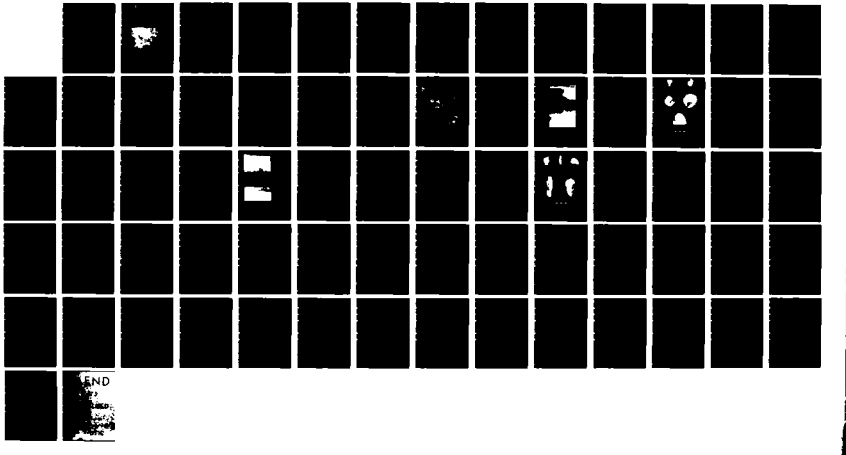
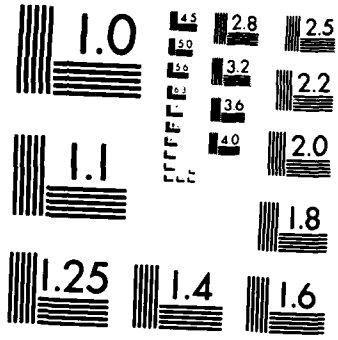
AD-A147 509 AN INTENSIVE CULTURAL RESOURCES SURVEY AT TUTTLE CREEK LAKE POTTAWATOMIE A.. (U) SOIL SYSTEMS INC OVERLAND PARK KS EARTH SYSTEMS DIV P MILLER ET AL. SEP 82 1/1

UNCLASSIFIED DACW41-79-M-0894 F/G 5/6 NL





US Army Corps
of Engineers
Kansas City District

Tuttle Creek Lake, Kansas

Soil Systems, Inc., Earth Systems Div.
Overland Park, Kansas

An Intensive Cultural Resources Survey at Tuttle Creek Lake Pottawatomie and Riley Counties

By Patricia Miller

Larry J. Schmits
Principal Investigator

September 1982

DACW41-79-M-0894

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER / 2. GOVT ACCESSION NO. AD A147509	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Tuttle Creek Lake, Kansas An Intensive Cultural Resources Survey at Tuttle Creek Lake, Pottawatomie and Riley Counties	5. TYPE OF REPORT & PERIOD COVERED Final 1979-1981
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(S) Patricia Miller Larry J. Schmits	8. CONTRACT OR GRANT NUMBER(s) DACW41-79-M-0894
9. PERFORMING ORGANIZATION NAME AND ADDRESS Soil Systems, Inc., Earth Systems Div. Overland Park, Kansas	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Corps of Engineers, Kansas City District 700 Federal Building, 601 E. 12th St. Kansas City, Missouri 64106	12. REPORT DATE September 1982
	13. NUMBER OF PAGES 60
14. MONITORING AGENCY NAME & ADDRESS(If different from Controlling Office)	15. SECURITY CLASS. (of this report) Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; unlimited distribution

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

archeology
survey
Big Blue River Valley
Central Lowlands
Dissected Till Plain
Attentuated Drift Border
Osage Plains
Flint Hills Uplands
Pottawatomie and Riley Counties

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Tuttle Creek Lake is located in an area containing numerous archaeological sites. Previous archaeological investigations have resulted in the discovery of 132 sites within the limits of the lake project.

This report describes results of the intensive shoreline survey, provides an environmental setting, summaries of previous archaeological investigations and descriptions of archaeological sites discovered or revisited during the course of the survey. The kinds and extent of lake effects upon the sites are discussed and recommendations given for future action.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

AN INTENSIVE CULTURAL RESOURCES SURVEY AT TUTTLE CREEK LAKE, POTTAWATOMIE AND RILEY COUNTIES, KANSAS

by

Patricia Miller

Prepared For

U. S. Army Corps of Engineers
Kansas City District
Contract No. DACW41-79-M-0894

Soil Systems, Inc.
Earth Systems Division
Overland Park, Kansas

Purchase Order No.
DACW41-79-M-0894

SSI PROJECT NUMBER ES-1253

Larry J. Schmits
Principal Investigator

September 1982

ABSTRACT

An intensive archaeological survey of the shoreline of Tuttle Creek Lake, Kansas, from the Marshall County line south to the Randolph State Park on the east side and to Fancy Creek State Park on the west side was conducted as recommended by the cultural resources management program for Tuttle Creek Lake (Ziegler 1976). The purpose of the survey was to locate new archaeological sites and to evaluate destructive effects of the lake upon both new and known sites in the project area.

Seven new archaeological sites were located and sixteen known sites revisited in the survey area. Three new sites are recommended for preservation and four for testing. Of the sixteen known sites in the project area, one is recommended for further excavation, three for preservation and five for testing. No action is recommended for eight known sites. Three are destroyed, four buried in silt and one located in an area where testing would be unfeasible.

A total of five sites may be eligible for inclusion in the National Register of Historic Places. The Coffey site (14PO1) is on the Register. Two new sites located during the survey and three known sites are potential National Register candidates.

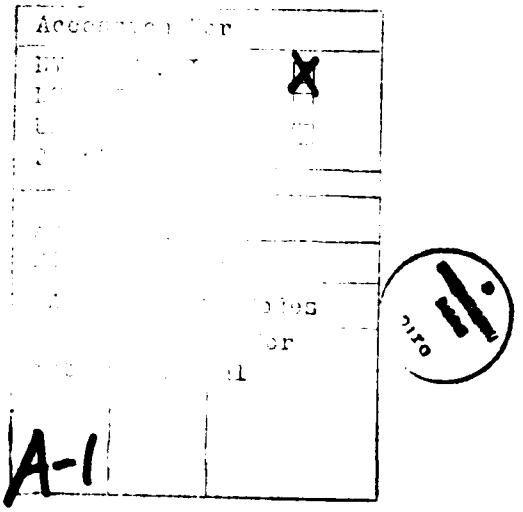


TABLE OF CONTENTS

LIST OF FIGURES

TABLE OF CONTENTS

LIST OF TABLES

I: INTRODUCTION

Tuttle Creek Lake, a multipurpose lake constructed by the Corps of Engineers, is located in an area containing numerous archaeological sites. Previous archaeological investigations have resulted in the discovery of 132 sites within the limits of the lake project (Ziegler 1976:9). But two large areas along the lake shoreline, from Marshall County south to Fancy Creek State Park on the west side and to Randolph State Park on the east side had lower recorded site densities than other areas. The cultural resources management program for Tuttle Creek Lake recommended that these areas be resurveyed to locate archaeological sites (Ziegler 1976:26).

This report describes results of the intensive shoreline survey of those areas for prehistoric sites. In this report is the environmental setting, summaries of previous archaeological investigations at Tuttle Creek Lake and the locations and descriptions of archaeological sites discovered or revisited during the course of the survey. The kinds and extent of lake effects upon the sites are reported and recommendations given for future action. Options recommended include excavation, testing, preservation, monitoring and no action.

II: ENVIRONMENTAL SETTING

Tuttle Creek Lake is located in the Big Blue River valley, a subbasin of the Kansas River drainage system (Figure 1). The Big Blue River flows south and east from headwaters in south-central Nebraska to a confluence with the Kansas River near Manhattan, Kansas. Between the Marshall County line and the Randolph bridge the shoreline is broken by several small spring fed tributary streams of which Spring Creek, near the county line on the east side, and Fancy Creek, near Randolph bridge on the west side, are the largest.

The northernmost portion of the project area is a part of the Attenuated Drift Border, a subdivision of the Dissected Till Plains. The remainder of the project area lies in the Flint Hills Uplands, the westernmost extension of the Osage Plains. Both the Osage Plains and the Dissected Till Plains lie in the Central Lowland Province of the Interior Plains.

The Osage Plains are distinguished by a series of east-facing escarpments, trending north to south, which rise to over 400 ft (121.9 m) within the Flint Hills. The Flint Hills are formed by erosion resistant beds of Permian shale separated by cherty limestones. The chert is particularly erosion resistant and accumulates as fragments over the surfaces of outcrops. As a result,

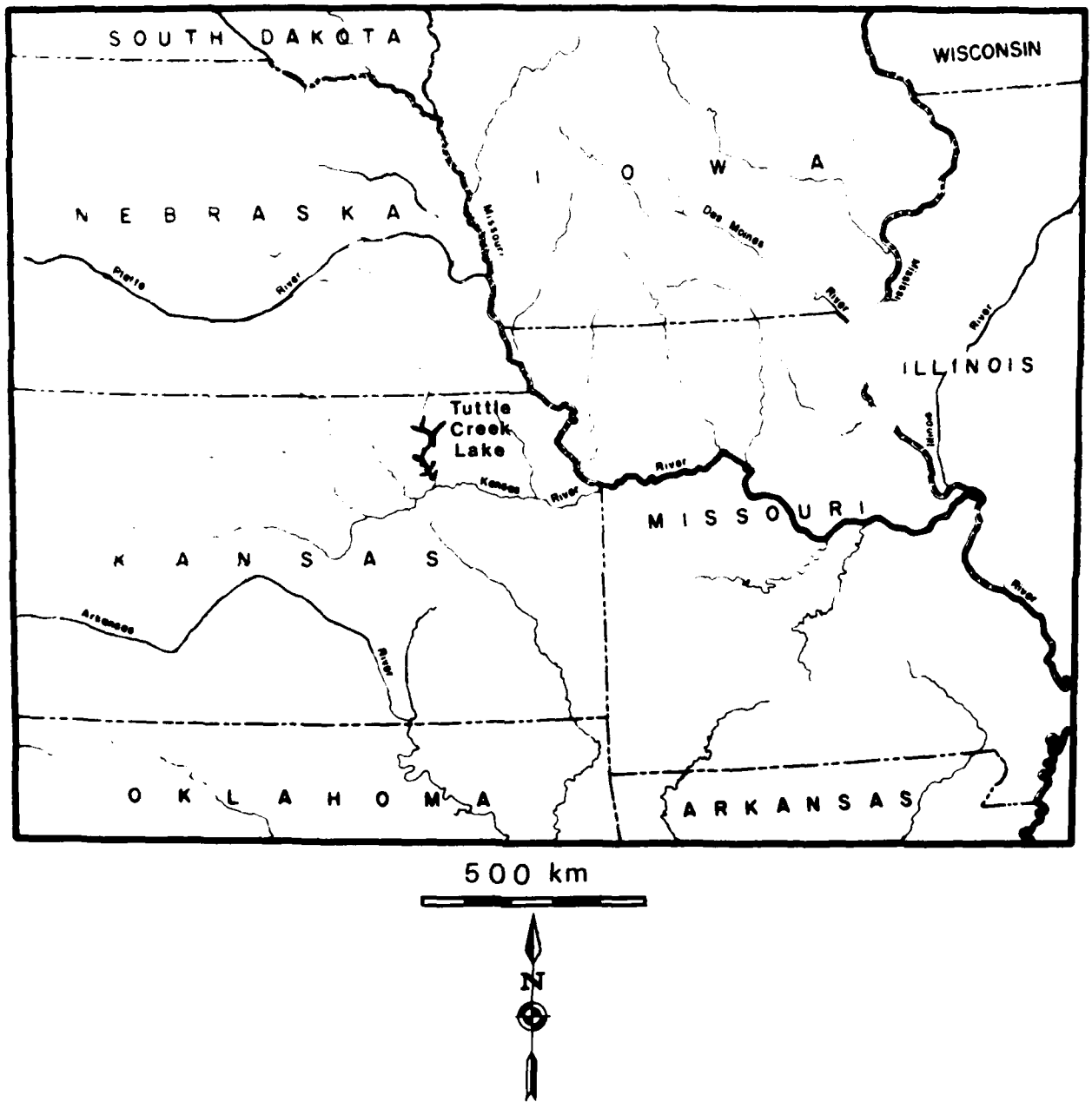


Figure 1. Location of Tuttle Creek Lake.

the uplands are steeply sloped and crested with broad rocky benches. Streams draining the uplands have deep channels, high gradients and numerous pools connected by short riffles. Stream beds are covered with limestone and chert gravels (Schoewe 1949: 286-289).

The underlying topography of the Attenuated Drift Border is the same as that of the Flint Hills but the surface of the land has been glaciated. Transported boulders, cobbles and pebbles are scattered in isolated patches over what Schoewe (1949:281) describes as erosional drift-controlled surfaces with gently undulating topography. The smooth, broad upstream and interstream areas are comprised of remnants of the original moraine left by the retreat of the Kansas glaciation (Schoewe 1949:281).

The region around Tuttle Creek Lake is subhumid continental in climate with well marked seasons (Colby et. al. 1956). The average annual temperature is 55.3 degrees F (12.9 degrees C) with extremes in temperature occurring in July and January (Flora 1948:195). The average annual precipitation is 28.3 in. (71.8 cm). Precipitation ranges from 0.60 in. (1.53 cm) in January to 4.44 in. (11.28 cm) in June. The growing season ranges from 137-197 days, with the first killing frost generally occurring in October and the last killing in late April (Flora 1948:223-229).

