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THE JOHNSON SITE (40Dv400): A DATED PALEOINDIAN AND EARLY ARCHAIC OCCUPATION IN TENNESSEE'S CENTRAL BASIN

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ABSTRACT

As a result of the periodic monitoring of river bank stratigraphy at 40Dv400 between 1990-1994, twelve radiocarbon determinations have been obtained for cultural features exposed by the shoreline erosion of this deeply buried floodplain site (Table 1). These chronometric assays and the recovery of in situ chipped stone tools indicate Late Pleistocene and Early Holocene utilization of the site area.

BACKGROUND AND INTRODUCTION

Tennessee site file data indicate an abundance of deeply buried cultural deposits along the state's stream channels. Although these types of archaeological sites have the potential to contribute significant information concerning the early cultures of the region, few will ever be excavated because of monetary and logistical constraints. Such constraints become especially noteworthy when combined with the fact that these deposits are being literally torn from the river banks by erosion and vandals. The lack of site accessibility and continuous destruction of these ancient cultural resources requires that cost effective data recovery methods be devised and implemented to mitigate further loss, as few sites are being preserved through shoreline stabilization.

Investigations at 40Dv400 have determined that beneficial archaeological data can be salvaged from deeply buried shoreline sites by systematically monitoring bank erosion. Although this method of data recovery has apparent limitations and is in no way a preferred alternative, it provides temporary mitigation of data loss and can be used to aid in the development of management plans that combat the shoreline erosion of archaeological sites.

Site 40Dv400 is situated within the Central Basin, a geomorphic division of the Interior Low Plateau Physiographic Province (Figure 1)(Fenneman 1938, Luther 1977). The site occurs at the confluence of a major tributary and the Cumberland

Table 1. 40Dv400 Radiocarbon Determinations (Uncorrected).

Sample No.	Provenience	Age B.P.	Deviation
Tx-7453	SII (Fea. 8)	8,940	+/- 110
AA-9165	SIII (Fea. 1)	9,555	+/- 90
AA-9164	SIII (Fea. 1)	9,050	+/- 85
Tx-7693	SIII (Fea. 2)	8,830	+/- 170
AA-8860	SIII (Fea. 6)	8,925	+/- 75
AA-9168	SIII (Fea. 6)	9,090	+/- 85
Tx-7694	SIII (Fea. 9)	8,810	+/- 80
Tx-7695	SIII (Fea. 11)	8,980	+/- 80
Beta 66202	Below Kirk Zone	9,510	+/- 290
Tx-6999	SIII/IV (Fea. 1)	12,660	+/- 970
Tx-7454	SIII/IV (Fea. 6)	11,980	+/- 110
Tx-7000	SIV	11,700	+/- 980

