be a reflection of the small sample size. Because of this similarity between these two assemblages it is possible to classify the Gravity ceramics as Early Woodland Black Sand phase.

Retouched Lithics

Both the debitage and retouched tool evidence from the Fox Pup has been interpreted as suggesting that activities related to tool manufacture were restricted to maintenance of tools. Retouched tools were broken and in the latter stages of manufacture. It appears that these tools had been discarded as their use life was exhausted. The debitage analysis from Gravity suggests that such a restricted range of activities was not the case here. The presence of blocky chert fragments suggest that earlier stages of reduction or production of expedient tools were occurring at Gravity. This interpretation is supported by the evidence obtained through the analysis of the retouched tools.

A total of thirteen tools were recovered during the 1982 study. Three of these tools have been identified as projectile points. All three are in the later manufacturing stages and broken, again suggesting that they may have been discarded as their use life became exhausted. Five have been classified as bifaces. Unlike the Fox Pup site, the Gravity tools were not

all in the later stages of manufacture. At least two were in the early stages of manufacture and exhibited only minimal retouch. Four of the remaining five tools have been classified as unifaces with only minimal retouch. These data would suggest a wider range of tool making activities including:

1) early stage of biface manufacture, 2) later stages and maintenance of bifacial tools, and 3) manufacture of expedient tools.

The remaining tool has been classified as a pitted mano. Such an item, usually associated with food preparation, would suggest yet another activity.

Projectile Points

Three projectile points were recovered from the surface during the 1982 fieldwork. Two specimens can be identified. The third projectile point is too fragmentary to permit identification. The two identified projectile points are classified as Middle Woodland, Gibson (Perino 1968). The first has a portion of the base missing below the notching and is manufactured from good quality Burlington chert (Plate II). The tip of the second point is missing and has been reworked along the break. It is manufactured from good quality Burlington chert and may have been heat treated as illustrated by its luster appearance.

Lithic Debitage

The limitations of a lithic debitage analysis on material from a multiple occupation site at which spatial segregations between the occupations does not exist or has not been established is discussed above. At the Fox Pup site three limitations were significantly reduced due to a large amount of undisturbed material located in the four pit features that have been assigned to the Late Woodland period. This was not the case at the

Gravity and therefore the following interpretation is more tentative.

A total of 165 chert flakes were recovered during the 1982 study. Of the total, 161 or 97.6% were classified as tertiary flakes while the remaining four or 3.4% were classified as secondary flakes. These percentages mirror those obtained at the Fox Pup site and a similar interpretation can be prepared. Based on the distribution of flake categories it would appear that tool maintenance was occurring. The presence of the six blocky fragments would also suggest that earlier stages of tool reduction was also occurring.

Summary and Conclusions

Earlier it was discussed how this study might contribute to the long term research interests developed by the Center for American Archeology (pp.6-10). The goal of that research is to document and explain changes in the settlement and subsistences patterning within the lower Illinois River drainage. The contributions of this present study toward this goal and the determination of eligibility for the Gravity site for inclusion on the National Register are evaluated and discussed below.

1) Determining accurate site boundaries. Site boundaries are presently based on the distribution of surface archeological material. This area corresponds roughly to the triangular shaped portion of the field between Test Units 1, 2, and 3 (ca. 1800 square meters). Results of the limited test excavations indicated that buried deposits were present at least in the western portion of the site (i.e., Units 1 and 4) and therefore surface distributions may not be an accurate representation of site boundaries.

2) Degree of preservation. Archeological material recovered during this study consisted primarily of lithic debitage and tools. This material class cannot be considered a good indication of the degree of preservation. The fifty-six ceramic sherds were in a poor state of preservation and highly fragmentary. Again this material was found in a disturbed context and therefore may not be a good indicator of the degree of preservation within any subplowzone feature. No comprehensive statement is possible as a result of this study.

3) Assessing the integrity of archeological material. A limited amount of archeological material (Units 1 and 4) was recovered from well

developed B horizons. Unlike the Fox Pup site, no features were located at the Gravity site. This should not be used, however, to suggest that features do not exist. Blading of the plowzone was not done at the Gravity site, the technique used at Fox Pup in locating the features at that site. Blading was not done because of the complex subsurface stratigraphy that exists at Gravity. It was determined that blading should not be done until this stratigraphy is better understood. Therefore, at this time there is no evidence to suggest that either pit feature and/or undisturbed middens exist at this site.

4) Determine chronological context. Two cultural components have been identified at the Gravity site. Similar to the Fox Pup site, a Middle Woodland occupation exists. This identification was based on the recovery of two projectile points assigned to the Middle Woodland period (i.e., Gibson/Norton points). These probably resulted from hunting loss. In addition, an Early Woodland component, based on the presence of Black Sand phase Early Woodland ceramics, has been suggested.