The Big Blue River flows through the tall grass prairie vegetational zone (Kuchler 1964). This zone, extending from North Dakota and Wisconsin southward to central Oklahoma, is dominated by bluestem (Andropogon) and Indian grass (Sorghastrum). Within the immediate lake shoreline area three natural vegetational communities are represented: aquatic, floodplain forest and floodplain prairie (Schmits 1978:98, Barker 1969:536-39). Aquatic plants in and along the Big Blue River include pondweed, coontail, water hyssop, water primrose, spatterdock, plantar, bur-reed, cattails, bulrushes, spike rushes, and arrowhead. In marginal aquatic areas knotgrass, sedges and willows predominate. Aquatic areas are bordered by either floodplain forest or floodplain prairie. Floodplain forest occurs as narrow strips of broadleaf deciduous trees with dense undergrowth consisting of shrubs, woody vines and herbaceous plants. The most prevailent species of trees are Amercian elm, red elm, willows, cottonwood, sycamore, box elder, green ash, hackberry, red mulberry and black walnut. Floodplain prairie areas are dominated by big bluestem grass; but Indian grass, switchgrass and grama grass are also present. Slough grass is commonly found in wet areas.

Before alteration of the environment by European settlers a wide variety of plant and animal resources would have been available to prehistoric inhabitants of the area. Bison and deer were important, as were waterfowl. Other animal resources included beaver, muskrat, river otter, salamanders, frogs, turtles, freshwater mussels, fish, oppossum, squirrel, gray fox, porcupine,

black bear, mountain lion, bobcat, raccoon, mink, weasel, snakes, hawks, turkeys, owls, doves, cottontail rabbit, jack-rabbit, coyote, badger and antelope. Over 60 species of edible plants would have been available including tubers, seeds, greens, nuts, fruits, berries and flowers (Schmits 1978:101-102, 173-177).

Cherts suitable for tool manufacture are abundant in limestone outcroppings on slopes adjacent to the river. High quality, dark gray cherts occur in the Florence and Fort Riley limestones of the Barneston formation and the Schroyer and Threemile limestones of the Wreford formation (Hattin 1957). Stream beds contain numerous chert cobbles. Glacial erratics from stream beds and slopes provided sources of raw materials for hammerstones or ground stone tools. Among these, Sioux quartzite was most frequently used.

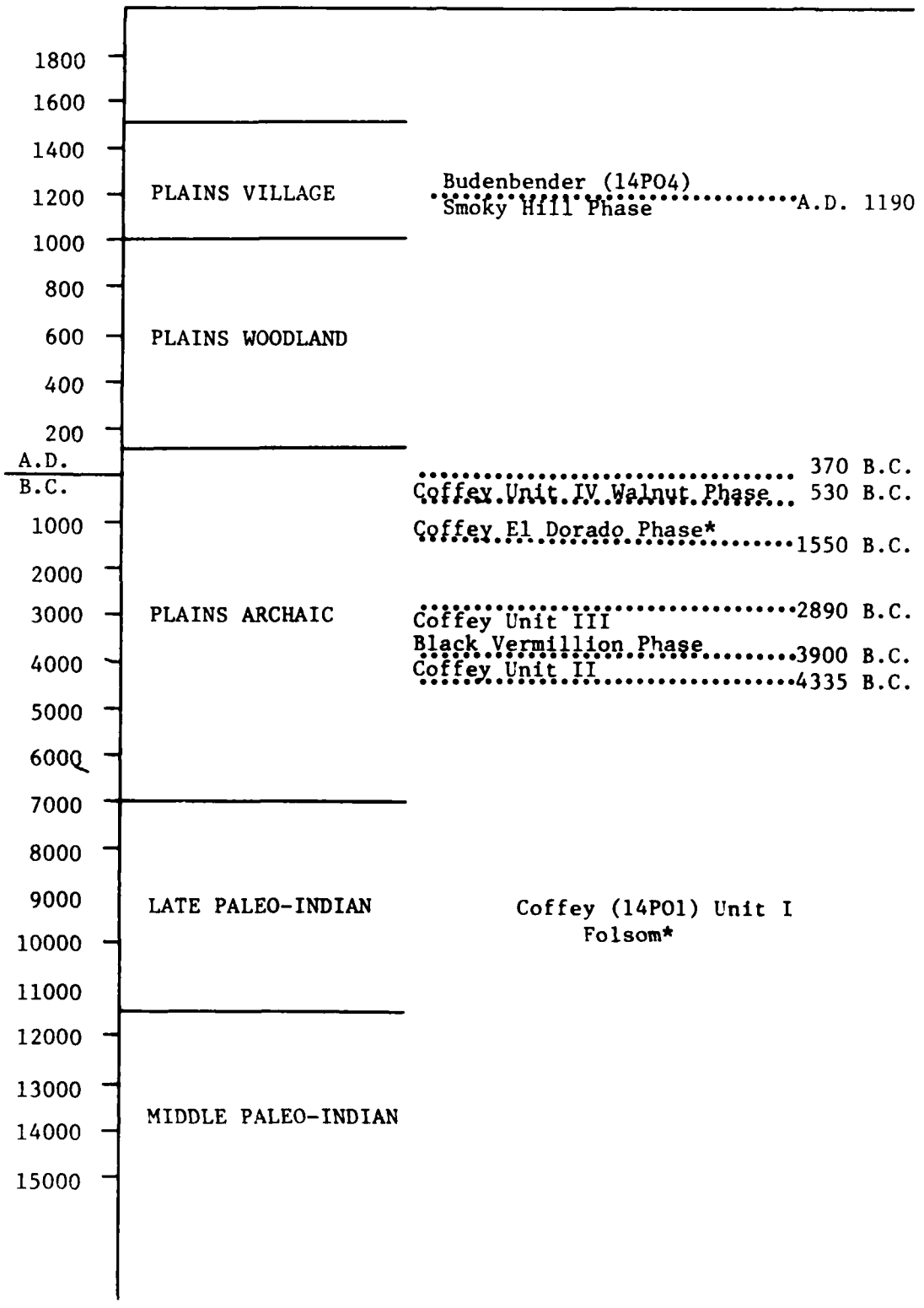
Land use in the project area has been altered by Euro-Americans. Before 1872 both uplands and bottomlands were farmed, but after the drought of 1872-1875 much of the upland farm area was abandoned and reverted back to grassland. Currently, the uplands are mainly used for grazing and the bottomlands for farming (Barker 1969:533-534). Portions of the shoreline of Tuttle Creek Lake have been altered to provide the public with boat ramps, picnic facilities and access roads, and further modifications are planned.

III: CULTURAL SEQUENCE OF THE AREA

As yet, no complete local cultural chronology has been established for the project area. Ziegler (1976) employs a general Kansas chronology as follows:

Cultural Affiliation	Time Period
Historic	A.D. 1700-1865
Middle Cermic	A.D. 1000-1500
Early Ceramic	A.D. 1-1000
Middle and Late Archaic	5000 B.C.-A.D. 1
Early Archaic	8000 B.C.-5000 B.C.
Paleo-Indian	10,000-8000 B.C.

For the present discussion the more commonly used terms of Caldwell and Henning's (1978) chronology for the Plains will provide a framework (Figure 2). Radiocarbon dates for specific cultures



*Typologically dated

Figure 2. Cultural sequence of the Tuttle Creek Lake area.

are from Schmits (1978, 1980) and Johnson (1973). In general, the cultural sequence of the Tuttle Creek Lake area can be divided into a series of "periods" distinguished by technology, exploitation strategies and settlement patterns. However, the Paleo-Indian through the Middle Archaic periods and the Plains Woodland periods are not well represented. Modifications and revisions of the chronology may be required as new evidence is brought to light.

Paleo-Indian: (15,000 - 7000 B.C.). The Paleo-Indian period is represented in the North American Plains by evidence of small groups of nomadic "Big Game Hunters" dependent upon fauna such as mastodons, tapir, horse and bison. Extinction of these animals at the end of the Pleistocene must have forced cultural change. Paleo-Indian occupations are identified by an association of large, lanceolate fluted and unfluted projectile points with Pleistocene mammals. Clovis fluted points, diagnostic of the Llano Complex, and Folsom fluted points, diagnostic of the Plano Complex, have been found on the surface of the Coffey site (14PO1).

Archaic: (7000 B.C. - A.D. 100). The Archaic period is distinguished from the Paleo-Indian by evidence of increasing cultural complexity, greater regionality of hunting and gathering territories, and a more sedentary way of life. A wider variety of animals and plants was exploited for subsistence. Seasonally available food resources became increasingly important. Pecked and ground stone tools, such as axes, grinding stones and nutting stones, became important additions to the tool complex. Projectile points are more varied in form, particularly in the hafting area. Judge (1973) maintains that Paleo-Indian points, Folsom points in particular, were socket-hafted. Archaic points were both split-hafted and socket-hafted. This more varied technology is reflected in the shapes of the hafted portions of the points, which in the Tuttle Creek area include lanceolate, stemmed, basally-notched, side-notched, and corner-notched forms. Archaic points types are more restricted in geographical location than Paleo-Indian types. To date, twenty sites in the Tuttle Creek area have been assigned to the Archaic period (Ziegler 1976).

The Coffey site (14PO1) contains strata belonging to three distinct cultural manifestations of the Late Archaic: the Black Vermillion Phase, the El Dorado Phase and the Walnut Phase (Schmits 1980), and has provided the most detailed knowledge to date of the Late Archaic in the region. One other site with an Archaic component, the Bean Hollow site (14MH1), has been excavated.

Plains Woodland: (A.D. 100 - A.D. 1000). The Plains Woodland period is characterized by greater restriction in hunting and gathering ranges and increasing dependence upon cultigens.

The period takes its name from the adaptation of subsistence patterns to cultivation of crops in the Eastern Woodlands culture area, but many characteristics extended into the Plains. Although incipient agriculture may have begun in the Late Archaic, cultigens first became important during the Woodland period. In the Plains, Woodland camps and villages were located along wooded river and stream valley margins. Bison were procured during hunting expeditions into the grasslands. In the Tuttle Creek area Plains Woodland pottery is cordmarked and projectile points generally corner-notched and larger than points diagnostic of later cultural periods. Twenty sites within the lake project boundaries have surface components assigned to the Plains Woodland period. Three sites with Woodland components have been excavated: Sweat Bee Mound (14PO14), the Bean Hollow site (14MH1) and the Coffey site (14PO1).

Plains Village: (A.D. 1000 - 1450). During the Plains Village period, village sizes increased and the bow and arrow became the dominant hunting weapon. Subsistence was based on corn, beans and squash horticulture and hunting, especially of bison.

The Plains Village period is represented in the Tuttle Creek Lake area by twelve surface components and four excavated sites: 14PO4, 14PO21, 14RY10 and 14MH2 (Ziegler 1976; Johnson 1973). Earth lodges, pottery vessels with collared rims and small triangular or side-notched arrow points are diagnostic of Plains Village period occupations in the area.

IV: PREVIOUS INVESTIGATIONS IN THE TUTTLE CREEK AREA

Previous archaeological investigations in the Tuttle Creek area consist of two surveys and nine field seasons of archaeological excavation. Institutions undertaking the work were the Smithsonian Institution, the University of Kansas at Lawrence, Kansas State University at Manhattan and the University of Nebraska at Lincoln. These investigations revealed that the Tuttle Creek area contains numerous and diverse archaeological sites spanning the duration of human occupation from the Paleo-Indian through the Plains Village periods.

The initial archaeological survey for the area was conducted by the Smithsonian River Basin Surveys in 1952. The survey located 119 sites representing all periods of prehistory in the Plains.

During the following summer field season of 1953, the Smithsonian River Basin Surveys undertook testing of three sites and excavation of one, Sweat Bee Mound. Sweat Bee Mound (14PO14)

was determined to be a burial mound containing seven burials in context with disturbed limestone slabs. All but one of the burials probably belong to the Plains Woodland period (Cumming 1958: 56). The sites tested were the Reany site (14PO13), the Spillway site (14PO12) and 14PO10 (Cumming 1958:45-78). The Reany site, containing both native and European artifacts, is probably a proto-historic or early historic Kansa Indian campsite (Ziegler 1976:7). The Spillway site and 14PO10 were determined to be of Plains Village cultural affiliation (Ziegler 1976:6-7). Later that year further excavations were conducted at 14RY10 by a volunteer crew composed of members from the River Basin Surveys, Kansas State University and the University of Nebraska (Kelley 1966).

Tests and excavations continued in 1956-57. In 1956 site 14PO21 was excavated by a Kansas State University crew and found to be of Plains Village affiliation (Kelley 1966:101-4; cf. Cumming 1958). During the summer of 1957 the Budenbender site (14PO4) was excavated and four other sites tested by the University of Kansas Museum of Anthropology. The Budenbender site, a Plains Village occupation, consisted of the remains of two or three earth lodges (Johnson 1973). A carbon sample from a post in the one completely excavated structure was radiocarbon dated to A.D. 1190 (Johnson 1973:291). The three sites tested were the Bean Hollow site (14MH1), the Walls site (14MH2) and the Coffey site (14PO1). The Bean Hollow site is a multi-component site dating from the Archaic to the Plains Village period. The Walls site was determined to be a Plains Village site. Testing of the Coffey site failed to locate the buried cultural deposits later discovered.

In 1962, one site was excavated and one tested by the Smithsonian River Basin Surveys. Excavations were conducted at the Pishny site (14MH2), a small Plains Village occupation with earth lodges (Kelley 1966). The Hamilton-Russell site (14MH70) was tested and found to be of Plains Village affiliation (Kelley 1966:106).

The second survey of Tuttle Creek Lake, during 1970, was a shoreline survey by a University of Kansas crew which located 54 new archaeological sites and tested three. Some sites were noted to be eroding as a result of shoreline wave action; other areas of artifacts were determined to be redeposited from inundated sites. The three tested sites were 14PO371, 14RY339 and 14PO65. A report concerning these investigations is now in process (Johnson, personal communication).

Excavations at the Coffey site, "one of the most spectacular stratified Archaic sites in the Plains area" (Ziegler 1976:25), were the last to date at Tuttle Creek Lake. In 1970 Ed Coffey discovered artifacts eroding from the river bank of 14PO1 and informed the University of Kansas survey crew. Test excavations

confirmed the presence of buried cultural deposits. Preliminary excavations of the site were conducted by Kansas State University during the fall of 1971 and the spring of 1972 and full scale excavations by the University of Kansas during the 1972-1975 summer field seasons. The 1972-1975 excavations revealed that no less than 12 sequential occupational levels are present at Locality I and at least five more at Locality II. Several levels have been radiocarbon dated to the Middle Archaic period (Schmits 1978, 1980). Data was obtained on numerous features and a large quantity of artifacts excavated. Faunal and floral remains were also recovered and analyzed (Schmits 1978). Bifacial tools from Horizons III-5, III-7 and III-8 have been analyzed and found to indicate the presence of a well defined tool tradition (Miller 1979). In addition to Archaic deposits a Woodland component is present, and a Folsom point recovered from the surface indicates the possible presence of a Paleo-Indian component.