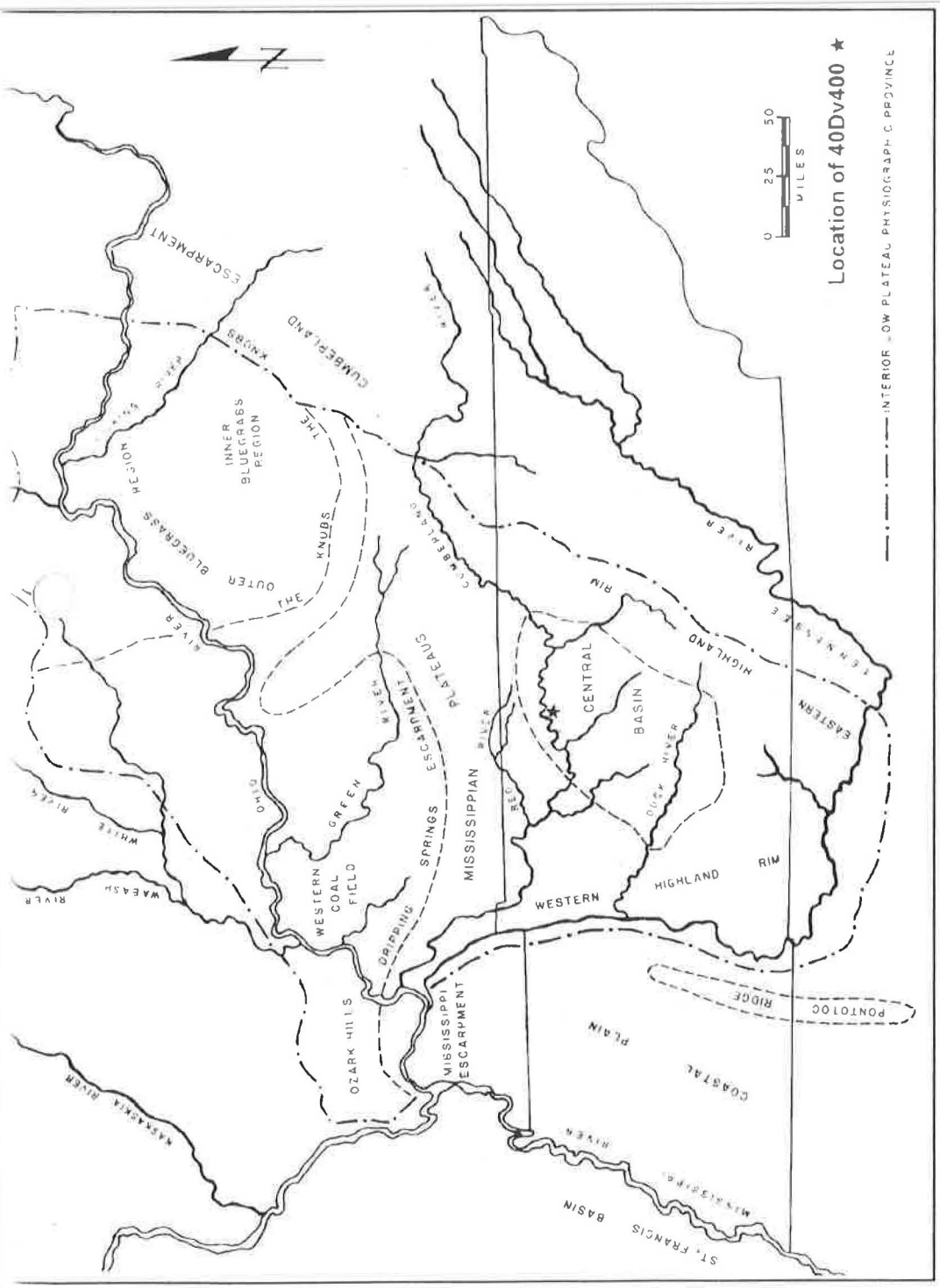


Figure 1. Location of Site 40Dv400 Within the Interior Low Plateau Physiographic Province.

River in Davidson County, Tennessee (Figure 2). Cultural deposits at the site consist of scattered bands of charcoal, basin shaped features, surface burns and associated lithic materials that are being eroded from an ancient alluvial flood plain (Figure 3). Preliminary data were first gathered from bank stratigraphy at the site in 1990. Two carbon samples obtained from the lowest cultural level (now designated Stratum IV) produced radiocarbon determinations that exceed 11,500 years B.P. (Broster et al. 1991:8). Chipped stone tools diagnostic of the Paleoindian tool kit have been recovered from this deposit and on the beach directly below.

In addition to the Stratum IV deposit, three other cultural strata are present. Stratum III, situated vertically above Stratum IV, is an Early Archaic horizon that contains Kirk Corner Notched projectile points and knives. Overlying this deposit and separated from it by sterile alluvium is Stratum II, a Bifurcate horizon. Stratum I, the latest cultural component at the site, consists of a thin soil zone, situated just below the existing ground surface that contains both Woodland and Mississippian period ceramic and lithic diagnostics.

STRATIGRAPHY AND DATED FEATURES

Stratum IV

The Stratum IV deposit, which at times has exhibited a maximum thickness of one meter, consists of charcoal flecks, lithic tools, debitage, and burned clay that is vertically distributed between six and eight meters below present ground surface. Due to continued erosion, Stratum IV has varied in depth over the course of several years. This cultural deposit extends horizontally for over ninety meters and is evident in the bank profile and planview of the beach below. At the western margin, the separation between Stratum IV and the above Stratum III deposit remains unclear.