5) Determining site significance.

a) Increase our understanding of limited activity sites on natural levees. Based on the results of the survey conducted the previous summer the Gravity site was classified as a short occupation limited activity site. This assessment was based on a lack of diversity and small quantity of archeological materials observed at the site. Results of this study necessitated that this assessment be modified. The range of activities which occurred at this site appears to be more extensive than originally thought. Activities related to tool manufacture would include:

1) manufacture of bifaces in the initial stages of reduction, 2) maintenance of tools, 3) manufacture of expedient tools, and 4) the discarding of tools whose use life has been exhausted. The presence of a mano would also suggest that some type of food preparation was also occurring. In addition, multiple components have been identified.

b) Improve our understanding of the utilization of the regional landscape during specific cultural periods. Similar to the Fox Pup site, two cultural components have been identified at the Gravity site. At the Fox Pup site there is a Late Woodland and minor Middle Woodland component. At Gravity Early and Middle Woodland components have been identified. It is uncertain, at this time, which of these components represents the major occupation. At this time it is known that this site was occupied during at least two cultural periods and that a range of activities was occurring. Additional fieldwork and laboratory analyses would be necessary either at this site or at others that are similar before meaningful comparisons can be made with other Early and Middle Woodland sites. Such a comparison should focus on differential distribution of sites across the landscape that exhibit varying degrees of assemblage diversity.

c) Improve our understanding of the relationship between surface and buried cultural remains on natural levees. The results of the limited test excavations done during the 1982 field season indicate that buried cultural material are present at least in the western portion of the site. Surface distribution seemed to indicate that the major portion of the site was in the eastern portion of the field. This turned out to have been an erroneous conclusion again based on the results of the test excavations.

Finally the conclusion drawn after the survey about duration of occupation and range of activities needed to be modified as a result of this study. As was the case at Fox Pup, the surface distribution does not appear to be an accurate indication of site limits and complexity when a site is located on a natural levee.

d) Refine existing models regarding Holocene floodplain evolution in the lower Illinois River drainage. Previous studies (Hajic 1981a,b) have suggested that the potential for encountering buried archeological remains on the natural levees is high. Test excavations done during this study have shown that buried cultural deposits exist in a well developed B horizon in the western portion of the site. These results would tend to support the hypothesis discussed above.

The results of the extensive soil coring done at the Gravity site also demonstrates how studies at small limited activity sites can be used in refining existing models on Holocene floodplain evolution. Recent natural levee/floodplain deposits were located at the site. Within and upon these natural levee/floodplain deposits are two separate soil stratigraphic units which are referred to in the text as the buried and modern soils. The buried soil developed in natural levee deposits from an old channel of the Illinois River. This abandoned channel lies to the west of the site and is now referred to as a slough. This soil dips from west to east as it follows the backslope of the natural levee. In the eastern portion of the site it is buried below deposits in which a more recent soil has developed. The modern soil is also developed in natural levee/floodplain sediments. These results, obtained through extensive coring of limited areas of the floodplain,

should be useful in refining existing models on Holocene floodplain evolution, which -- because of the large areas of concern (i.e., lower Illinois River drainage) -- are based on only limited coring.

Unfortunately because of unusually high water tables during this study, it is not possible at this time to determine if cultural material is associated with the buried soil horizon.

e) Opportunity for analysis of small lithic assemblages.

The potential for conducting detailed lithic analysis (i.e., use wear analysis) with the Fox Pup assemblage is high because of the presence of undisturbed deposits from the four Late Woodland features. At present such an opportunity does not exist at the Gravity site.

Recommendations

The high water tables during the 1982 excavations prevented excavations into the buried soil. It was later determined through extensive coring that this soil horizon was at the surface in the extreme western portion of the site, however, time constraints prevented additional excavations at that time. Additional work at the Gravity site should focus on determining if cultural material is associated with this buried soil horizon.

This could probably be accomplished most efficiently by excavating backhoe trenches. Either a continuous backhoe trench or a series of smaller trenches should be excavated to a depth of the base of this buried horizon along an east/west transect across the site. The material could be screened and profiles examined.

Until it has been determined if artifacts are associated with this soil horizon, blading is not warranted. However, if borrow is to be taken from the site blading may become necessary at that time. While a backhoe may be less expensive and more expedient if determining if cultural material is associated with the ancient soil horizon, it is not as effective as blading in determining if features may be present directly below the plowzone. The lack of a strong correlation between surface materials and subsurface pit features at the Fox Pup site should illustrate the possibility of in situ subplowzone material being present in an aggrading floodplain context.

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APPENDIX A

Artifact Description - Fox Pup Site

FOX PUP - TYPE COLLECTION DESCRIPTIONS

<u>Provenience</u>	<u>Artifact Type</u>	<u>Description</u>
Walkover 1-1	projectile point	Type: Gibson/Norton Period: Middle Woodland Point is incomplete - tip is missing Material: Burlington chert Bifacial surficial retouch. Broken base, expanding stem.
Walkover 1-2	biface	Bifacial scraper Bifacial retouch is present on a broken edge. (steeply retouched) Material: Burlington chert Artifact is patinated.
Walkover 1-3	biface	Biface - initial stage of reduction Cortex is present on one edge Material: Chouteau chert (?)
Walkover 1-4	biface	Oval shaped biface - complete - early manufacture stage Material: Burlington Surficial retouch, heavily patinated
Walkover 1-6	biface	Biface fragment Minimal bifacial surficial retouch Material: Burlington chert
Walkover 3-1	projectile point	Type: Madison Triangle(?) Period: Mississippian Tip missing Material: Burlington chert Burnt
Walkover 3-2	biface	Biface fragment - two lateral edges and end present Material: Burlington chert Minimal edge retouch
Sq 1-00-1	projectile point	Type: Koster Corner Notch Period: Late Woodland Material: Burlington chert Manufactured from a flake Short expanding stem