V: METHODS AND RESULTS OF THE SURVEY

The scope of work stipulated that the area of Tuttle Creek Lake from the Marshall County line south to Randolph State Park on the east and Fancy Creek State Park on the west be intensively surveyed as recommended in the cultural management program for Tuttle Creek Lake for the years 1978-1983 (Ziegler 1976). The survey was to be limited to between the elevations of 1073 ft and 1095 ft above mean sea level (327.5 m to 333.8 m) along the shoreline.

Prior to the survey, a literature and records search of the project area was conducted. According to Ziegler (1976) and Kansas Archaeological Survey records on file at the Museum of Anthropology, University of Kansas, 132 archaeological sites have been recorded within the boundaries of the Tuttle Creek Lake project area. Sixteen of these are located within the survey project area. The average elevation and cultural affiliation for each of these sites, as given by Ziegler (1976), are shown in Table 1. During the course of the survey, the locations of these sites were revisited and adverse effects of the lake project evaluated.

The survey was conducted by walking a pedestrian transect down both sides of the Big Blue River along or as close as possible to the present shoreline. Approximately two miles of the west bank of Spring Creek north of the confluence with the Big Blue River was also surveyed (Figure 3).

The transect survey method was adopted in order to insure efficient and thorough coverage of the area. The survey was conducted in December when vegetation was low and surface visibility was maximized. Consequently, minimal shovel testing was required to determine the horizontal limits of sites. Previous work on floodplain sites along the Big Blue River has demonstrated that these

Table 1. Project area elevations and cultural affiliations of previously known sites.

Site	Elevation (ft)	Cultural Affiliation
14PO1	1090	Paleo-Indian (?), Archaic
14PO2	1090	Plains Woodland
14PO3	1090	Plains Village
14PO370	1090	Unknown
14PO374	1090	Archaic, Plains Woodland
14PO375	1090	Unknown
14PO377	1090	Unknown
14RY3	1090	Plains Woodland
14RY6	1080	Archaic, Plains Woodland Plains Village
14RY7	1080	Unknown
14RY326	1080	Unknown
14RY333	1090	Unknown
14RY352	1090	Archaic, Plains Woodland
14RY353	1080	Archaic
14RY354	1080	Unknown
14RY360	1080	Unknown

sites often contain buried cultural components two to three meters below the surface. The extensive testing which would be required to adequately determine the vertical extent of these sites was neither required by the scope of work or adequatly budgeted for in the project. Survey personell consisted of the author, Bertram S.A. Herbert and David H. Jurney. Materials and field records recovered by the project will be curated by the University of Kansas Museum of Anthropology.

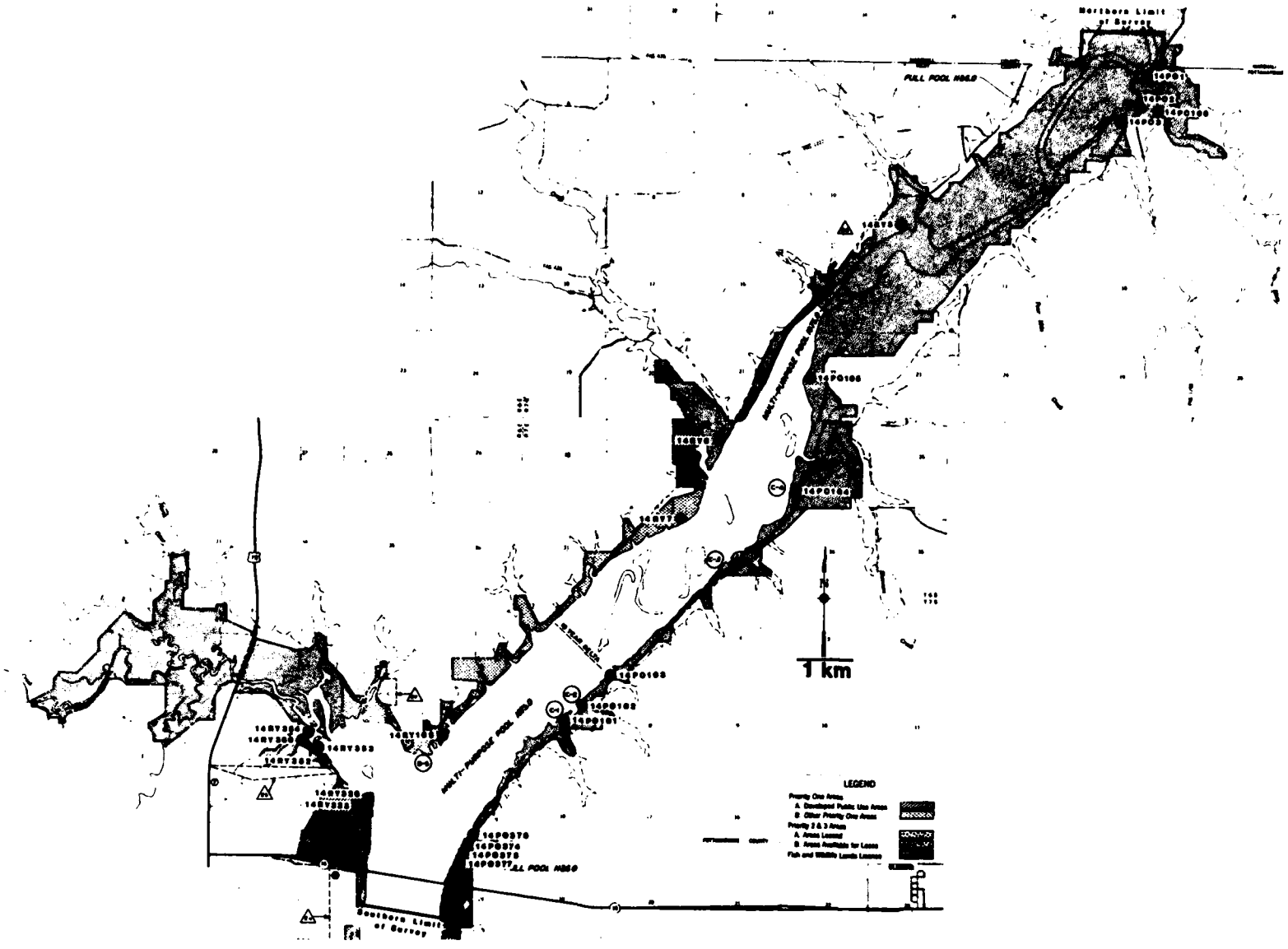


Figure 3. Map of the Tuttle Creek Lake archaeological shoreline survey 1979.

SITE DESCRIPTIONS AND EVALUATIONS FOR KNOWN SITES

14PO1 (Coffey Site)

MATERIAL RECOVERED:
- Mano fragment: 1
- Waste flakes: 2
- Core: 1
- Quartzite cobble fragment: 1

VEGETATION: Grass, milo stalks

DESCRIPTION: Along the bank just north of Locality I (Schmits 1978) cultural material was observed eroding out of cultural strata. Artifacts include a Sioux quartzite mano fragment 57 mm thick with three smoothed surfaces and a core of a local blue-gray chert with five striking platforms and patterned flake removal surfaces. Dimensions of the core are 82 mm in length, 64 mm wide, 38 mm thick, and a weight of 184.4 grams. Flecks of charcoal and burned earth were present, but no charcoal suitable for a radiocarbon date was observed. Major erosional effects are due to the Big Blue River undercutting the bank along which the site is located (Figure 4). The surface area of the site is also occasionally inundated. Erosional damage is severe and will eventually result in destruction of the site.

RECOMMENDATIONS: The site is one of the most important Archaic sites in the Plains. Past excavations have concentrated on buried cultural deposits in Unit III at Locality I (Schmits 1978). While extensive excavations have been conducted in the Middle Archaic cultural deposits at Locality I, relatively little cultural material has been recovered from the Unit V deposits at Locality I or the Unit IV at Locality II. Locality II is known to contain a stratified series of Walnut phase cultural level located in a channel fill deposit dating to 2320-2480 B.P. (Schmits 1980). This cultural complex has important bearing on the transition from the Archaic to the Plains Woodland in the Central Plains'and is not sufficiently well known at the present. The cultural affiliation of the Unit V cultural deposits at Locality I is not known. These deposits should be extensively tested and appropriate mitigative action taken if warranted.

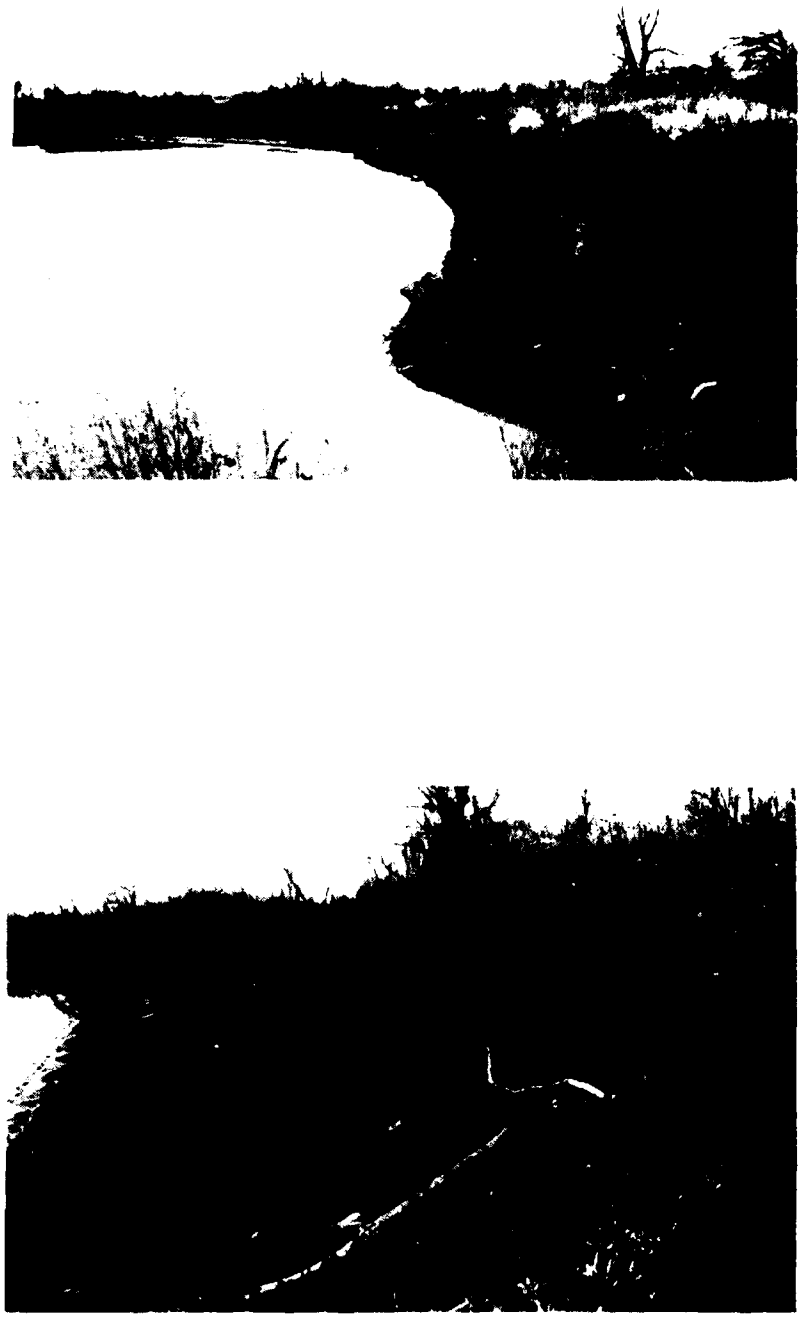


Figure 4. Views of erosional damage at the Coffey site: (Upper) View along the bank to the west of Locality I, (Lower) View of the bank to the east of Locality I.

14PO2

MATERIAL RECOVERED:
Projectile point: 1
Bifaces: 3
Unifaces: 5
Waste flakes: 10
Ground stone fragment: 1
Unworked stone: 3

VEGETATION: Sprouting wheat and corn stubble

DESCRIPTION: The site covers at least 6.1 ha (60,705 sq m) along a terrace remnant of the Big Blue River. Artifacts recovered in 1952 suggest an Early Woodland affiliation. The point recovered during this survey (Figure 5a) has a long contracting stem with a slightly concave base. It is similar to points diagnostic of the Langtry Complex, as described by Martin (1976:18-22) for the Kansas City vicinity. The Langtry complex probably dates to the Middle Woodland period. The three bifaces recovered exhibit irregular primary flaking and a lack of edge retouch or wear. All were likely early discards in the lithic reduction sequence. Unifacial tools include a complete end scraper and flakes with minor use wear. Dimensions of the scraper are length 38 mm width 31 mm, thickness 9 mm, and weight 11.4 grams. A small unidentifiable fragment of Sioux quartzite has one smooth rounded surface. All lithic material appears to be of local origin. Erosional damage of the site is limited to surface runoff.

RECOMMENDATIONS: Most of the site is located above 1090 ft. Preservation and protection from visibility can be provided by removing the area from cultivation and allowing natural vegetation to return. The Woodland period is little known in the Tuttle Creek area. Consequently the site is significant and eligable for nomination to the National Register.