Although no internal stratigraphy is evident within Stratum IV, three associated features have been identified. The first, a shallow basin, was recorded in 1990. One charred wood sample was obtained from this feature. An additional carbon sample was collected from the Stratum IV lens, which contained a fluted preform base. Both samples were submitted to the University of Texas-Austin Radiocarbon Laboratory, for chronometric determinations. An uncorrected date of

Figure 2. The 40Dv400 Site Setting.

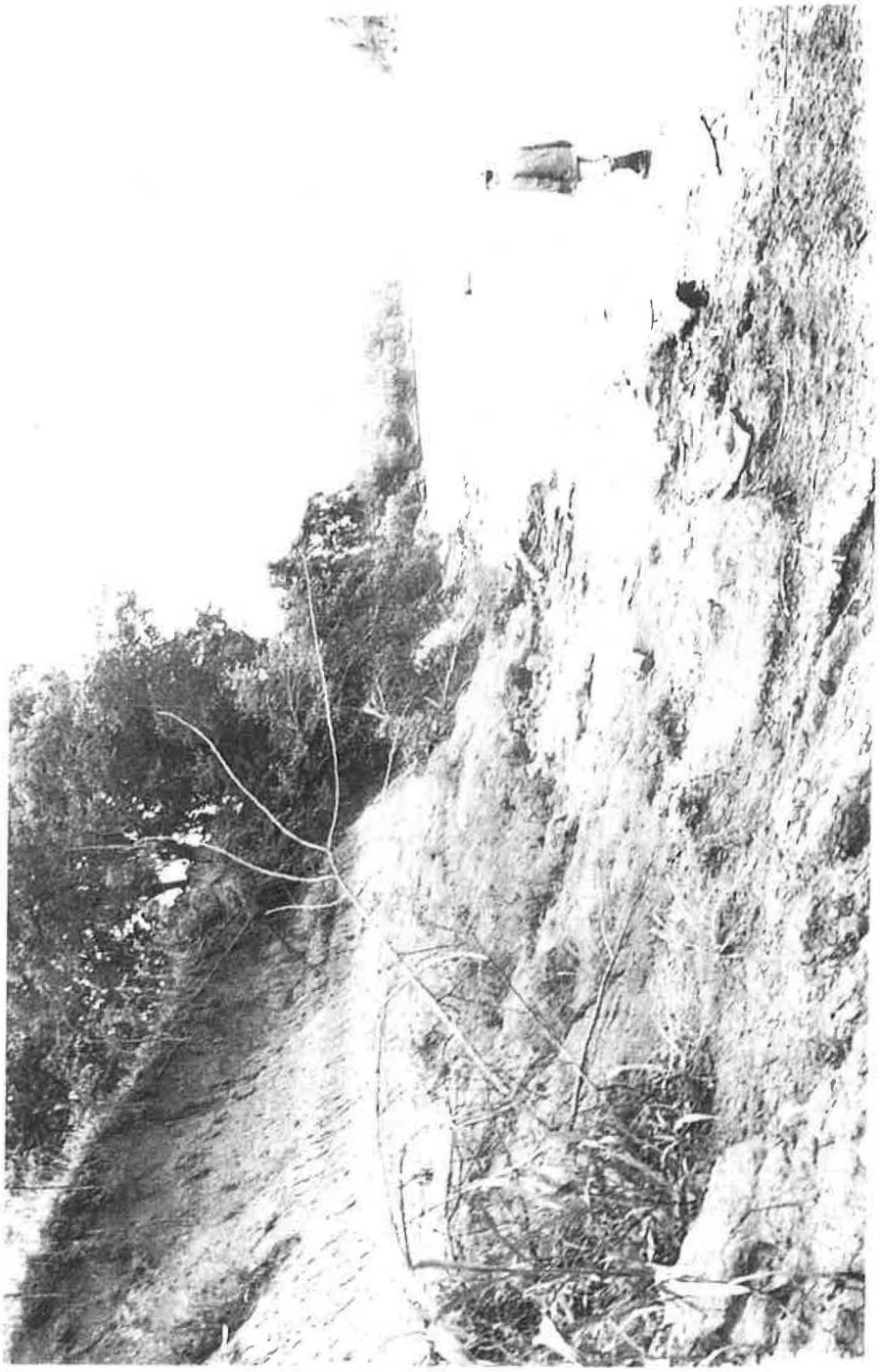


Figure 3. The 40Dv400 Bank Profile (September 1994).