<u>Provenience</u>	<u>Artifact Type</u>	<u>Description</u>
F1-01P-1	bifacial retouched flake	Material: type indeterminate (burnt) Bifacial edge retouch
F1-02P-1	drill	Fragment - portion of the base and tip missing. Material: Burlington chert Bifacial secondary edge retouch
F2-02P-1	biface	Fragment - tip portion of pointed biface present - later manufacturing stage Material: Burlington chert Bifacial surficial retouch
F2-02P-2	biface	Nearly complete - irregular shaped Material: Burlington chert Bifacial edge retouch along two edges Heat treated
F3-01-1	biface	Fragment - tip portion of pointed biface - later manufacturing stage Material: Burlington Bifacial surficial/minimal secondary edge retouch
F3-01P-1	biface	Fragment - tip portion of pointed biface present Material: Burlington chert Bifacial surficial retouch

APPENDIX B

Core Descriptions - Fox Pup Site

CORE DESCRIPTIONS - FOX PUP SITE

NLC-48

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-30	A _p	Very dark grayish brown (10YR3/2) clay loam; moderate, medium subangular blocky; ped size increases toward the base of the horizon; abrupt boundary.
30-54	B ₂₁	Very dark gray (10YR3/1) clay loam; strong medium subangular to angular blocky; thin clay skins on ped faces; gradual to clear boundary.
54-125	B ₂₂	Dark gray (10YR1/1) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; gradual boundary.
125-183	B ₃₁	Dark gray (10YR4/1) silty clay loam; moderate, fine subangular blocky; common medium Fe mottles; gradual boundary.
183-260	B ₃₂	Grayish brown (2.5Y5/2) silty clay loam; moderate, fine subangular blocky; common, medium Fe mottles; gradual boundary.
260-342	C (MDU)	Gray (5Y5/1) silty clay loam; moderate, very fine subangular blocky; common medium Fe mottles; sand lenses appear toward the base of the hroizon; abrupt boundary.
342-355	MUU	Greenish gray (5GY5/1) sandy clay loam; massive, few shells; few medium Fe mottles; abrupt boundary.
355-493	UU	Dark greenish gray (5GY4/1) stratified silts and sands; massive, common shells and organic matter (heavy organic matter concentration at 380-430); abrupt boundary.
493-548	UU	Greenish gray (5GY5/1) fine sand.

NLC-49

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-25	A _p	Very dark grayish brown (10YR3/2) clay loam; moderate, medium subangular blocky; ped size increases toward the base of the horizon: abrupt boundary.
25-105	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common medium Fe mottles; few thin clay skins; gradual boundary.
105-240	B ₃	Light brownish gray (10YR6/2) silty clay loam; weak to moderate, fine subangular blocky; common medium Fe mottles; gradual boundary.
240-300	C (MDU)	Grayish brown (2.5YR5/2) sandy clay loam; weak to moderate, medium subangular blocky; few to common fine Fe and Mn mottles; few to common shells; clear to abrupt boundary.
300-390	UU	Gray (5Y5/1) silty clay; weak medium subangular blocky; few to common fine mottles; common shells; clear boundary.
390-440	UU	Gray (5Y5/1) stratified sand, silt, and clay; massive; shells; abrupt boundary.
440-468	UU	Dark greenish gray (5GY4/1) fine sands and silt; clear boundary.
468-538	UU	Greenish gray (5GY5/1) fine loamy sand.

NLC-50

<u>Depth</u>	<u>Horizon or zone</u>	<u>Description</u>
0-27	A _p	Very dark grayish brown (10YR3/2) clay loam; moderate, moderate, medium sub-angular blocky; ped size increases toward the base of the horizon; abrupt boundary.
27-115	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate subangular blocky; common medium Fe mottles; few, very small shells; gradual boundary.
115-155	B ₃	Grayish brown (10YR5/2) silty clay loam to silty clay; weak, fine to medium sub-angular blocky; common medium Fe mottles; gradual boundary.
155-368	C (MDU)	Grayish brown (2.5Y5/2) silty clay loam to silty clay; weak, fine subangular blocky; few, medium Fe mottles; few shells; clear boundary.
368-475	UU	Gray to greenish gray (2.5Y5/1 to 5GY5/1) stratified silty clay and sand; massive, common shells; abrupt boundary.
475-515	UU	Greenish gray (5GY4/1) silt; massive; Paleochannel silts.

APPENDIX C

Artifact Descriptions - Gravity Site

GRAVITY - LITHIC TYPE COLLECTION DESCRIPTIONS

<u>Provenience</u>	<u>Artifact Type</u>	<u>Description</u>
Walkover 1-1	projectile point	Type: Gibson/Norton(?) Period: Middle Woodland Material: Burlington chert Incomplete - base is present, broken at notches. Basal grinding.
Walkover 3-1	biface	Biface fragment - early manufacturing stage Material: Burlington chert Plow scars along one lateral edge Heavily patinated.
Walkover 3-2	mano	Pitted mano - pitting present on two surfaces, however it is much more extensive on one surface Material: Igneous cobble Possible grinding on one surface Battering along the edges.
Walkover 3-3	projectile point	Type indeterminate Material: Burlington chert Material quality: good Edge broken along hafting element Reworked along break.
Walkover 4-1	projectile point	Type: Gibson/Norton Period: Middle Woodland Material: Burlington chert Tip portion missing Expanding stem, shallow notching
Walkover 4-2	biface	Pointed biface fragment - later manufacturing stage Material: Burlington chert Bifacial surficial retouch Patinated.
Walkover 4-3	uniface	Incomplete Material: Burlington chert Minimal unifacial retouch along one edge.
Sq 1-01-1	uniface	Incomplete Material: Burlington chert Surficial retouch Minimal unifacial edge retouch Burnt

<u>Provenience</u>	<u>Artifact Type</u>	<u>Description</u>
Sq 1-01-2	biface	Incomplete Material: Burlington chert Minimal bifacial surficial retouch.
Sq 4-01-1	biface	Pointed biface fragment Material: Burlington chert Bifacial surficial/edge retouch
Sq 4-01-2	projectile point	Type indeterminate Appears to be reworked along notch and shoulder. Most of blade is missing. Material: Burlington chert
Sq 4-01-3	uniface	Incomplete Material: Burlington chert Surficial retouch Unifacial edge retouch along entire edge.
Sq 4-01-4	uniface	Incomplete Material: Burlington chert Tertiary flake with minimal unifacial edge retouch.