14PO3

MATERIAL RECOVERED:
Bifaces: 6
Unifaces: 3
Core: 1
Waste flakes: 37

VEGETATION: Corn stubble

DESCRIPTION: The site was reported in 1952 as covering approximately 1.6 ha upon a gentle slope southwest of 14PO2. However, the present survey found the surface scatter to be continuous with

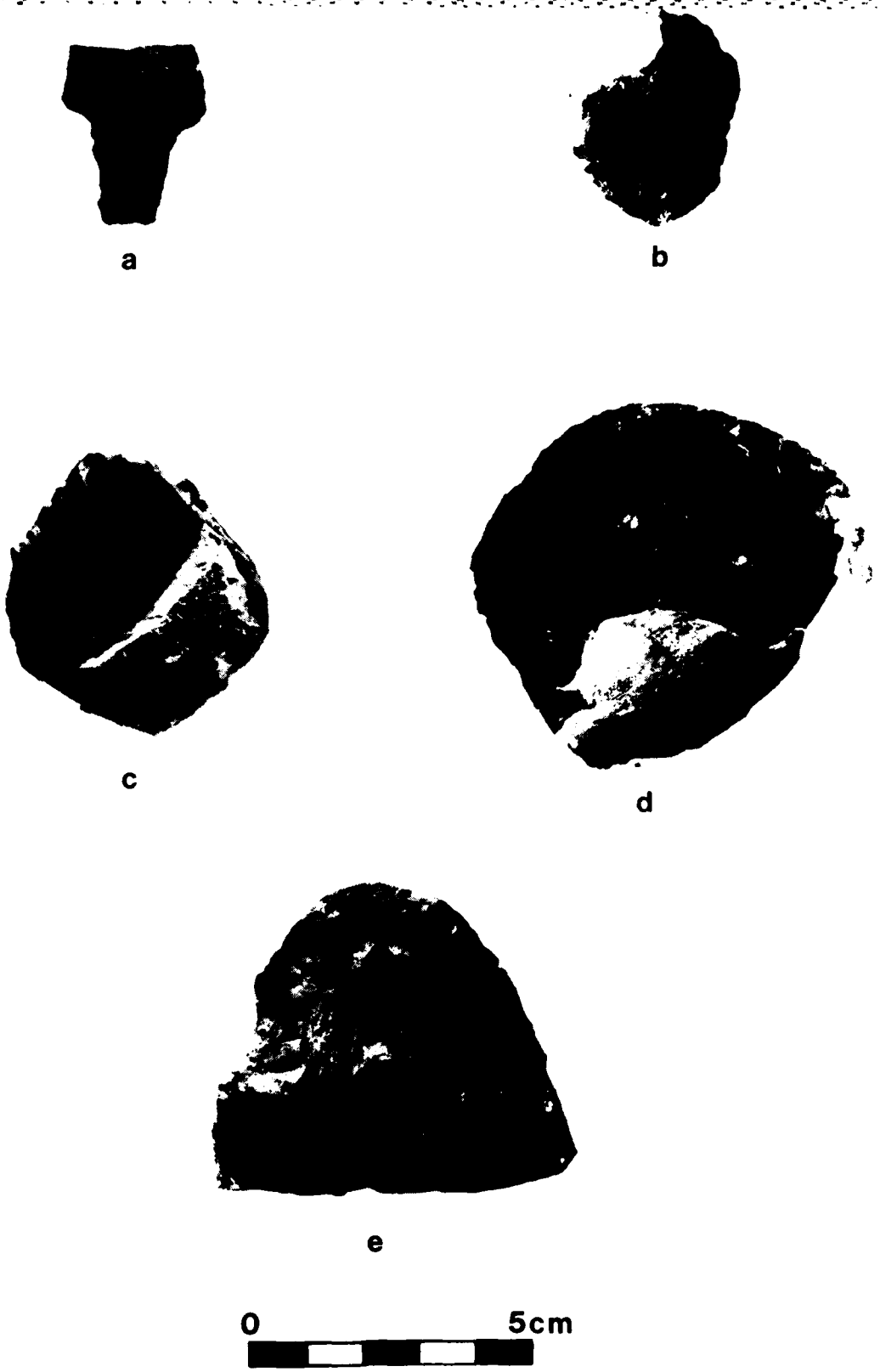


Figure 5. Chipped stone artifacts from previously known archaeological sites: (a) Projectile point from 14PO2, (b-d) Unifacial scrapers from 14PO2, (e) Bifacial knife from 14PO4.

14PO2. It is possible that vegetation prevented detection of this continuity in 1952. Bifacial artifacts recovered in 1979 show irregular primary flaking and lack of edge wear. All are of local blue-gray chert, one speciman shows a color change indicative of heat treatment. All three unifacial tools show steep marginal retouch and step flaking indicating likely use for scraping. A core fragment has irregular platforms and flake removal surfaces. The weight of the core is 73.9 grams. Seven of the 37 waste flakes recovered evidence a pinkish luster indicative of heat treatment. No diagnostic artifacts were recovered during this survey, but diagnostic body and rim sherds recovered in 1952 indicate that a Plains Village component is present. The site is a potential National Register candidate. Erosion appears to be limited to surface run off.

RECOMMENDATIONS: Solecki (1953:15) and Ziegler (1976) recommend testing. However, preservation of the site could be effected by removing the area from cultivation. While a Plains Village period site has been investigated in the Tuttle Creek area (Johnson 1973), sufficient data regarding the cultural affiliation of Plains Village populations and adaptive stratesies is not presently available. Consequently, the site is significant and is eligible for nomination to the National Register.

14PO370

MATERIAL RECOVERED:
None

VEGETATION: None

DESCRIPTION: Preliminary testing was recommended for this site by Ziegler (1976). However, the site has been destroyed by the construction of a boat ramp.

RECOMMENDATIONS: No further work is recommended.

14PO374, 14PO375, 14PO377

MATERIALS RECOVERED:
Waste flakes: 34
Unworked stone: 6

VEGETATION: Grass

DESCRIPTION: Sites 14PO374, 14PO375 and 14PO377 have been considered together since there is a more or less continuous scatter of materials between these localities (Figure 3). At these sites flakes were observed eroding onto the beach for a length of approximately 400 m along the picnic area in Randolph State Park. A few flakes were found on the surface in the picnic area. Cultural debris eroding onto the beach was continuous indicating that the three sites should be treated as one site. No diagnositc artifacts were recovered. Two projectile points recovered in 1952 from the area designated 14PO374 suggest a Late Archaic to Early Woodland cultural affiliation. The site is being damaged by wave action erosion, intensive public use and surface run off.

RECOMMENDATIONS: Full scale Phase II test excavations as recommended by Ziegler (1976:41-42) are required to determine whether the integrity of the site has been destroyed by construction and/or erosion.

14RY3

MATERIAL RECOVERED:
None

VEGETATION: Corn and soybean stubble, trees, brush

DESCRIPTION: The 1952 survey reported cultural debris extending from the country road to the railroad tracks east of the Big Blue River and covering an area of .8 ha. Thorough examination was prevented by crop cover (Ziegler 1976:43). Crops had been harvested prior to the present survey and visibility was excellent except along tree lines. Artifact scatter was light near the county road, increasing in density toward the river. Artifacts observed at the site consisted of Sioux quartzite cobbles (hearthstones) and lithic manufacturing debris. No tools were found. The site is more extensive than previously reported, extending from near the west bank of Timber Creek to a recently constructed road directly to the west. The surface area is approximately 4.1 ha (40,470 sq m). Near the river, on the southern boundary of the site, artifacts were observed eroding out of an old shoreline along a treeline for about 200 m. The bank of the Big Blue River directly to the south of the site was examined. No artifacts were observed; but the old railroad bed could be seen as a layer of gravel, cinders and charcoal under approximately .5 m of silt. The river is cutting toward the site, but the resistence of the old railroad bed is impeding this process. The site has been inundated and damaged by wave action and sheet erosion. The soil surface along the treeline to the south is approximately one m higher than that of adjacent cultivated soil, but the treeline is not extensive enough to provide long term resistence to erosion. The site has been determined to be of Plains Woodland affiliation

on the basis of a projectile point recovered in 1952.

RECOMMENDATIONS: The site is endangered by bank cutting erosion. This is a potentially important site, due to cultural affiliation, and should be tested. In the interim the site should be taken out of cultivation and planted in erosion resistant vegetation, preferably trees.

14RY6

MATERIAL RECOVERED:
Ground stone tools fragment: 1
Body sherds: 3
Uniface: 1

VEGETATION: Grass, weeds, milo stubble

DESCRIPTION: The 1952 survey reported several hectares of cultural material along the east bank of Swede Creek and the river terrace. The site lies to the lee of a promontory and has been silted over. Artifacts could be observed only along about 600 m of the shore line south of the promontory where wave action has resulted in erosion. Points diagnostic of Archaic, Plains Woodland and Plains Village cultural affiliation were recovered in 1952 (Ziegler 1976:44). The three body sherds recovered during this survey are probably of the Plains Village period. The site is a potential National Register candidate. Although the site is located in a wildlife area, it is easily accessed by the public for hunting or recreation.

RECOMMENDATIONS: The site is highly visible to the public along the shoreline and easily accessed. The site is potentially valuable, particularly as a long duration of occupation is indicated, and should be tested as recommended by Solecki (1953:29) and Ziegler (1976).

14RY7

MATERIAL RECOVERED:
Waste flakes: 12
Unworked stone: 1

VEGETATION: Grass, weeds, milo stubble

DESCRIPTION: Flakes were observed eroding out of an old shoreline for a distance of about 200 m west of two concrete posts. The 1952 survey reported that the site covered 1.2 ha in a plowed field, but only one flake was observed on plowed ground during the present survey. It appears that the site is partially silted

over. No diagnostic artifacts have been recovered from the site to date. All flakes are of local blue-gray chert. One evidences heat discoloration.

RECOMMENDATIONS: Ziegler (1976:44) recommends that the site be tested. However, most of the area in which the site is located is marshy. Excavations would not be feasible. The site is being subjected to coms wave action erosion but does not appear to be in danger of total destruction. No action is recommended.

14RY326

MATERIAL RECOVERED:
None

VEGETATION: None

DESCRIPTION: A surface grab sample which contained no diagnostic artifacts was obtained from this site in 1970. No cultural debris was observed in the area during the present survey. The site is located near the shoreline of the Fancy Creek State Park pool. It has apparently been destroyed by wave action.

RECOMMENDATIONS: No further action.

14RY333

MATERIAL RECOVERED:
None

VEGETATION: Grass

DESCRIPTION: A surface grab sample of artifacts was collected in 1970. There were no diagnostic artifacts. The site is located in a picnic area of Fancy Creek State Park. It has been destroyed by construction of a parking lot.

RECOMMENDATIONS: No further action

14RY352

MATERIAL RECOVERED:
None

VEGETATION: Weeds

DESCRIPTION: No evidence of the site was found. Diagnostic artifacts recovered from the site in 1970 indicate an Archaic to Plains Woodland cultural affiliation. The site is located at the west end of the Fancy Creek Park pool. Aerial photographs taken in 1977 show that considerable silt deposition has occurred since the previous survey.

RECOMMENDATIONS: Ziegler (1976:51) recommends testing. However, as the site is buried, no action is recommended unless earth moving activities are planned. If earth is to be moved the site location should be monitored.

14RY353

MATERIAL RECOVERED:
None

VEGETATION: Weeds

DESCRIPTION: No evidence of the site was found. Two Archaic projectile points were recovered in a surface grab sample at this location in 1970. However, Ziegler (1976:51) reports that survey notes indicate the material was probably washing down the slope.

RECOMMENDATIONS: Testing is recommended by the 1976 management program; but if the site is upslope from the location of the recovered materials, it is outside the lake project boundaries. No further action is recommended unldess earth is to be moved during construction, in which case the location should be monitored.

14RY354

MATERIAL RECOVERED:
None

VEGETATION: Weeds

DESCRIPTION: The 1970 survey reported a lithic scatter 1.5 m above the water. No diagnositc artifacts were recovered. The site could not be located by the present survey. Silting was observed up to an elevation of 1120 ft along the area south of Fancy Creek to the west of the pool. The stream bank contained no cultural debris. The site is apparently buried in silt.

RECOMMENDATIONS: Testing of the site as recommended by Ziegler (1976:52) would not be feasible. No further action is needed unless earth moving activities are planned. The site location should then be monitored.

14RY360

MATERIAL RECOVERED:
None

VEGETATION: Weeds

DESCRIPTION: No evidence of the site was found either on the surface or in the stream bank. The site was reported by the 1970 survey to consist of a scatter over an area of approximately 9.1 by 7.3 m on a mud flat on the right bank of Fancy Creek. No diagnostic artifacts were recovered. The area has been silted over up to the elevation of 1120 ft.

RECOMMENDATIONS: The site is apparently buried in silt. No further action is recommended unless earth moving activities are planned, in which case the site should be monitored.

SITE DESCRIPTIONS AND RECOMMENDATIONS FOR SITES LOCATED DURING SURVEY

14PO101

MATERIALS RECOVERED:
Biface fragments: 1
Uniface: 2
Waste flakes: 11
Unworked stones: 15

VEGETATION: Grass and weeds

DESCRIPTION: Flakes, and a biface were observed along an old shoreline for a distance of approximately 300 m at the point of a portion of the floodplain located between two tributaries. A modern quarry lies to the east of the site and the road paralleling the lake shore. The extent of the site could not be determined due to burial beneath silt. No diagnostic cultural materials were recovered. Chipped stone tools include two use-modified flakes and a bifacially worked flake with intermittent attrition wear indicative of cutting use. All chipped stone artifacts and unworked stone appears to be of locally derived material. None exhibit evidence of heat treatment. The river is cutting into the site (Figure 6).

RECOMMENDATIONS: The site is endangered by sheet erosion, bank cutting and wave action. Testing should be conducted to determine the horizontal extent and depth of the site and its cultural affiliation.

Figure 6. Views of erosion and sedimentation at Tuttle Creek Lake: (Upper) View along bank at 14RY108 looking north from the southern end of the site showing bank cutting, (Lower) View along shoreline looking south at 14P0101 showing sedimentation over the site.