12,660+/-970 (Tx-6999) was obtained for Feature 1, and an uncorrected determination of 11,700+/-980 (Tx-7000) was obtained from the Stratum IV lens sample (Broster et al. 1991:8). These dates suggested a Late Pleistocene temporal span for Stratum IV and prompted further investigations.

Upon examination of the 40Dv400 stratigraphy, some three weeks after the identification of Feature 1, two additional carbon samples were collected from the remaining portion of this basin shaped deposit. In the winter of 1992 they were forwarded to the University of Arizona for independent confirmation of the Stratum IV temporal frame. These samples were identified as hardwood charcoal and humic acids respectively (Haynes, personal communication).

An uncorrected radiocarbon determination of 9,050+/-85 (AA-9164) was obtained for the hardwood charcoal sample and an uncorrected date of 9,555+/-90 (AA-9165) was received for the humic acids.

A second basin shaped deposit (Feature 6) associated with Stratum IV was recorded in 1992 (Broster and Barker 1992:124). It originated approximately one meter below Stratum III, at only centimeters above the depth of Feature 1, located some nineteen meters to the west. Fill from the feature consisted of charred wood, nut hulls (*Carya* sp.), ash, and several small retouch flakes. One fluted preform and one unfluted preform were recovered from the beach in the vicinity of this deposit. As with Feature 1, samples were prepared for identification and chronometric dating. The first sample (unidentifiable charcoal) was submitted to the University of Texas-Austin Radiocarbon Laboratory. An uncorrected date of 11,980+/-110 (Tx-7454) was obtained. Two additional samples were submitted to the University of Arizona. One sample contained Spruce cone scale (*Picea*). The other was identified as humic acids (Haynes, personal communication). The sample containing spruce cone scale returned an uncorrected date of 8,925+/-75 (AA-8860) and the humic acid sample was dated at 9,090+/-85 (AA-9168).

In Autumn of 1993 a burned clay deposit was identified (Feature 20). It had an elliptical shape that appeared in the planview of the lower beach (Figure 4). This feature was situated twenty-two meters east of and thirty-five centimeters below the provenience of Feature 1. This possible surface burn likely dates to the earliest occupation of the site area, as it represents the deepest recorded feature yet identified at 40Dv400 (8.1 meters below existing ground surface). Unfortunately, the deposit contained no cultural material or carbon.

Figure 4. Planview of Feature 20.

Stratum III

Stratum III is the most prolific cultural deposit at the Johnson site and is evidenced as a band of dark silty clay that contains abundant charred material, lithic debitage and chipped stone tools. This deposit has exhibited a maximum vertical thickness of forty centimeters and is situated at an average of fifty centimeters above Stratum IV. It extends horizontally for over 150 meters with various portions being exposed according to the rise and fall of the water level. The western end of the deposit dips downward and converges with Stratum IV.

To date, fifteen features associated with Stratum III have been identified, of which three have been C-14 age determined (Barker 1993). Lithic diagnostics associated with Stratum III consist entirely of Kirk Corner Notched Cluster PP/Ks (Broyles 1971, Chapman 1975, Coe 1964, Norton and Broster 1993, Tomak 1994). Radiocarbon determinations for other Tennessee sites with similar lithic chronologies suggest that Kirk culture thrived around 9,000 years ago in the Tennessee Valley (Table 2). This is supported by radiocarbon assays obtained for the following 40Dv400 Stratum III features.