APPENDIX D

Core Descriptions - Gravity Site

CORE DESCRIPTIONS - GRAVITY SITE

NLC-51

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-27	A _p	Dark gray (10YR4/1) silty clay loam; moderate, medium subangular blocky; abrupt boundary.
27-75	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; clear boundary.
75-125	B ₃	Light brownish gray (2.5Y5.5/2) silty clay loam; weak to moderate, medium subangular blocky; common medium Fe mottles; very abrupt boundary.
125-178	B ₂	Grayish brown (2.5Y5/2) silty clay; moderate, medium subangular blocky; clay skins; few, fine Fe mottles; clear boundary.
178-258	C _{1b} (MDL)	Light brownish gray (2.5Y5.5/2) silty clay; massive; few to common, medium Fe mottles; clear boundary (charcoal at base of horizon).
258-270	C _{2b} (MDL)	Grayish brown (2.5Y5/2) silty clay; moderate, medium subangular blocky; many, medium Fe mottles especially on the ped faces; abrupt boundary.
270-290	C _{3b} (MDL)	Grayish brown (2.5Y5/2) silty clay; massive; common, medium Fe mottles.

NLC-52

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-30	A _p	Very dark gray (10YR3/1) silty clay loam; moderate to strong, fine to medium sub-angular blocky to angular blocky; abrupt boundary.
30-76	B _{2t}	Very dark gray (10YR3/1) silty clay; moderate, medium subangular blocky; common, medium Fe mottles toward the base of the horizon; clear boundary.
76-155	B ₃	Grayish brown (2.5YR5/2) silty clay; weak to moderate, fine subangular blocky; common medium Fe mottles; gradual boundary.
155-250	C (MDL)	Light brownish gray (2.5Y6/2) silty clay loam; massive, common medium Fe mottles.

NLC-53

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-27	A _p	Dark gray (10YR4/2) silty clay loam; weak to moderate fine angular blocky; abrupt boundary.
27-72	B _{2t}	Very dark grayish brown (10YR4/1) silty clay; moderate, medium subangular blocky; clay skins on ped faces; common, medium Fe mottles toward the base of the horizon; clear boundary.
72-175	B ₃ DL	Grayish brown (2.5Yr5/2) silty clay; weak to moderate, medium subangular blocky; common medium Fe mottles; gradual boundary.
175-250	C (MDL)	Light brownish gray (2.5Y6/2) silty clay loam; massive, common medium Fe mottles.

NLC-54

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-54	Road spoil	Laminated road and ditch spoil.
54-82	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; gradual boundary.
82-165	B ₃	Light grayish brown (10YR6/2) silty clay loam; weak, moderate subangular blocky; common medium Fe mottles; clear boundary.
165-250	IIC ₁ (OL)	Dark grayish brown (10YR4/2) silty clay to sandy clay; massive.
250-270	IIIC ₂ (OL)	Light grayish brown (10YR6/4) fine sand; abrupt boundary.
270-295	IVC ₃ (OL)	Dark grayish brown (10YR4/2) silty clay to sandy clay; massive.
295-328	VC ₄ (MDL)	Light grayish brown (2.5Y5/2) laminated silty clay loam; massive; resembles the lower 25 cm in core #8; few, medium Fe mottles; abrupt boundary.
328-400	VIC ₅ (OL)	Light yellowish brown (10YR6/4) medium grained sand; well sorted; abrupt boundary.
400-	UU	Dark gray (5Y4/1) to dark greenish gray (5GY4/1) clayey silt; massive, Paleochannel fill.

NLC-55

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-30	A _p	Dark grayish brown (10YR4/2) silty clay loam; weak to moderate fine subangular blocky; clear boundary.
30-129	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; very abrupt boundary.
120-146	B _{21bt}	Grayish brown (2.5Y5/2) silty clay to silty clay loam; moderate to strong subangular blocky; clay skins on ped faces; few, fine Fe mottles; clear boundary.
146-170	B _{22bt}	Light grayish brown (2.5Y5.5/2) silty clay loam; moderate, medium subangular blocky; few, medium Fe mottles; clear boundary.
170-225	C _{1b} (MDL)	Grayish brown (2.5Y5/2) clay loam; massive; common, medium Fe mottles; laminated silts between 210-240 cm; clear boundary.
225-(425-450)	IIC ₂₆ (OL)	Light yellowish brown (10YR6/4) fine sand; no shells; abrupt boundary but lower limit questionable due to sand falling out of core varrel.
(425-450)-520	IIIC _{3b} (DL)	Dark grayish brown (10YR4/2) silty clay; massive; abrupt boundary.
520-1130	IVUU	Paleochannel silts. See Core #54.