14PO102

MATERIAL RECOVERED:
Uniface: 2

VEGETATION: Weeds, trees, brush, grass

DESCRIPTION: The only portion of the site visible was a 60 m long scatter of cultural debris at the base of a bank cut along the floodplain adjacent to the north bank of a tributary stream. The remainder of the site is buried in silt, preventing determination of horizontal extent. Two unifacial scrapers were recovered. A complete end scraper has retouch extending around a lateral margin. Dimensions are length 46 mm, width 45 mm, thickness 14 mm, and weight of 29.6 grams. The other scraper is manufactured from a large circular flake and has a working edge 61 mm in length. Dimensions are length 65 mm, width 58 mm, thickness 21 mm and a weight of 98 grams. Cultural affiliation could not be determined for no diagnostic artifacts were recovered.

RECOMMENDATIONS: The site is in danger of destruction by direct current erosion from the tributary and wave action from the lake. Testing is needed to determine site limits and cultural affiliation.

14PO103

MATERIALS RECOVERED:
Biface fragments: 1
Unworked stones: 2

VEGETATION: Grass, weeds, milo stubble

DESCRIPTION: A biface fragment, flakes, firecracked rocks and fragments of quartzite were observed for a distance of 100 m along the beach at the base of a bank cut to the south of the mouth of the small tributary in Section 5. For a distance of approximately 150 m back from the bank lithic debris is scattered over the surface of a low terrace. The site covers at least 1.6 ha (16,188 sq m). Soil stratification was observed in the bank, but it could not be determined whether this is attributable to a sequence of cultural occupations. No artifacts recovered were diagnostic of a cultural affiliation.

RECOMMENDATIONS: The site is being rapidly destroyed due to bank undercutting and slumping. There may be considerable vertical depth to the cultural deposits. The site is a potential National Register candidate and should be tested to determine vertical extent, cultural affiliation and significance.

14PO104

MATERIALS RECOVERED:
Biface fragment: 1
Uniface: 1
Waste flakes: 4

VEGETATION: Alder saplings, grass

DESCRIPTION: The site is visible for a distance of approximately 30 m. Artifacts were observed eroding out along an old shoreline on a low terrace. The remainder of the site is silted over. Alders growing on portions of the site area were observed to provide a resource for beaver. Sheet erosion and wave action are affecting the site. However, most of the damage appears to be attributable to sheet erosion. No cultural affiliation can be assigned for no diagnostic artifacts were recovered. Artifacts recovered include a fragment of a large ovate biface and a use-modified uniface which shows heat discoloration. All tools and waste flakes are of local blue-gray chert.

RECOMMENDATIONS: Testing would be required to determine vertical and horizontal extent of the site. However, the site could probably be preserved by maintaining erosion resistant vegetation over the site area. The shoreline should be periodically checked for diagnostic artifacts.

14PO105

MATERIALS RECOVERED:
Biface: 1
Biface fragments: 1
Unifaces: 2
Waste flakes: 14
Unworked stones: 7

VEGETATION: Grass, weeds

DESCRIPTION: The site is located on a terrace which has silted over. Cultural debris was observed eroding along an old shoreline for a distance of approximately 300 m northeast of a concrete structural ruins to the south end of the treeline along the shore. Previously recorded sites 14PO6, 14PO7, 14PO8 and 14PO22 are also located on this terrace. It is possible that all five sites are portions of one large site. However, when reacessing the site to confirm its location, the field party did not find any evidence of 14PO22, which is located in a currently plowed field with excellent visibility. This suggests that all five sites may be buried in silt. No diagnostic artifacts were recovered. Chipped stone

artifacts recovered included a bifacial celt (Figure 7e) and a unifacial end scraper (Figure 7d). Dimensions of the celt are length 79 mm, width 45 mm, thickness 19 mm, and a weight of 52.8 grams. The scraper dimensions are length 93 mm, width 34 mm, thickness 19 mm, and weight of 43.1 grams. A small bifacial fragment shows non patterned primary flaking and a lack of edge wear. Heat discoloration is apparent. All chipped stone tools, waste flakes, and unworked stone appears to be of local material. Two flakes show heat discoloration. Sites 14P07, 14P08, and 14P022 are also of unknown cultural affiliation; 14P06 is a Plains Village site.

RECOMMENDATIONS: Testing would be required to determine the number, extent, and cultural affiliations of the sites in this area. No bank cutting and little wave action were observed, however. Erosional effects are mainly due to sheet erosion. The sites can be preserved and the bank stabilized by vegetation cover, preferably inundation tolerant species of trees.

14P0106

MATERIAL RECOVERED:
- Biface fragments: 2
- Unifaces: 4
- Waste flakes: 44
- Body sherds, plain: 6
- Body sherds, cordmarked: 1
- Unworked stones: 4

VEGETATION: Milo stalks

DESCRIPTION: The site consists of approximately .4 ha (4,047 sq m) of lithic and ceramic debris extending about 60 m over a terrace in a plowed field to the west of a road running north 75 m west of the bridge across Spring Creek. Flakes were observed along the top and base of the south bank of Spring Creek at the first meander north of the bridge. Lithics include a biface fragment with a lenticular cross section 8 mm in thickness and a steeply retouched lateral edge. The other biface fragment shows irregular primary flaking and no edge wear. All lithics are of local blue gray chert and none evidence heat discoloration. Ceramics found on the east side of the site suggest a Plains Village cultural affiliation. The major erosional impact on the site is surface runoff.

RECOMMENDATIONS: The site is in a wildlife area. It could be preserved and protected from erosion by removing the land from cultivation and planting grass or trees to obscure surface visibility.

MATERIAL RECOVERED:
Projectile points: 2
Biface fragments: 5
Unifaces: 3
Cores: 3
Waste flakes: 57
Ground stone tool fragment: 1
Unworked stones: 13
Mussel shell: 1

VEGETATION: Grass

DESCRIPTION: To the north of the second tributary north of Fancy Creek a large quantity of flakes and tools were observed at the base of the bank for a length of about 300 m to the next tributary to the north. Along the top of the bank cultural debris covers approximately 4.1 ha (40,470 sq m) of a terrace. To the northwest is a hill which appears conical from the site. Large quantities of chert rubble cover the hill slopes and stream valleys. One projectile point (Figure 7b) is the base of a lanceolate point reworked into a drill. The second (Figure 7a) is the base of a large corner-notched point with an expanding stem slightly concave at the base. This point is similar to Ziegler's (1976) Figure 1 h, which is classified as Middle to Late Archaic. However, large corner-notched points may also occur in Plains Woodland assemblages. Other chipped stone tools include one biface fragment (Figure 7c) which shows patterned primary flaking and unidirectional marginal retouch. The other 4 biface fragments show minimal working and no edge wear. Three cores recovered have irregular platforms and non patterned flake removal surfaces. The weight of the cores is 65, 87, and 118 grams. A small groundstone fragment of Sioux quartzite has one smoothed flattened surface. All lithics appear to be from locally derived material.

The river is cutting into the bank along the east side of the site (Figure 6). Animal burrows are numerous. No stratification was observed on the bank, with the exception of soil development at the top. Stranded beaches were observed across the terrace up to approximately 1120 ft above sea level. Sheet and wave erosion have exposed artifacts on the site surface.

RECOMMENDATIONS: The site is a potential National Register candidate. It is extensive and, if of Early Woodland cultural affiliation, could provide new information regarding the local cultural sequence. The site is being destroyed. Erosional damage to date has been considerable, but a large portion of the site appears to be intact. The site requires testing to determine subsurface extent and cultural affiliation.

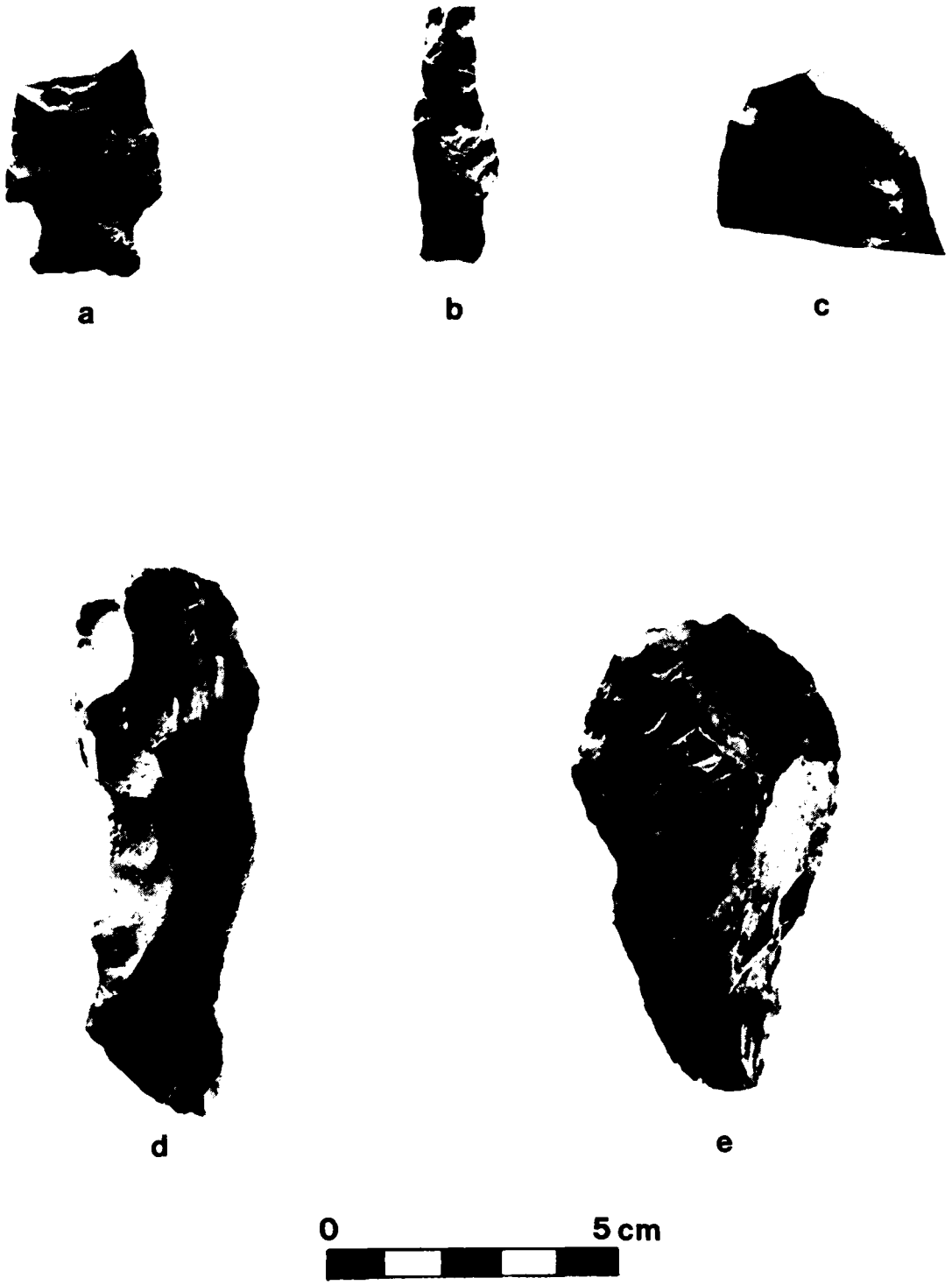


Figure 7. Chipped stone tools from recently exposed sites: (a-b) projectile points from 14RY108, (c) Bifacial fragment from 14RY108, (d) Unifacial scraper from 14PO105, (e) Bifacial celt from 14PO105.

VI: SUMMARY OF PROJECT IMPACT AND CONCLUSIONS

An intensive shoreline survey of Tuttle Creek Lake from the Marshall County, Kansas line to Randolph State Park on the east side and Fancy Creek State Park on the west side was conducted to locate and evaluate erosional damage to new and known sites between the elevations of 1073 ft and 1095 ft above mean sea level. This work was undertaken in accordance with the National Historic Preservation Act of 1966 (PL 89-665, as amended), Executive Order 11593, and the Archaeology and Historic Preservation Act of 1974 (PL 93-291). The cultural resources management program for Tuttle Creek Lake for the years 1978-1983 (Ziegler 1976), formulated for the Corps of Engineers, Kansas City District, recommends the shoreline survey as part of a comprehensive plan emphasizing the identification of significant archaeological sites.

According to Garrison (1975:288) post-inundation cultural resource studies should be undertaken after a reservoir has reached its specified configuration and should include resurvey and site examination during periods of low water or planned draw downs. The present survey was conducted during the month of December, a planned "draw down" period when the lake surface level was at or near the minimum for the year. The water surface level of the lake during the survey was 1073 ft (327.1 M) above sea level (U.S. Army Corps of Engineers, oral communication) as compared to the normal pool level of 1075 ft (327.7 m) above sea level. Vegetatational ground cover was at a minimum. Surface visibility along the shoreline ranged from 50 to 100 percent.

Location, description and extent of erosional damage was recorded for each new site, a grab sample of artifacts obtained, and photographs taken. Erosional damage was recorded for known sites and grab samples of artifacts obtained or artifacts photographed in situ. Figures 4 and 5 show some of the chipped stone tools recovered. All cut banks in the project area were examined for buried cultural deposits and carbon suitable for C-14 dates. Artifacts recovered will be curated by the University of Kansas Museum of Anthropology, Lawrence, Kansas.

Four basic kinds of erosion and sedimentation effects were observed at site locations in the survey area: (1) surface run-off, (2) wave action along beaches, (3) cutting away of banks and (4) deposition of silt. The processes of erosion and sedimentation are most prevalent at and near the shoreline of the multipurpose pool of a reservoir and in the upper end where stream output deposits silt. Wave action damage to sites at or near the shoreline will be the most extensive adverse effect. In reservoirs where wave action moves up and down the slope gradient due to water surface level fluctuations the resultant cycle of exposure-inundation-exposure will be particularly destructive to archaeological sites (Garrison 1975).