Feature 2, identified in 1991, had a maximum diameter of forty-eight centimeters and a maximum thickness of twenty centimeters. It consisted of a small shallow basin that contained some unidentifiable charred wood, ash, two bifacial thinning flakes, one interior flake and four small fragments of fire-cracked chert. A portion of the charred wood was submitted to the University of Texas-Austin Radiocarbon Laboratory for chronometric dating. An uncorrected determination of 8,830+/-170 (Tx-7693) was obtained for this sample.

Feature 9 was a shallow circular basin shaped deposit that was exposed on the beach (Figure 5). It had a maximum diameter of 22 centimeters and a maximum thickness of six centimeters. Fill from the feature consisted mostly of charred wood and ash. Three bifacial thinning flakes were also present. A sample of charcoal from the deposit consisting of Oak (*Quercus* sp.) and Maple (*Acer* sp.) yielded an uncorrected date of 8,810+/-80 (Tx-7694).

Feature 11 was a small circular hearth embedded in a matrix of fired silty clay. It had a diameter of 29 centimeters and a maximum depth of eight centimeters. This rounded bottom feature contained charcoal, fire cracked sandstone and

Table 2. Tennessee Early Archaic Kirk Component Radiocarbon Determinations (Uncorrected).

Site	Sample No.	Provenience	Age B.P.	Deviation
Rose Island	GX-3169	Stratum 8	8,060	+/- 350
	GX-3564	Feat. 212	9,330	+/- 350
	GX-3565	Feat. 219	9,110	+/- 145
Icehouse Bottom	I-9137	Stratum L	8,525	+/- 355
	GX-4125	Stratum L	9,350	+/- 215
	I-9138	Stratum O	8,715	+/- 140
	GX-4126	Stratum O	9,435	+/- 270
	GX-4127	Stratum Q	9,175	+/- 240
Patrick Site	GX-4122	Stratum 16	9,410	+/- 290
Bacon Farm Site	GX-4707	Kirk Horizon	9,105	+/- 190
Pucket	TX-7413	Level 5	8,490	+/- 180
	TX-7412	Level 6	8,820	+/- 180

Sources: Chapman 1975:211, 1977a:161-163, 1977b; Norton and Broster 1993:49.

Figure 5. Planview of Feature 9.

lithic debitage. Unidentifiable charred hardwood bark from the deposit yielded an uncorrected date of 8,980+/-80 (Tx-7695).

Charcoal vertically distributed between Stratum III and Stratum IV was also collected. A sample of the material was identified as a combination of Oak (*Quercus* sp.), hardwood bark, and Kentucky Coffee Tree (*Gymnocladus dioica*). This charred material yielded a date of 9,510+/-290 (Beta-66202).

Stratum II

Stratum II consists of a horizontal lens of charcoal (Figure 6) that is intermittently exposed for over 130 meters in the bank profile. It is situated between three and four meters below surface and is separated from Stratum III by sterile alluvium that averages 1.5 meters in thickness. Four bifurcate base projectile points have been recovered in situ from this deposit, as well as an abundance of lithic debitage, burned limestone and fire-cracked chert.

A carbon sample was recovered from a basin shaped hearth that originated in the Bifurcate horizon (Stratum II). This deposit (Feature 8) had a maximum diameter of forty-eight centimeters and a depth of eighteen centimeters. It's fill contained charcoal, 1 modified flake scraper, 1 primary flake, 3 interior flakes, 6 bifacial thinning flakes and 14 fire-cracked chert. Although no diagnostic lithics were associated, two bifurcate base projectile points recovered in situ from Stratum II were embedded horizontally only centimeters away from Feature 8. Charred wood from the deposit fill was identified as Oak (*Quercus* sp.). It was later submitted to the University of Texas-Austin Radiocarbon Laboratory for an age determination. The sample yielded an uncorrected date of 8,940+/-110 (Tx-7453).

Stratum I

Stratum I consists of a sparse midden that occurs between thirty and sixty centimeters below existing ground surface. It is evident only in the eastern portion of the 40Dv400 site area. This deposit continues eastward for over 100 meters beyond the earlier described cultural lenses and has been recorded separately as a different site (40Dv399). Over the course of investigations, limestone tempered fabric-impressed ceramic sherds, shell tempered plain sherds, and two Hamilton

Figure 6. Selected Portion of the Stratum II Lens.

triangular projectile points (Lewis 1955) have been recovered from the beach in the eastern periphery of the 40Dv400 site area. At present no floral samples have been obtained from Stratum I.