NLC-56

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-29	A _p	Very dark grayish brown (10YR3/2) silty clay loam; moderate, fine subangular blocky; abrupt boundary.
29-159	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; abrupt boundary.
159-192	B _{2bt} DL	Grayish brown (2.5Y4.5/2) silty clay; moderate to strong medium subangular blocky; clay skins on ped faces; few, medium Fe mottles; clear boundary.
192-242	C _b (MDL)	Light grayish brown (2.5Y6/2) silty clay loam; massive; common, medium Fe mottles.

NLD-46

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-30	A _p	Dark grayish brown (10YR4/2) silty clay loam; moderate, medium subangular blocky; abrupt boundary.
30-70	B ₂	Grayish brown (2.5Y5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; gradual boundary.
70-175	B ₃ DL	Grayish brown (2.5Y5/2) silty clay loam; weak to moderate subangular blocky; common medium Fe mottles; clear to abrupt boundary.
175-200	B _{2bt} DL	Grayish brown (2.5Y5/2) silty clay; weak to moderate subangular blocky; few, fine Fe mottles; clay skins on ped faces; clear boundary.
200-225	C _{1b} (DL)	Light brownish gray (2.5Y6/2) silty clay loam; weak, fine subangular blocky; clear boundary.
225-545	C _{2b} DL-U	Light grayish brown to olive laminated silts overlying paleochannel fill; distinct variation on color from 2.5Y6/2 to 5Y5/3; concentration of Fe mottles at 310-321; becomes calcareous at 535; carbonate then increases in the paleochannel silts.
545-1090	UU	Paleochannel fill. See #54.

NLC-47

<u>Depth (cm)</u>	<u>Horizon or zone</u>	<u>Description</u>
0-30	A _p	Very dark grayish brown (10YR3/2) silty clay loam; moderate, medium subangular blocky; abrupt boundary.
30-113	B ₂	Grayish brown (10YR5/2) silty clay loam; moderate, medium subangular blocky; common, medium Fe mottles; clear boundary.
113-165	C ₁	Light brownish gray (2.5Y6/2) silty clay; massive; few to common Fe mottles; very abrupt boundary.
165-202	B _{2bt} DL	Grayish brown (2.5Y5/2) silty clay; moderate to strong subangular blocky; clay skins on ped faces; few, fine Fe mottles; clear boundary.
202-280	C _{1b} (MDL)	Grayish brown (2.5Y5/2) silty clay; massive; few, fine Fe mottles; clear boundary; lower 25 cm appears to be laminated.
280-338	C _{2b} (MDL)	Grayish brown (2.5Y5/2) silty clay; moderate, medium subangular; common medium Fe mottles mainly on peds; clear boundary.
338-500	C _{3b} (MDL)	Grayish brown (2.5Y5/2) silty clay; massive; common, fine Fe mottles.

APPENDIX E

Plates

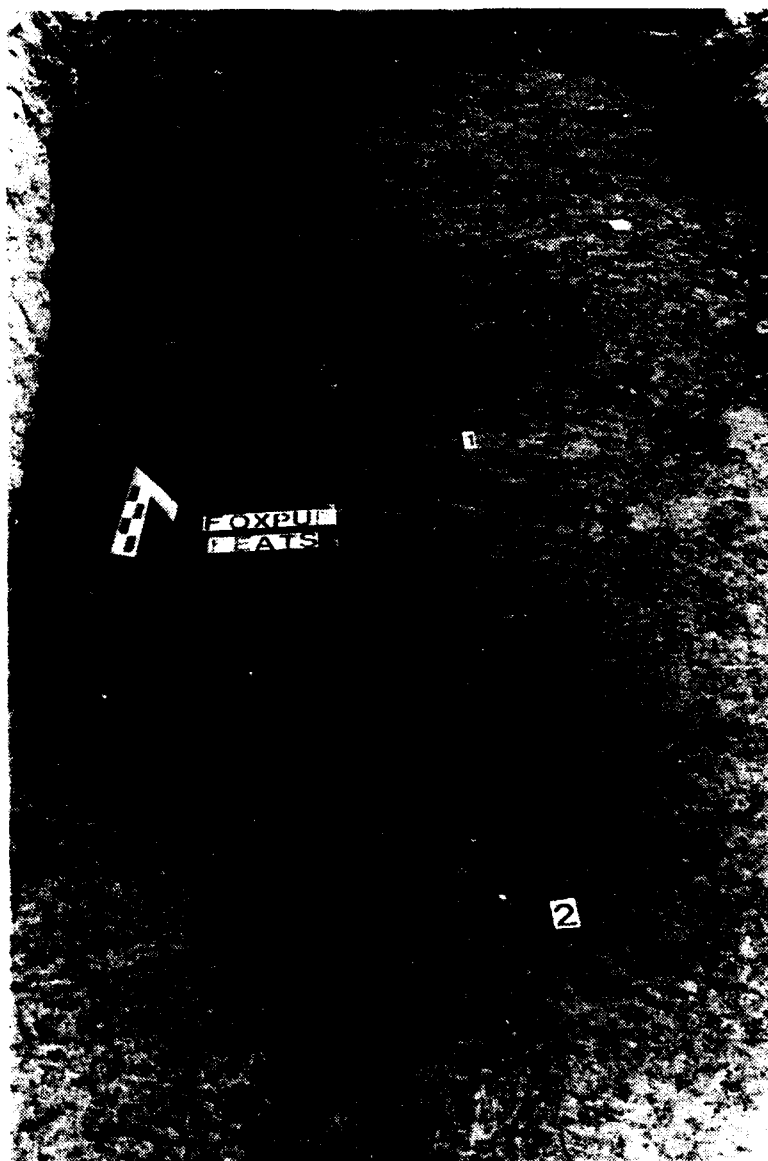


Plate I: Features 1, 2 and 3, Fox Pup site.