Fluctuating water levels can also result in wave action along a sequence of parallel shorelines. During low water level periods at Tuttle Creek Lake this effect may be observed as a series of "stranded shorelines" resembling steps progressing upslope from the lowest shoreline. These are usually associated with rows of driftwood and occur up to 1128 ft above sea level, the highest water surface level of the lake up to 1980. Inundated sites near a lake shoreline will be exposed to cyclical return currents, and either cutting or sedimentation can result. Sites located in the lee of shoreline promontories will be subject to sedimentation and resultant adverse chemical effects. Direct current erosion will affect sites located near stream inflows and currents in headwater areas will deposit silt over large areas, covering in some cases many square miles. Recreational activities near a lake shoreline are also destructive to archaeological sites (Garrison 1975).

At Tuttle Creek Lake silt deposits are most prevalent in the area northeast of Fancy Creek State Park, on the lee sides of promontories along the multipurpose pool and throughout the valley north of Swede Creek. At the time of the survey, some areas with silt deposits were observed to have been recut by the river channel or to show the "stranded shorelines" effect. The presence of sites in silted areas could be determined only by observing cultural debris eroding out as the result of wave action along an abandoned shoreline. Surface run-off will affect any sloping land surface when precipitation exceeds the absorption capacity of the soil However, water surface level fluctuations of a reservoir will also result in surface run-off, or sheet erosion, during "draw downs". The large amount of water flowing down previously inundated slopes will produce rapid erosion. Cutting away of banks will be accelerated during periods when water levels are high.

The extent of erosion of an archaeological site will be dependent upon frequency of inundation as well as kind of erosion. Elevation reflects the frequency of site inundation. Ziegler's (1976) cultural management program establishes site elevation as one criteria for ranking priorities for future work on sites. Within the survey area all sites would be assigned a high value (3 or 4), for they are frequently inundated.

Water surface fluctuations at Tuttle Creek Lake are frequent. Both planned and unplanned fluctuations occur. Planned water fluctuations are due to a reservoir operation plan in conjunction with the Kansas Fish and Game Commission. During the spring the lake surface is held at two to three feet above the normal multipurpose pool level to benefit fish through their spawning season. The water is "drawn down" during July to at or below the normal pool level. The lake surface level is raised two to three feet above normal pool level again in the fall to attract migratory waterfowl, then "drawn down" in December. Minimum lake water surface levels can be expected to occur during the winter. Unplanned water fluctuations occur when water is held in the lake for flood

control. The high water levels for the years 1970-1978 (Table 2) reflect this operation of the lake. Flood control procedures usually result in no more than a two week period of high water, followed by release of water to the desired multipurpose pool level (U.S. Army Kansas City District Corps of Engineers, oral communication).

Table 2. Tuttle Creek Lake minimum and maximum surface elevations (ft) for the years 1970-1978.

Year	Minimum	Maximum
1978	1073.4	1096.6
1977	1072.2	1086.1
1976	1072.7	1083.6
1975	1069.0	1086.5
1974	1069.0	1079.7
1973	1074.0	1127.9
1972	1074.9	1082.0
1971	1073.0	1084.7
1970	1073.5	1078.7

The maximum lake surface level has exceeded 1080 ft for seven of the years from 1970-1978. The minimum lake surface level has been at or above 1073 ft (327.1 m) for six of the nine years. It can therefore, be expected that a zone along the lake shoreline from approximately 1073 ft to 1090 ft (327.1 m to 332.2 m) will be annually subjected to intensive wave action.

Degree of resistance to erosion was also considered. Kind and extent of vegetation are important factors. Land which is cultivated will obviously be less resistant to erosion than land in grasses or forest. Erosion resistance may be increased by the proximity of old road beds and driftwood accumulation or decreased by felling of new timber growth by beavers and other animals constructing dens in the river banks.

Seven recently exposed archaeological sites were located by the survey team. Three are recommended for preservation and four for testing. Of the sixteen known sites in the project area one is recommended for further excavation, three for preservation, and five for testing. No action is recommended for eight known sites (Table 3).

Table 3. Recommendations of further action for sites in the project area.

	NO ACTION	PRESERVATION	TEST	EXCAVATION
14PO101			X	
14PO102			X	
14PO103			X	
14PO104		X		
14PO105		X		
14PO106		X		
14RY108			X	
14PO1				X
14PO2		X		
14PO3		X		
14PO370	X			
14PO374			X	
14PO375			X	
14PO377			X	
14RY3		X	X	
14RY6			X	
14RY7	X			
14RY326	X			
14RY333	X			
14RY352	X			
14RY353	X			
14RY354	X			
14RY360	X			

The Coffey site (14PO1) has been placed on the National Register of Historic Places (Ziegler 1976:26). Two of the new sites located during the survey and three previously known sites are potential National Register candidates (Table 4).

Table 4. Potential National Register sites.

14PO1*	14PO103
14PO2	14RY6
14PO3	14RY108

*Registered

The present survey brings the total number of archaeological sites known to exist within the boundaries of Tuttle Creek Lake to 139. The results of the survey demonstrate that selected resurvey can be an aid in the process of completing an inventory of cultural resource properties located on government-owned lands. An added benefit of resurvey is the possiblity of updating information regarding the conditions of previously located sites. Both the locations and conditions of archaeological sites must be known in order to make future lake management decisions. It is hoped that this study will significantly contribute to the overall goals of the cultural resources management program for Tuttle Creek Lake.

REFERENCES CITED

Barker, William T.
1969 The Flora of the Kansas Flint Hills. The University of Kansas Science Bulletin 48(14):524-584.

Caldwell, Warren W. and Dale R. Henning
1978 North American Plains. In Chronologies in New World Archaeology edited by R. E. Taylor Academic Press, New York.

Colby, C., H. Dillingham, E. Erickson, G. Jenks, J. Jones, R. Sinclair
1956 The Kansas Basin, Pilot study of a watershed. University of Kansas Press, Lawrence.

Cumming, R. B.
1958 Archaeological investigations at the Tuttle Creek Dam, Kansas. River Basin Survey Papers 10, Bureau of American Ethnology Bulletin 169.

Flora, S. D.
1948 Climate of Kansas. Report of the Kansas State Board of Agriculture, Quarterly Reports 67(285).

Garrison, S. D.
1975 A quantitative model for inundation studies in archaeological research and resource conservation: an example from Arkansas. Plains Anthropologist 20(70).

Hattin, Donald E.
1957 Depositional environment of the Wreford Megacyclothem (Lower Permian) of Kansas. State Geological Survey of Kansas Bulletin 124.

Johnson, Alfred E.
1973 Archaeological investigations at the Budenbender site, Tuttle Creek Reservoir, North-central Kansas, 1957. Plains Anthropologist 18(62) Parts 1-2.

Judge, W. James
1973 Paleoindian occupation of the Central Rio Grande Valley in New Mexico. University of New Mexico Press, Albuquerque.

Kelly, Jane H.
1966 Archaeological investigations in the Tuttle Creek Reservoir area. Manuscript on file, Midwest Archaeological Center, National Park Service, Lincoln, Nebraska.

Kuchler, A. W.
1964 Manual to accompany the map: potential natural vegetation of the coterminous United States. American Geographical Society, Special Publication 36.

Martin, Terrell L.
1976 Prehistoric settlement-subsistence relationships in the Fishing River drainage, Western Missouri. The Missouri Archaeologist 37:1-91.

Miller, Patricia A.
1979 An Archaic tool tradition in the Plains: a case study of the Coffey Site. Master of Arts Thesis, Anthropology, University of Kansas, Lawrence.

Schmits, Larry J.
1978 The Coffey Site: environment and cultural adaptation at a Plains Archaic site. Mid-Continental Journal of Archaeology Special Paper 1.

1980 Holocene fluvial history and depositional environments at the Coffey site, Kansas. Manuscript on file. Soil Systems, Inc. Earth Systems Division, Kansas City.

Schoewe, W. H.
1949 The geography of Kansas. Transactions of the Kansas Academy of Science 52(3)261-333.

Solecki, R. S.
1953 Appraisal of the archaeological and palentontological resources of the Tuttle Creek Reservoir, Marshall, Pottawatomie and Riley Counties, Kansas. Manuscript on file, Midwest Archaeological Center, National Park Service, Lincoln, Nebraska.

Ziegler, Robert J.
1976 A cultural resources management program for Tuttle Creek Lake for the years 1978-1983. Report submitted to the Department of the Army, Kansas City District Corps of Engineers. Purchase Order DACW41-76-M-0957.

APPENDIX I:

SCOPE OF WORK

Cultural Resources Shoreline Survey

Tuttle Creek Lake
Big Blue River, Kansas

1. INTRODUCTION

a. Tuttle Creek Lake is a Corps of Engineers operating project located on the Big Blue River in Riley, Pottawatomie, and Marshall Counties, Kansas. The project area consists of 33,634 acres of Government-owned land of which 15,800 acres are permanently inundated by waters of the lake.

b. To date, the following cultural resource studies have been conducted at the Tuttle Creek project:

1953 Solecki, R. S.
Appraisal of the Archaeological and Paleontological Resources of the Tuttle Creek Reservoir, Marshall, Pottawatomie, and Riley Counties, Kansas. Mimeographed report prepared by Smithsonian Institution, River Basin Surveys, Lincoln.

1958 Cumming, R. B.
Archaeological Investigations at the Tuttle Creek Dam, Kansas. River Basin Survey Papers, No. 10. Bureau of American Ethnology, Bulletin 169. Washington.

1966 Kelly, Jane H.
Archaeological Investigations in the Tuttle Creek Reservoir Area. MS, Midwest Archaeological Center, National Park Service, Lincoln.

1973 Johnson, Alfred E.
Archaeological Investigations at the Budenbender Site, Tuttle Creek Reservoir, North-Central Kansas, 1957. Plains Anthropologist, Vol. 18, No. 62, pts. 1-2.

1973 O'Brien, Patricia J. et al.
A Most Preliminary Report of the Coffey Site, 14PO1: A Plains Archaic Site in Pottawatomie County. Kansas Anthropological Association Newsletter 18 (5): 1-38.

1976 Schmits, Larry J.
The Coffey Site: Environment and Cultural Adaptation at a Prairie Plains Archaic Site. Report submitted to Department of the Interior, National Park Service, Interagency Archaeological Services, Office of Historic Preservation, Denver.

1976 Ziegler, R. J.
A Cultural Resources Management Program for Tuttle Creek Lake for the years 1978-1980.

c. The work defined herein to be performed by the Contractor is called for in the National Historic Preservation Act of 1966 (PL 89-665) and is authorized for funding under Public Law 86-523 as amended by Public Law 93-291. Accomplishment of this work will provide documentation evidencing compliance with Executive Order 11593 "Protection and Enhancement of the Cultural Environment" dated 13 May 1971, Section 2(a).

2. SCOPE

This work encompasses archeological survey of approximately 15 miles of shoreline within the project and identification of materials recovered. The Contractor and his staff shall conduct this study in a professional manner, using accepted methodology in accordance with the proposed 36CFR66 and 33CFR305. The Contractor shall be responsible for the preparation of a report of findings, fulfilling the requirements stated below.

3. STUDY APPROACH

a. Survey. The survey for archeological resources can be accomplished by scientific investigation based on research design as stated in 33CFR305.18 and approved by the Government. Recovery of data and cultural material shall be in accordance with the proposed 36CFR66. Proper curation of recovered materials, and documentation of data is vital.

b. Problem Orientations. A preliminary cultural resources management plan for the project area has identified sites that are most affected by project operations. Past work concentrated on survey of project lands. This study is to be oriented toward a survey of approximately 15 miles of shoreline to locate and evaluate archeological sites within this portion of the Tuttle Creek Lake project.

Recommendations for a basic orientation for investigation of shoreline sites have been broadly outlined in the 1976 Tuttle Creek Lake Preliminary Cultural Resources Management Plan.

c. Methodology. Justification for the area selected has been stated in the 1976 report. In order to investigate sites the Contractor shall, in accordance with the research design, use accepted and appropriate field and lab methods in accordance with the proposed 36CFR66 including but not limited to the following.

(1) Intensively survey the Tuttle Creek Lake shoreline between elevations 1073 m.s.l and 1095 m.s.l. This area consists of approximately 650 acres and is located:

(a) from the Pottawatomie County line southward to Fancy Creek Park on the western side of the lake, and

(b) from the Pottawatomie County line southward to Randolph State Park on the eastern side of the lake.

(2) No extensive excavation is required; however, limited testing for delineation of site boundaries will be necessary.

(3) Collect a sample of surface cultural materials at each site.

(4) Photograph phases of field work, using black and white film and also illustrate diagnostic features and artifacts by either black and white photography or line drawings.

(5) Record provenience of features, including maps and graphs, when applicable.

(6) Collect materials for absolute dating (e.g. radio-carbon) when appropriate.

(7) Process, catalog, and curate all recovered materials.

(8) Make identifications of cultural materials to answer the research design and to provide a base for future use by the archeological profession as data for research.

(9) Perform all measurements using the metric system.

4. SCHEDULE OF WORK

a. Coordination and Meetings. The Contractor shall pursue the study in a professional manner to meet the schedule specified. Prior to the initiation of actual field work, the Contractor shall submit a research design for review and approval as stated in Section 3a. He shall also coordinate all field schedules and activities with the appropriate cultural resources coordinator, State Historic Preservation Officer representative (SHPO) and the project office.

During the course of the study, the Contractor shall review the progress of the work performed with representatives of the Corps of Engineers and the SHPO.

The Contractor shall attend one meeting at the Kansas City District Office to discuss the review of the draft of the report.

b. Report Content and Schedule

(1) A report of findings shall be prepared by the Contractor and his staff. The main text of the report shall be written in a manner

suitable for reading by persons not professionally trained as archeologists. Detailed presentation and discussion of data of interest to the archeological profession shall be included in a second part of the report or as appendices. The report is intended to be of use and interest to the general public as well as of value to the profession. Use of illustrations is encouraged.

(2) The report shall be authored by either the principal investigator or project director. If the project director is not the author, he shall review and edit the report prior to submission of the draft and final versions.