LITHICS

Local Raw Material Types

No lithic resource surveys have been conducted in the northern portion of the Central Basin. However, studies in the surrounding region provide a basic raw material typology for middle Tennessee (Amick 1987, Faulkner and McCollough 1973, Kline 1979, Penny and McCollough 1976). The following chert types are represented at 40Dv400.

Ft. Payne

Ft. Payne chert is derived from the lower Mississippian formation of that name. It occurs in massive tabular deposits in the Highland Rim and in cobble form along many of the local stream channels of the Central Basin. Ft. Payne chert is documented as a major source of raw material for prehistoric lithic tool production throughout the Middle South (Amick 1987, Faulkner and McCollough 1973, Kline 1979). Although much variability exists in color and texture, it is generally blue-grey to tan in color and ranges from nearly vitreous to gritty (Amick 1987:44).

Ft. Payne Tan Chert: This is a medium to coarse textured opaque chert that is distinguishable on the basis of mottled and intermingled blue-grey and tan constituents (Kline 1979:59). This material accounts for approximately 32 percent of the chipped stone assemblage from 40Dv400.

Ft. Payne Blue-Grey Chert: This chert is coarsely textured opaque and most often contains blue and white bands or flecks. According to Faulkner and McCollough (1973:53) this variety and the tan variety described above have been observed grading into one another along the Duck River drainage, and some examples exhibit both colors indicating that they could have come from the same Ft. Payne bed. This material accounts for approximately 38 percent of the chipped stone assemblage at 40Dv400.

Ft. Payne Blue-Grey to Olive Chert: This chert is medium to coarse textured and is distinguishable on the basis of it's mottled blue-grey to olive color. Although it has not been specifically defined in any of the literature available to the authors it shares commonalties with the above described Ft. Payne types and has been classed accordingly. This material accounts for approximately 14 percent of the 40Dv400 sample.

St. Louis

This is a uniformly fine-grained chert that is dark grey-blue to tan in color. It is derived from the upper Mississippian St. Louis formation. It occurs in both nodular and tabular form along the northern portions of the Highland Rim. There, it was a primary resource for prehistoric chipped stone tool production (Barker 1994, Barker and Broster 1993). Approximately six percent of the lithic artifacts recovered from the Johnson site are of this material.

Dover

This is one of the most widely recognized chert types found in the southeastern United States. And although it outcrops over a wide region, including western Kentucky, the Highland Rim of Tennessee, and southern Illinois (Gramly 1992), it is most often associated with the large quarry areas located in the vicinity of Stewart County, Tennessee. This chert is grey-brown to pale brown in color, has a fine grained texture and exhibits lineations and occasional inclusions of blue-white quartz. Roughly six percent of the lithics recovered from the Johnson site are of this material.

Warsaw

The Warsaw formation is a Highland Rim chert-bearing unit of Mississippian age that is situated above the Ft. Payne formation. Chert from this source exhibits a range of colors and contains highly fragmented fossils (e.g. crinoid ossicles, pieces of brachiapod shells, bryozoan debris, threadlike algae, and small horn coral inclusions). It is generally not considered a good source for the manufacture of chipped stone tools because of its high porosity (Amick 1987:43). One PP/K and a small

amount (less than one percent) of the lithic debitage recovered from the Johnson site are of this material.

Undetermined

The lithological types that account for the remaining three percent of chipped stone items recovered at 40Dv400 are quartz cobble sections, flakes and debitage that may have been derived from the above referenced sources.

Of the chipped stone tools (n=201) and debitage examined (n=2103) from 40Dv400, Ft. Payne chert is by far the most frequently occurring raw material type. This is apparent in all cultural lenses, suggesting that adequate sources were available in the Central Basin during the Late Pleistocene and Early Holocene. The presence at the site of lesser amounts of Dover, St. Louis, and Warsaw chert suggests that these raw materials were not locally abundant.