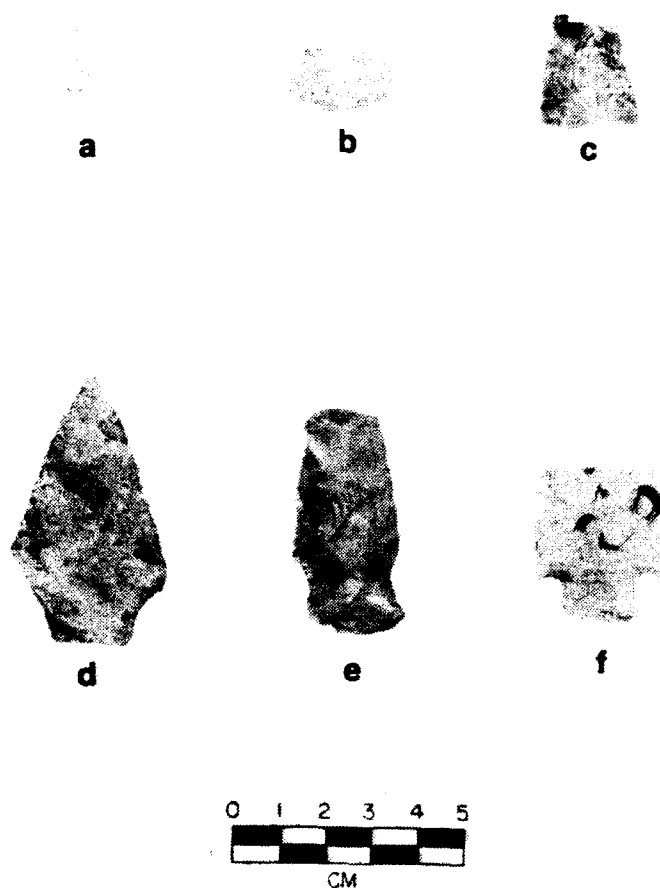


Plate II: Artifact photographs, Fox Pup and Gravity sites.

- A - Fox Pup SQ 1-1, Koster Corner-notch
- B - Gravity walkover 1-1, Gibson/Norton?
- C - Fox Pup walkover 3-1, Madison Triangle?
- D - Gravity walkover 3-3, Type Indeterminate
- E - Gravity walkover 4-1, Gibson/Norton
- F - Fox Pup walkover 1-1, Gibson/Norton

APPENDIX F
Tabulation Definitions

The following definitions were applied to the artifacts discussed in the text. The definitions are based by those established by the Center for American Archeology (n.d.).

Projectile Point - All pointed complete, symmetrical, finished bifaces/unifaces and all basal fragments showing a hafting modification.

Drill - Pronounced roughly parallel sided projection, length at least 1/3 total length of artifact, bifacial edge retouch on projection. Hafting element may be present. Fragments and tips meeting at least one of these criteria are included.

Biface - Presence of flake scars on both surfaces.

Uniface - Presence of flake scars on only one surface.

Primary Flake - 100% cortex on dorsal surface; no flake scars on dorsal surface.

Secondary Flake - Some cortex on dorsal surface, but less than 100%; presence of at least one flake scar on dorsal surface.

Tertiary Flake - Lacks cortex, will exhibit dorsal flake scarring.

Bifacial Thinning Flake - Lacks cortex; the platform forms an acute angle and overhanging lip with ventral surface and exhibits multiple facets.

Blocky (shatter) - Sharp angular edges, presence of negative scarring, absence of platform.

Ground Stone - Mano - Flat stone exhibiting planar wear patterns (grinding, striations) possessing at least one flat to convex face. Worked face feels smoother and exhibits more polish than unworked face.

APPENDIX G
SCOPE OF WORK

SCOPE OF WORK

Cultural Resource Testing to Determine National Register Significance Sites to be Affected By Flood Protection Activities in the Nutwood Drainage and Levee Project, Jersey and Greene Counties, Illinois

1. Statement of Work. The work to be accomplished by the Contractor shall consist of furnishing all supplies, materials, plant, equipment, if required, and all personnel necessary to conduct testing and evaluation of significance on two archaeological sites situated within the Nutwood Drainage and Levee Project Area and furnish a written report thereon, all as set forth in this Appendix A.
2. Location and Description of the Study Area. The study area includes two sites situated on the left (east) bank of the Illinois River in Jersey and Greene Counties. The sites, the Gravity Site and the Fox Pup site, were located during the 1981 Nutwood Drainage and Levee District survey and are outlined in red on Maps 1 and 2 (Incl 1). The Gravity Site covers approximately 9.2 acres (3.7 hectares) and is represented by a light lithic scatter and three hammerstones. The Fox Pup Site covers approximately 2.75 acres (1.1 hectares) and is represented by a lithic scatter and burnt limestone.
3. Study Plan
 - 3.1 General. The Contractor is responsible for the formulation, justification, and conduct of the study, including the design and execution of all survey methods and procedures, as well as the presentation of the study results, unless otherwise set forth in this Appendix A, all to be included in a written report as set forth herein.