(3) Thirteen (13) copies of a complete draft of the report shall be submitted to the Contracting Officer for purposes of Governmental review within eight (8) months after receipt of notice to proceed. (If excessive inclement weather or other delays occur, this date may be extended to one mutually agreed upon between the Government and the Contractor.) In addition to standard review procedures, the Government may (at its discretion) send the draft report and Scope of Work to three qualified professionals not associated with a State or Federal Governmental agency for peer review of the merits and acceptability of the report. After a review period of approximately two (2) months, the Government will return the draft to the Contractor. The Contractor then shall complete necessary revisions and submit the final report, which shall be professionally edited, within sixty (60) calendar days after receipt of the reviewed draft. The Contractor shall submit one set of originals and two copies of the final report of findings to the Government. The copies shall include all plates, maps, and graphics in place so that they may be used as patterns for assembling the final report. The Government will edit the final report and after approval, will reproduce this report and provide the Contractor ten (10) copies for personal use, plus two (2) copies for each major contributing author.

(4) The report shall include the following:

(a) Description of the study area;

(b) A discussion of each site investigated and identification of data mentioned above. A detailed description of sites and limited discussion of the recovered artifacts, presented both in support of the discussion in the text and also as valuable data for professional use of the report;

(c) A detailed description of the methods used in field and lab work;

(d) Recommendations which could be added to the preliminary cultural resources management plan for the operating project, and any suggestions for the archeological portion of the interpretive program;

(e) Illustrations, photos, maps, tables, and graphic representations of data appropriate to the text, such as illustrations of diagnostic artifacts;

(f) One map of the project indicating areas surveyed during this study. This map should also include all known sites. (Color overlay reproduction is available.) Maps for inclusion in the report must be presented in such a manner that exact site locations are not disclosed.

(g) A glossary of terms;

(h) Reference section with all sources referred to in text or used for report, personal communications, interviews, bibliography, etc.,

(i) Copies of all correspondence pertaining to review of the draft report. These are to include the comments of the State Historic Preservation Officer, Heritage Conservation and Recreation Service, and the peer reviews (if applicable) by professional archeologists requested by the Government, together with responses to each of the comments given. The Scope of Work is to be included in this section; and

(j) Listing of principal investigators and field and lab personnel with their qualifications as an appendix.

(5) The final originals and two copies of the report shall be typed single-spaced on one side of paper with the margins set for reproduction on both sides of 8 x 10-1/2 inch paper. One of the copies shall be assembled in accordance with the attached style sheet. (To be added later.)

c. Other Information. Six copies of materials not suitable for publication in the report shall be submitted with the draft. These materials include feature maps, large amounts of specialized statistical analysis data, repetitious photographs, a complete listing of all materials recovered, and where records are maintained, and other documentation not of interest to most readers of the report. Averages, graphs, or summaries of statistical data are to be included in the publishable report. Large masses of specialized statistical data, such as certain artifact measurements, shall be stored on computer tapes or in microfilm so that it can be made readily available to interested persons. Publication of such bulk statistics in the report is not appropriate.

d. Materials Not for Release. Materials dealing with exact archeological site locations are considered confidential and are not to be published or released. Materials which shall accompany the report but which are not to be included in the report consists of:

(1) Six (6) copies of USGS and base maps indicating exact locations of all archeological resources and areas which were physically surveyed. These shall be provided to the Government and SHPO.

(2) Six (6) copies of survey forms for any newly recorded sites discovered incidental to this contract. These shall be provided four (4) to the Government, and one each to the SHPO and the Kansas State Historical Society.

e. Storage of Materials. Attached to the letter of transmittal for the final report shall be a listing of all cultural materials found during the field investigations and a Certificate of Authenticity for these materials. Collections shall be properly stored in containers clearly marked "Property of the U.S. Government, Kansas City District, Corps of Engineers." Retrieval of these materials by the U.S. Army Corps of Engineers for use by the Government is reserved. If the materials are to be removed from the curatorial facilities, this action must be approved in writing by the Contracting Officer.

5. FURTHER RESPONSIBILITIES OF THE CONTRACTOR AND GOVERNMENT

a. Contract Modifications

(1) Because of the complex nature of the prehistoric and historic resources being surveyed, it is recognized that additional testing may be required. If in the opinion of the Contracting Officer such additional work is needed, the contract will be modified pursuant to the provision of Article 2, Changes, of the Contract.

(2) The work identified in this document shall be complete in itself. There will be no assurance from the Government that additional work will follow, nor should such work be anticipated.

b. Data Availability. The Government shall provide the Contractor with available background information, maps, remotely sensed data reports (if any), and correspondence as needed. In addition, the Government will provide support to the Contractor regarding suggestions on data sources, format of study outline and report, and review of study progress.

c. Right-of-Entry and Crop Damages. The Contractor shall have right-of-entry on all property owned by the Government. Compensation for damages to crops planted on Government property leased to various individuals shall be the responsibility of the Contractor.

d. Publication. It is expected that the Contractor and those in his employ, may during the term of the contract, present reports of the work to various professional societies and publications. Outlines or abstracts of those reports dealing with work sponsored by the Corps of Engineers shall be sent to the Kansas City District Office for review and approval prior to presentation or publication. Proper credit shall be given for Corps of Engineers' sponsored work, and the Corps of Engineers shall be furnished six (6) copies of each paper presented and/or published report.

e. Court Testimony. In the event of controversy or court challenge, the Contractor shall make available, as appropriate, expert witnesses who performed work under contract who shall testify on behalf of the Government in support of the report findings. If a controversy or court challenge occurs and testimony of expert witnesses is required, an equitable adjustment shall be negotiated.

f. Safety Requirements. The Contractor shall provide a safe working environment for all persons in his employ as prescribed by EM 385-1-1, "General Safety Requirements," a copy of which will be provided by the Government.

g. Evaluation for National Register. The Contractor shall evaluate newly found archeological sites to ascertain which sites warrant extensive testing and to determine their suitability for nomination to the National Register of Historic Places.

6. STAFF AND FACILITY REQUIREMENTS

a. Project Director and Archeologist. Minimum qualifications are set forth in the proposed 36CFR66, Appendix C, which is provided on page 5381 in the Federal Register, Vol. 42, No. 19-January 28, 1977.

b. Consultants. Personnel hired or subcontracted for their special knowledge and expertise must carry academic and experiential qualifications in their own fields of competence.

c. Equipment and Facilities. The Contractor must also provide or demonstrate access to:

(1) Adequate permanent field and laboratory equipment necessary to conduct operations defined in the Scope of Work; and

(2) Adequate laboratory and office space and facilities for proper treatment, analysis, and storage of specimens and records likely to be obtained from the project.

APPENDIX II: GLOSSARY OF TERMS

bifacial - deliberate alteration upon two opposite surfaces of a stone tool.

body sherd - fragment from the lower portion of a ceramic vessel.

collard rim - technological and stylistic motif in ceramic manufacture consisting of a horizontal addition of clay to the neck of the vessel.

component - reference to a short term archaeological deposit commonly thought to represent a single cultural group.

Cultural Resources Management - knowledgable investigation, preservation and public dissemination of information relating to prehistoric and historic artifacts, habitations and archaeological sites.

diagnostic artifact - material remnant of a historic or prehistoric technology that provides a temporal and cultural association, which has been determined by previous scientific investigations.

fluted - term which refers to a stone tool manufacturing technique associated with the Paleo-indian period and consists of relative long parallel sided scars on tool surfaces.

grab sample - a sample of artifacts recovered from the general provenience of the site rather than individually mapped or collected by grid quadrants.

ground stone - term referring to method of stone tool manufacture consisting of grinding and polishing in order to produce the desired shape.

in situ - term referring to an intact position of an artifact within the matrix in which it was originally deposited.

monitor - supervision of earth alteration activities by qualified archaeologist to insure that cultural deposits are not destroyed by such activities.

National Register of Historic Places - official list of the Nation's cultural resources worthy of preservation.

sedimentation - the natural process of soil accumulation derived from alluvial (riverline) or colluvial (mass earth movement) processes.

strata - natural or cultural layers in the soil or archaeological sites produced by the accumulation of soil and/or refuse deposits.

testing - a scientific technique of investigating archaeological sites consisting of physical excavation of portions of a cultural or natural deposits and permanent recording of the results.

unifacial - deliberate alteration on one surface or edge of a stone tool.

APPENDIX III: VITAE OF PROJECT PERSONNEL

PRINCIPAL INVESTIGATOR

C U R R I C U L U M V I T A E

NAME:

Larry J. Schmits

MARITAL STATUS:

Single

DATE AND PLACE OF BIRTH:

February 18, 1948; Seneca, Kansas

PROFESSIONAL EMPLOYMENT EXPERIENCE:

1978-present	Senior Archaeologist and Director of the Kansas City Office of Soil Systems, Inc., Earth Systems Division (SSI).
1976	Research Associate. Illinois State Museum, Springfield, Illinois.
1972-1976	Research Assistant. University of Kansas Museum of Anthropology, Lawrence, Kansas.

EDUCATION:

M.A. (WITH HONORS), University of Kansas 1976

B.A., University of Kansas, 1971

PROFESSIONAL EXPERIENCE:

1980	Principal Investigator. Phase II Archaeological Investigations at 23JA128 and 23JA129, Little Blue Trace Recreations Areas, Jackson County, Missouri. City of Raytown, Missouri. SSI Project No. 1295.
1978-1980	Principal Investigator and Project Director. Archaeological Mitigation of Blue Springs and Longview Lakes, Jackson County, Missouri. U. S. Army Corps of Engineers, Kansas City District. SSI Project No. 1204.

1979-1980	Principal Investigator and Project Director. Phase II Archaeological Investigations at Cold Clay (23JA155). Little Blue Valley Sewer District. SSI Project No. 1280.
1979-1980	Principal Investigator. Cultural Resources Shoreline Survey, Tuttle Creek Lake, Kansas. SSI Project No. 1253.
1979	Principal Investigator and Project Director. Phase III Archaeological Excavation at the May Brook site (23JA43), Jackson County, Missouri. Little Blue Valley Sewer District. SSI Project No. 1247.
1979	Principal Investigator. Cultural Resources Survey of the Proposed Eldon Sewerage Project, Miller County,Missouri. SSI Project No. 1276.
1976	Project Archaeologist. Archaeological Excavations at Rodgers Shelter, Missouri. Illinois State Museum, Springfield, Illinois.
1975	Project Director. Excavations at the Coffey Site, Jones Site and De Shazer Creek Site, Tuttle Creek Lake, Kansas. University of Kansas Museum of Anthropology, Lawrence, Kansas.
1972-1974	Project Director. Excavations at the Coffey Site, Tuttle Creek Lake, Kansas. University of Kansas Museum of Anthropology, Lawrence, Kansas.
1973	Project Director. Survey of the Neosho River Valley, Kansas. University of Kansas Museum of Anthropology, Lawrence, Kansas.
1971	Technician. Excavations at Peche de l'Aze, Dordogne, France, under the direction of Professor F. Bordes.
1970	Technician. Hillsdale Lake Project. Directed by Mr. James Marshall. University of Kansas Museum of Anthropology, Lawrence, Kansas.
1969	Student. University of Kansas Archaeological Field School. Directed by Dr. Alfred E. Johnson.
1969	Technician. Grove Lake Project. Kansas State Historical Society, Topeka, Kansas.

PROFESSIONAL MEMBERSHIPS:

Society for American Archaeology
Society for Archaeological Science
Society for Field Archaeology
Plains Anthropological Association
Kansas Anthropological Association
Missouri Archaeological Society
Missouri Association of Professional Archaeologists

PROFESSIONAL SKILLS:

Administration of Cultural Resource Contracts
Faunal and Floral Identification and Analysis
Soil and Sediment Analysis
Statistical Analysis of Archaeological Data

PROFESSIONAL INTERESTS:

Archaeology of the Plains and Midwest
Hunter-Gatherer Adaptations to the Plains
Settlement and Subsistence Patterns
Late Pleistocene and Holocene Paleoecology
Geology and Sedimentology of Archaeological Sites
Cultural Resource Management

PAPERS PRESENTED AT PROFESSIONAL MEETINGS:

Schmits, Larry J.

1979 (with Patricia Miller). The May Brook Site, Jackson County, Missouri. Contributing Paper presented at the 37th Plains Conference, Kansas City, Missouri.

1978 Williamson: A Late Archaic Site in East Central Kansas. Contributing Paper presented at the 36th Plains Conference, Denver, Colorado.

1977 Holocene Fluvial History and Depositional Environments at the Coffey Site, Kansas. Contributing Paper presented at the 35th Plains Conference, Lincoln, Nebraska.

1975 The Coffey Site: Environment and Subsistence at a Late Altithermal Archaic Site. Contributing Paper presented at the 33rd Plains Conference, Lincoln, Nebraska.

1972 Excavations at the Coffey Site: A Stratified Archaic Occupation in Northeast Kansas. Paper Presented at the 30th Plains Conference, Lincoln, Nebraska.

PUBLICATIONS AND TECHNICAL REPORTS:

Schmits, Larry J.

1980 Holocene Fluvial History and Depositional Environments at the Coffey Site, Kansas. In "Archaic Prehistory Along the Prairie Plains Border" edited by Alfred E. Johnson. University of Kansas Publications in Anthropology 10, (In Press).

1980 (with Kenneth C. Reid and Nancy O'Malley) Dead Hickory Tree: A Plains Village Occupation in East Central Kansas. Missouri Archaeologist 41. (In Press).

1980 (Editor). The May Brook Site, Jackson County, Missouri: A Cultural Resource Management Project Conducted for the City of Lee's Summit. Report submitted to the City of Lee's Summit, Missouri.

1980 (with Thomas P. Reust). Phase II Archaeological Investigations at Cold Clay (23JA155). Report submitted to Burns and McDonnell Engineers, Kansas City, Missouri and the Little Blue Valley Sewer District, Independence, Missouri.

1979 Archaeological Investigations at the Coffey Site, Tuttle Creek Lake, Kansas. Report submitted to the Department of the Interior, Interagency Archaeological Services, Denver, Colorado.

1978 The Coffey Site: Environment and Cultural Adaptation at a Prairie Plains Archaic Site. Midcontinental Journal of Archaeology Special Paper No. 1 3(1).