CHIPPED STONE TOOLS

Stratum IV

A total of 43 chipped stone bifaces believed to be associated with the Paleoindian occupation of the site (Stratum IV) has been recovered. The count includes 17 diagnostic projectile points and 26 fluted preforms. In addition, 27 modified flake tools have been collected from the site. Although all of the projectile points were identified out of context on the lower beach, most of the fluted preforms (n=20) and flake tools (n=15) were recorded in situ within Stratum IV. The following artifacts constitute the Stratum IV sample. Metric attributes of the recovered bifaces are presented in Table 3.

Clovis (n=3): Three specimens from the site fit within the Clovis type. All were found on the lower beach. Two are small basal fragments of expended projectile points. One is manufactured from Ft. Payne Blue-Grey chert and the other is Dover chert. The third artifact is a complete heavily resharpened projectile point. It has the characteristics of an early Clovis, having a square base with no measurable basal cavity. It has also been fashioned from Ft. Payne Blue-Grey chert.

Table 3. 40Dv400 SIV Projectile Point/Knife and Preform Metrical Data (n=43).

Type	Length	Body Width	Basal Width	Basal Depth	Max Thick	Max Flute Length	Max Flute Width	Ground Base
Clovis								
1	78.61	19.38	21.37	0.00	6.91	19.12	7.03	Yes
2	116.35	25.63	---	2.08	6.99	---	---	No
3	---	---	---	0.00	5.49	---	---	No
Preform								
1	73.09	46.71	40.98	0.00	18.27	73.09	26.97	No
2	---	41.89	35.96	0.00	9.32	17.81	23.29	No
3	---	36.54	36.34	0.00	7.73	35.71	15.25	No
4	---	32.09	29.80	0.00	10.63	27.06	15.69	Yes
5	50.38	41.08	39.29	0.00	9.66	50.16	20.67	No
6	---	30.37	33.16	0.00	6.90	27.35	17.01	No
7	69.22	45.00	35.89	0.00	15.25	48.57	18.20	No
8	---	36.07	35.12	0.00	5.62	---	16.59	No
9	---	41.17	38.09	0.00	8.68	---	12.95	No
10	---	34.73	---	0.00	7.30	---	20.18	No
11	---	48.74	42.25	0.00	11.89	---	15.69	No
12	---	39.36	39.24	0.00	12.92	30.07	16.20	No
13	---	40.44	34.61	0.00	7.13	23.46	20.68	No
14	---	43.73	42.10	0.00	8.96	---	18.26	No
15	---	45.63	40.69	0.00	9.28	24.57	8.73	No

Table 3. 40Dv400 SIV Projectile Point/Knife and Preform Metrical Data (n=43) (continued).

Type	Length	Body Width	Basal Width	Basal Depth	Max Thick	Max Flute Length	Max Flute Width	Ground Base
Preform								
16	---	---	---	0.23	5.40	---	9.68	Yes
17	59.09	35.27	27.42	0.00	11.66	17.54	17.77	No
18	---	36.08	31.06	1.72	7.22	0.00	0.00	No
19	---	36.90	36.90	0.00	8.34	---	14.76	No
20	---	32.34	30.36	0.00	8.38	25.87	12.54	No
21	68.06	36.51	34.67	0.00	9.76	27.41	12.54	No
22	---	33.02	31.18	1.30	7.32	0.00	0.00	No
23	---	44.47	42.41	0.00	7.21	28.73	23.93	No
24	---	37.97	33.18	0.00	9.94	24.56	16.86	No
25	---	38.73	36.34	0.00	10.24	35.14	11.74	No
Cumberland								
1	---	15.19	---	2.42	6.15	22.52	9.50	Yes
2	---	26.12	---	2.00	8.22	0.00	0.00	Yes
3	---	18.33	---	---	5.69	0.00	0.00	No
4	64.02	21.13	18.73	2.51	7.40	1.95	1.59	Yes
5	72.54	22.20	19.65	0.00	---	51.62	13.20	Yes
6	46.16	19.32	15.38	1.29	5.38	0.00	0.00	Yes
Preform								
1	65.55	27.94	25.94	0.00	---	26.54	9.62	No

Table 3. 40Dv400 SIV Projectile Point/Knife and Preform Metrical Data (n=43) (continued).