3.2 Research Design. The Contractor will prepare a research design (that will be fully reported in writing as an appendix to the request for quotation) and conduct testing to determine National Register significance of two sites as defined in paragraph 2 above. The research design shall describe the methodologies to be used to address the various requirements of the Scope of Work. Detailed vitae attachments outlining the work histories and academic backgrounds of all individuals scheduled to be directly involved in the supervision of laboratory/fieldwork and report preparation will be submitted with the research design. One completed copy of the Contractor's proposal, including the research design and budget, is to be postmarked for return to the Government representative for review within 15 calendar days of receipt of request for quotation.

4. Study Requirements.

4.1 Shovel Testing. A series of subsurface shovel tests will be conducted at the two sites referenced in paragraph 2 above. The purpose of these tests will be to determine what, if any, undisturbed features are situated below the plow zone at each site. The testing frequency will be a 10-meter grid interval. The dimensions of each unit will be approximately 30 cm long by 30 cm wide by 50 cm deep. The bottoms of each of these units will be trowel scraped and visually examined.

4.2 Test Excavations. Test excavations will be conducted at each shovel test unit in which features have been detected. The standard excavation unit will be 2 by 2 meters. No more than six 2-by-2 meter units will be excavated per site. At least one test pit per site shall be excavated to a depth of 2 meters below the last evidence of cultural activity. Where no material was found during shovel testing, last evidence is defined as the base of the plow zone.

All artifacts and features encountered shall be plotted, mapped, and photographed in situ. Plan view and profile maps of soil strata, features, and artifact distributions shall be completed at the base of each successive excavation level. Unless otherwise dictated by cultural strata, the standard vertical excavation unit will be 10 centimeters. The purpose of these activities will be to determine the horizontal and vertical extent of the site and to determine, whenever possible, site function. The documentation shall include a photographic log of each phase of the fieldwork described in this Appendix A. Thirty-five millimeter slides are required for this documentation and shall be presented as an appendix to the final report.

4.3 Laboratory Analysis. Artifacts removed during shovel testing and excavation procedures will be washed and permanently labeled. All artifacts will then be separated into various general categories and then subdivided into smaller functional and stylistic categories. These distributions shall be qualitatively assessed in a professional, concise manner.

4.4 Documenting Significance. The Contractor shall perform all work necessary to accomplish the documentation of site significance or nonsignificance on both sites. This documentation must stand alone as a completely independent document. Exhibit 2 sets forth the requirements for each site's documentation. If a numbered heading or subheading in Exhibit 2 guidelines does not apply, the Contractor shall so state under the appropriately numbered heading or subheading. When the site is not significant as per the criteria in Part 800.10, Chapter VIII of Title 36 of the Code of Federal Regulations, the Contractor shall so state and present the evidence upon which such nonsignificance is based. Being non-significant does not preclude a resource from being fully documented as per this

paragraph. National Register forms (Exhibit 3) will be completed and submitted for both sites regardless of site significance.

5. Final Report. The final report shall consist of:

a. A general description of the research in light of current anthropological discussions.

b. A discussion of the theoretical foundation underlying and influencing the research goals. This discussion will be site-specific and will address the rationale for the type of measures employed at each site in a clear and understandable manner.

c. A discussion of specific hypotheses derived both from previous research and from the above-cited theoretical orientations. This discussion will be accompanied by a description of related, but more specifically framed, test implications.

d. A comprehensive discussion of data collection techniques as these relate to the data requirements necessitated by the specific hypotheses. This section will also present the sampling methods employed during testing with an accompanying discussion of the relative success of each sampling procedure.

e. A specific discussion of data analysis techniques which are proposed for testing hypotheses. This discussion will outline the rationale for particular analytical techniques as these are constrained and influenced by the methods of data collection. Specific attention will be given to discussions which clarify the data analysis techniques in terms of their applicability to the types of data collected and in terms of their appropriateness for testing the hypotheses addressed.

f. Detailed maps and other site-specific location data. This will be attached as an appendix to the final report.

g. Plates/drawings of diagnostic artifacts recovered during these investigations. These will be incorporated into the body of the final report or attached as an appendix.

h. An abstract that is not to exceed one typewritten page.

5.1 Statement of Location of Materials and Records Produced or Collected Under This Contract. The report shall contain a statement indicating the exact location of all materials and records resulting from this contract work. This statement should include at a minimum the name and address of the curatorial building, the storage room number, and, if possible, the rack, shelf, or cabinet number where this material is stored. Containers in which artifacts are stored shall be clearly marked "Property of U.S. Government, St. Louis District, COE."

6. Definitions.

6.1 Principal Investigator. The principal investigator is required to spend 20 percent of the field time directly involved in the fieldwork. Adequate time will be devoted to the contract to accomplish the work in an expedient manner. He will be responsible for the validity of the material presented in the cultural resource report and will sign the final report. If authored by someone other than the principal investigator, he will prepare a forward in the final report. In the event of controversy or court challenge, the principal investigator will testify on behalf of the Government in support of the report findings. Persons in charge of an archaeological project or research investigation contract, in addition to meeting the appropriate standards for an archaeologist, should have recognized expertise in this field and must have a doctorate or an equivalent level of professional experience as evidenced by a publication record that demonstrates experience in field project formulation, execution, and technical monograph reporting. Suitable professional references

may also be made available to obtain estimates regarding adequacy of prior work. If prior projects were of a sort not ordinarily resulting in a publishable report, a narrative should be included detailing the proposed project to the director's previous experience, along with references suitable to obtain opinions regarding the adequacy of this earlier work.