1978 The Williamson Site: A Stratified Occupation in East Central Kansas. MS on file. Soil Systems, Inc., Overland Park, Kansas.

1973 An Assessment of the Prehistoric Cultural Resources of the Neosho (Grand) River Valley and an Evaluation of the Impact of the Proposed Riverbank Stabilization Project. Report submitted to the Department of the Army, Tulsa District, Corps of Engineers, Tulsa, Oklahoma.

1971 Gun and Ammunition Parts from the Allison Ranch Site. Kansas Anthropological Association Newsletter 16 (6).

PROJECT ARCHAEOLOGIST

C U R R I C U L U M V I T A E

NAME:

Patricia A. Miller

MARITAL STATUS:

Divorced

DATE AND PLACE OF BIRTH:

August 11, 1945; Rock Hill, South Carolina

PROFESSIONAL EMPLOYMENT EXPERIENCE:

1979-Present	Archaeologist. Soil Systems, Inc., Earth Systems Division, Kansas City Office.
1978	Research Assistant. Museum of Anthropology, University of Kansas.
1977	Teaching Assistant. Department of Anthropology, University of Kansas.
1977	Research Assistant. Museum of Anthropology, University of Kansas.
1975	Museum Assistant. Museum of Anthropology, University of Kansas
1974	Teaching Assistant. Department of Anthropology, University of Kansas.

EDUCATION:

M.A. (with Honors), University of Kansas, 1979

Thesis Committee:

Prof. Anta Montet-White
Prof. Alfred E. Johnson
Prof. Robert J. Squier

Thesis Title: "An Archaic Tool Tradition in the Plains
A Case Study of the Coffey Site"

B.A. University of Kansas, 1972.

PROFESSIONAL FIELD EXPERIENCE:

1978 (Summer) Assistant Director, Excavations at Little Blue River Project, Blue Springs Mo. Museum of Anthropology, University of Kansas.

1977 (Summer) Assistant Director. Survey at El Dorado Project, El Dorado, Ks. Museum of Anthropology, University of Kansas.

1976 (Summer) Laboratory Director. Little Blue River Project, Blue Springs, Mo. Museum of Anthropology, University of Kansas.

1976 (Summer) Crew Member. Excavations at the Sohn Site, Raytown, Mo. Museum of Anthropology, University of Missouri.

1975 (Summer) Crew Member. Excavations at the Coffey Site, Tuttle Creek Reservoir, Ks. Museum of Anthropology, University of Kansas.

ACADEMIC AWARDS:

Phi Beta Kappa
Undergraduate National Science Foundation Research Grant, 1966

PAPERS PRESENTED AT PROFESSIONAL MEETINGS:

Miller, Patricia A.
1977 Archaic Lithics of the Coffey Site. Contributed Paper presented at the 35th Plains Conference, Lincoln, Neb.

PUBLICATIONS AND TECHNICAL REPORTS:

Miller, Patricia A.
1979 Archaic Lithics of the Coffey Site. University of Kansas Publications in Anthropology. In press.

with Kenneth Brown, et. al.
1977 Historic and Prehistoric Cultural Resources of the Blue Springs and Longview Lakes, Jackson County, Missouri. Department of the Army, Kansas City District, Corps of Engineers, Kansas City, Mo.

PROFESSIONAL SKILLS:

Lithic Analysis
Faunal Analysis
Statistical Analysis of Archaeological Data

PROFESSIONAL INTERESTS:

Archaeology of the Plains and Midwest
Archaeological Taxonomy

Survey Archaeologist

C U R R I C U L U M V I T A E

NAME:

Bertram S. A. Herbert

MARITAL STATUS:

Single

DATE AND PLACE OF BIRTH:

July 14, 1948; Tarrytown, New York

PROFESSIONAL EMPLOYMENT EXPERIENCE:

1979-present	Survey Archaeologist. SSI, Earth Systems Division.
1979	Archaeologist. Iroquois Research Institute. Fairfax, Virginia.
1978	Field Archaeologist. Archaeological Resource Management Corporation. Garden Grove, California.
1977	Survey Archaeologist. Ecology and Environment, Inc. Buffalo, New York.
1976	Survey Archaeologist. New York Archaeological Council. Buffalo, New York.
1975	Survey Archaeologist. New York Archaeological Council. Buffalo, New York.
1975	Cataloger and Field Archaeologist. Department of Anthropology, SUNY/Buffalo. Buffalo, New York.
1974-1975	Instructor. Department of Anthropology, SUNY/Buffalo. Buffalo, New York.
1974	Research Assistant. Nuclear Science and Technology Facility, SUNY/Buffalo. Buffalo, New York.

EDUCATION:

M.A. SUNY/Buffalo. Expected September, 1979.

Master's Research Title (in progress): "The Early Horizon Olmec: A Review of Their Style, Culture and Impact on Mesoamerica."

B.A. Fordham University, 1972.

PROFESSIONAL FIELD EXPERIENCE:

1979 (Spring) Archaeologist. Iroquois Research Institute. Old Lee Highway, Fairfax, Virginia. Survey of Clinton Lake Reservoir, Kansas and Harry S. Truman Reservoir, Missouri.

1978 Field Archaeologist. Excavations at several sites in Orange County, California. Surveys in the Oji Valley and San Bernadino County.

1977 Field Director. Survey in Boston Valley and Finger Lake Region in New York.

1976 Field Director. Survey in Cattaraugus and Chautauqua Counties.

1975 Technician. Survey in Chautauqua, Erie, and Alleghany Counties. Director - Marian E. White.

1972 Student. Field School, SUNY/Albany. Albany, New York. Director - Dean R. Snow.

1971 Field Researcher. Survey in Mexico and Guatemala.

PROFESSIONAL MEMBERSHIPS:

Society for American Archaeology
American Anthropological Association
American Association for the Advancement of Science

PROFESSIONAL SKILLS:

Neutron Activation Analysis
Carbon-14 Dating
Statistical Analysis of Archaeological Data
Iconographic Analysis

PROFESSIONAL INTERESTS:

Archaeology of the Northeast United States and of Mesoamerica
Development of Early Horizon Cultures in Mesoamerica
Settlement and Subsistence Patterns
Prehistoric Exchange Systems
Cultural Ecology
Cultural Resource Management

PAPERS PRESENTED AT PROFESSIONAL MEETINGS:

Herbert, Bertram S. A.

1975 Neutron Activation Analysis of Clay Sources in Highland Mexico: An Application of Expanded Nuclear Research Methods at SUNY/Buffalo to Archaeological Problems. Contributing Paper presented at the Northeastern Anthropological Association Meetings.

ADMINISTRATIVE EXPERIENCE:

1975-1976 Treasurer and Chairperson of the Finance Committee. Graduate Student Association, 205 Norton Hall, State University of New York at Buffalo, Amherst, New York 14226. Administered and maintained a balanced budget amounting to $140,000.00. Also served as chairperson of the committee responsible for the allocation of these funds.

SURVEY ARCHAEOLOGIST

C U R R I C U L U M V I T A E

NAME:

David Harold Jurney Jr.

MARITAL STATUS:

Single

DATE AND PLACE OF BIRTH:

July 16, 1951, Wilkesboro, North Carolina

PROFESSIONAL EMPLOYMENT EXPERIENCE:

1979-Present	Archaeologist, Kansas City Division, Soil Systems, Inc., Earth Systems Division.
1978-1979	Project Archaeologist, Arkansas Archaeological Survey, Fayetteville, Arkansas.
1975-1978	Research Assistant. Arkansas Archaeological Survey, Fayetteville, Arkansas.
1975	Field Director, Fort Dobbs Excavation, North Carolina Department of Archives and History - Archaeology Section.
1974	Field Director, Rutherford-McDowell Soil Conservation Service Watershed. Appalachian State University, Boone, North Carolina, Department of Anthropology.

EDUCATION:

M.A. Anthropology, University of Arkansas, 1978.

B.A. Anthropology, Appalachian State University, 1973.

HONORS:

Veterans' Child Scholarship, Appalachian State, 1969-1973.
University-Graduate Assistantship, Arkansas Archaeological Survey, 1975-1977.

PROFESSIONAL FIELD EXPERIENCE:

1978-1979	Project Archaeologist. Test excavation and emergency salvage of the Burris site 3CG218, Phase 3 of the Texas Eastern Project. Arkansas Archaeological Survey, Fayetteville, Arkansas.
1978	Project Archaeologist. Phase 2 survey of the Pine Bluff Railroad Relocation transect. Arkansas Archaeological Survey, Fayetteville.
1975-1978	Research Assistant. Archaeological Survey, analysis and report writing for various projects, including faunal analysis, Historic Architectural Analysis, tree-ring collections, and mapping. Arkansas Archaeological Survey, Fayetteville.
1975	Field Director. CETA funded excavation of Fort Dobbs, a 1756-1762 British Military outpost and subsequent 1762-1780 rural community. North Carolina Department of Archives and History - Archaeology Section, Raleigh.
1974	Field Director. Intensive site survey, analysis, and report writing, SCS Watershed, Rutherford and McDowell Counties. Appalachian State University, Boone, North Carolina.
1972-1973 (Summers)	Assistant Field Director. Excavation, mapping, and analysis of a pisgah phase palisaded village and a 1780-1830 historic cabin. Appalachian State University Field School, Boone, North Carolina.
1971 (Summer)	Intensive site survey and analysis of several river drainages in Watauga County. Appalachian State University, Boone, North Carolina.

PROFESSIONAL MEMBERSHIPS:

Southeastern Archaeological Conference
Society for Historic Archaeology

PROFESSIONAL SKILLS:

Faunal Analysis
Archival Research
Geomorphological Interpretation
Tree Ring Collection Procedures

PROFESSIONAL INTERESTS:

Historic Archaeology
Woodland-Mississippian Settlement Patterns
Settlement, Subsistence, and Environmental Reconstructions
Cultural Resource Management

PAPERS PRESENTED AT PROFESSIONAL MEETINGS:

Jurney, David Harold Jr.

1979 Archaeological Investigations at the Burris Site (3CG218). Paper presented at the 1979 meeting of the Arkansas Academy of Science, Henderson State College, Conway, Arkansas.

1980 The Ridge House Cellars: Faunal Analysis and Nineteenth Century Diet. Paper presented at the Thirteenth Annual Meeting of the Society for Historical Archaeology, Albuquerque, New Mexico.

PUBLICATIONS AND REPORTS:

Jurney, David Harold Jr.

1980 The Ridge House Cellars: Faunal Analysis and Nineteenth Century Diet. Paper in preparation to Historical Archaeology.

1979 Analysis of Dog remains from the Goldmine site, Richland Parish, Louisana. Paper in possession of the author and J. S. Belmont, Peabody Museum.

1979 The source and distribution of specialized stone tools in the Ozarks. Paper submitted to the Midcontinental Journal of Archaeology.

1979 Archaeological investigations at the Burris site (3CG218). In preparation, Arkansas Archaeological Survey, Fayetteville.

1979 An archaeological survey of the proposed Pine Bluff Railroad relocation transect. Report on file with Harland Bartholomew and Associates, Memphis and the Arkansas Archaeological Survey, Fayetteville.

1978 Archaeological background (with Thomas J. Padgett and Steve Imhoff). In The AP&L Keo to Blytheville 500 Kilovolt Transmission Line Archaeological Survey by Thomas J. Padgett. Report on file with Arkansas Power and Light Company, Little Rock and the Arkansas Archaeological Survey, Fayetteville.

1978 Archaeological assessments of Bull Shoals, Woolly Hollow, Mt. Nebo, and Lake Dardanelle State Parks. Reports on file with Arkansas State Parks Commission, Little Rock, and the Arkansas Archaeological Survey, Fayetteville.

1978 A brief outline of regional history. In St. Francis II, assembled by Timothy C. Klinger and Mark A. Mathis. Arkansas Archaeological Survey Research Report 14:21-26.

1978 The Ridge House Cellars: using faunal analysis to reconstruct meat diet. Masters of Art thesis, University of Arkansas, Fayetteville.

1977 Archaeological site potential along proposed corridors of the Pine Bluff Railroad Relocation Project, Pine Bluff, Arkansas. Report on file with Harland Bartholomew and Associates, Memphis, Tennessee and the Arkansas Archaeological Survey, Fayetteville.

1977 A preliminary archaeological assessment of the proposed Texas Eastern Transmission Company pipeline extension from El Dorado to North Little Rock, Arkansas. Report on file with the Texas Eastern Transmission Company, Houston, and the Arkansas Archaeological Survey, Fayetteville.

1977 A preliminary archaeological assessment of the proposed Dover Wastewater Transmission route from Dover to Russellville, Arkansas. Report on file with the Arkansas Archaeological Survey, Fayetteville.

1976 A preliminary archaeological assessment of the proposed Lakeview Wastewater Collection and Treatment System, Lakeview, Arkansas. Report on file with Engineering Services, Inc., Springdale and the Arkansas Archaeological Survey, Fayetteville.

1976 Archaeological survey of proposed sewerage improvements for the city of Conway (with Ron Wogaman). Report on file with Crist Engineers, Inc., Little Rock and the Arkansas Archaeological Survey, Fayetteville.

1976 The Pemberton Cabin: problems, interpretations and research orientation. Report on file with the Arkansas Archaeological Survey, Fayetteville.

1976 The Ridge House. Arkansas Archaeological Society Field Notes 140:7.

1976 An archaeological investigation of the Tilles House, Fort Smith, Arkansas. Report on file with the Arkansas Archaeological Survey, Fayetteville.

1975 Historical summary of the Pine Mountain Lake area. In Pine Mountain: a study of prehistoric human ecology in the Arkansas Ozarks, edited by L. Mark Raab. Arkansas Archaeological Survey Research Report 7:13-23.

1974 An archaeological survey of the Upper Second Broad Watershed, McDowell and Rutherford Counties, North Carolina. (With Caran Downing). Report on file with the Soil Conservation Service and Archaeology Section, North Carolina Department of Archives and History, Raleigh.

END

FILMED

12-84

DTIC