6.2 Archaeologist. The minimum formal qualifications for individuals practicing archaeology as a profession are a B.A. or B.S. degree from an accredited college or university, followed by two years of graduate study with concentration in anthropology and specialization in archaeology during one of these programs and at least two summer field schools, or their equivalent, under the supervision of archaeologists of recognized competence; a Master's thesis or its equivalent in research and publication is highly recommended as is the Ph.D degree. Individuals lacking such formal qualifications may present evidence of a publication record and references from archaeologists who do meet these qualifications.

6.3 Consultants. Personnel hired or subcontracted for this special knowledge and expertise must carry academic and experiential qualifications in their own field of competence. Such qualifications are to be documented by means of vitae attachments to the proposal or at a later time if the consultant has not been retained at the time of the proposal.

6.4 Institution or Contract Firm. Any institution, organization, etc., obtaining this contract and sponsoring the principal investigator or project director meeting the previously given requirements must also provide or demonstrate access to the following capabilities:

(1) Adequate field and laboratory equipment necessary to conduct whatever operations are defined in the scope of work,

(2) The institution will provide for storage and retrieval facilities for perpetual curation for all artifacts, specimens, records, and other documents of the cultural resource survey performed under this contract. The location of these materials will be stated in the report of this work and the Contractor will indicate how such materials and records can be made available to other professionals who may have a need for data deriving from the work conducted under this contract.

7. PROTECTION OF NATURAL AND HISTORIC FEATURES.

The Contractor shall be responsible for all damages to persons and property which occur in connection with the work and services under this contract, without recourse against the Government. The Contractor shall provide maximum protection, take every reasonable means, and exercise care to prevent damage to existing historic structures, roads, utilities, and other public or private facilities. Special attention shall be given the historic structures and natural and landscape features of the area, and special care shall be taken to protect these elements in their surroundings. The Contractor shall provide suitable protection for vegetation and facilities adjacent to work areas.

8. PROPERTY DAMAGE.

The Contractor will restore to the satisfaction of the Government representative at no additional cost to the Government any damage to any Government or private property.

9. PUBLICITY.

The Contractor shall not release any material for publicity without the prior written approval of the Government representative. This provision shall not be construed so as to restrict in any way the Contractor's right to publish in scholarly or academic journals. Students and other archaeologists are likewise free to use information developed under this contract in theses and dissertations or in publications in scholarly or academic journals.

10. PERMITS. Rights-of-entry upon the worksite for performance of work under this contract will be obtained by the Contractor. The Contractor will obtain the necessary approval to enter on any private property and to permanently take possession of any artifacts recovered during subsequent testing activities. If entry cannot be secured to investigate the designated sites, the purchase order will be modified to reflect the reduced project magnitude,

11. INSPECTION AND COORDINATION.

The Government representative may at all reasonable times inspect or otherwise evaluate the work being performed hereunder and the premises on which it is being performed. If any inspection or evaluation is made by the Government on the premises of the Contractor or any subcontractor, the Contractor shall provide and shall require his subcontractors to provide all reasonable facilities and assistance for the safety and convenience of the Government representatives. All inspections and evaluations shall be performed in such a manner as will not unduly delay the work. Close coordination shall be maintained between the Contractor's principal investigator and the Government representative to ensure that the Government's best interest is served.

12. INVESTIGATION OF FIELD CONDITIONS.

Representatives of the Contractor are urged to visit the areas where work is to be performed and by their own investigation satisfy themselves as to the existing conditions affecting the work to be done. Any prospective contractors (including subcontractors) who choose not to visit the area will nevertheless be charged with knowledge of conditions which a reasonable inspection would have disclosed. The Contractor shall assume all responsibility for deductions and conclusions as to the difficulties in performing the work under this contract,

13. RESPONSIBILITY FOR MATERIALS AND RELATED DATA.

Except as otherwise provided in this contract, the Contractor shall be responsible for all written materials and related data covered by this contract until they are delivered to the Government at the designated delivery point and prior to acceptance by the Government. The designated delivery point is: 210 Tucker Boulevard, North; Room 1138; St. Louis, Missouri 63101, ATTN: Mr. Terry Norris (ED-BA)

14. SCHEDULE OF WORK.

14.1 All fieldwork (testing) activities will begin only after the crops have been harvested and will be completed by 6 February 1982.

14.2 Draft Report. Five copies of the report will be submitted by the Contractor to the Government representative within 130 calendar days after receipt of the notice to proceed, on or about 15 April 1982. representative will review the report for compliance with the requirements of the contract and shall return the draft report, together with any written comments he may have thereon, which may require changes in the report, to the Contractor within 30 calendar days after its receipt. The report will be organized in a manner consistent with the St. Louis District's report format guidelines (Incl 4).

14.3 Final Report. The Contractor shall submit 10 copies of the final report to the Government representative within 210 calendar days after receipt of the notice to proceed on or about 15 June 1982. The original and a set of reproducibles of all drawings, plates, or other graphics shall be furnished at the time of the submittal of the final report.

14.4 Provisions for Payment. Assuming that all requirements of the Scope have been fulfilled, two equal payments will be made on this order. The first payment will be made upon the receipt of the draft report and the last payment upon acceptance of the final report.

15. DELAYS.

In the event these schedules are exceeded due to causes beyond the control and without the fault or negligence of the Contractor, the contract will be modified in writing; and the contract completion date will be extended one calendar day for each calendar day of delay.

4 Incl

1. Incl 1 - Project Map, USGS Topographic
2. Incl 2 - National Register Guidelines
3. Incl 3 - National Register Forms
4. Incl 4 - SLD Report Format Guidelines