Type	Length	Body Width	Basal Width	Basal Depth	Max Thick	Max Flute Length	Max Flute Width	Ground Base
Dalton								
1	---	16.65	24.96	3.77	4.69	0.00	0.00	Yes
Harpeth River								
1	42.52	20.68	23.25	0.00	7.04	0.00	0.00	Yes
2	44.81	26.82	27.32	0.00	---	0.00	0.00	Yes
Greenbriar								
1	---	29.16	28.81	4.28	6.27	0.00	0.00	Yes
2	42.38	20.90	28.81	2.76	7.61	13.20	11.50	Yes
3	54.07	20.46	29.57	1.73	6.25	21.78	11.19	Yes
4	51.75	25.62	---	---	7.09	0.00	0.00	Yes
5	47.18	21.33	29.35	2.87	---	0.00	0.00	Yes

Clovis Preforms (n=25): Twenty-five Clovis preforms are represented in the collection from the site. Five are complete and the others are snapped bases. Seventeen were broken or discarded during initial thinning, with long flutes struck from a beveled base (Figure 7). The remaining specimens are nearly finished and were generally broken in the final fluting process or as in one case during final lateral thinning of the blade margins (Frison and Stanford 1982). Nineteen were manufactured from Ft. Payne chert, five were of Dover chert, and the remaining base was flaked from an unclassified raw material locally referred to as Buffalo River chert.

Cumberland (n=6): Of six Cumberland type projectile points from the site, one is a small expended base fluted on both sides, one is a large projectile point that has an attempted flute on one side, and another is a heavily resharpened example. The last three diagnostics are unfluted, but are diamond shaped in cross-section indicating that they were initially set up to be fluted, a criteria often used to distinguish Cumberland from Beaver Lake PP/Ks. Of the remainder, one is a small complete artifact and the others are represented by bases. All six samples are manufactured from Ft. Payne chert.

Cumberland Preforms (n=1): This artifact has two long flutes taken from one side and struck on a prepared beveled base. It is manufactured from Dover chert.

Dalton (n=1): A single Dalton type PP/K is represented by an expended base made from Dover chert (Figure 8). The hafting element of this specimen is heavily ground.

Greenbriar (n=5): Five Greenbriar PP/Ks have been recovered from the beach. All are derived from Ft. Payne chert. Four are complete while the remaining specimen is a snapped base. Grinding of the haft element is evident on all examples.

Harpeth River (n=2): Two heavily resharpened Harpeth River projectile points were recovered from the site. One is made from St. Louis chert and the other is Dover (Figure 8). Both examples exhibit basal grinding.

Uniface Tools (n=27): *Prismatic Blades* - Three prismatic blades were recorded that exhibit no apparent utilization or retouch along their lateral margins (Figure 9). These artifacts are very diagnostic of the Clovis and Cumberland lithic tool kit which is based upon blade core production (Stanford 1991). All of these specimens are made from the various locally available Ft. Payne cherts.

Figure 7. Clovis Preforms.

Figure 8. Late Paleoindian Projectile Points/Knives

Figure 9. Prismatic Blades with No Lateral Edge Modification.

Prismatic Blades (one lateral edge retouched) - Three complete blades and four proximal ends of blades were placed in this category (Figure 10). Six of these are made from Ft. Payne chert and one is of Dover material. These tools were probably utilized for skinning and butchering game.

Prismatic Blades (both lateral edges retouched) - Ten artifacts were assigned to this category (Figure 11). One extremely long well made specimen was recorded in situ within the Stratum IV deposit (Figure 12). It is made of St. Louis chert. Three other complete specimens and four snapped proximal ends have also been found. Additionally, two snapped midsections of blades have been recovered. These tools were likely also used for skinning and butchering tasks. Three of the artifacts exhibit steep edge wear on a portion of one lateral edge indicating that they may have also served as sidescrapers. Five of these artifacts were manufactured from Ft. Payne chert, two are of Dover, and the remaining three are of St. Louis material.

End/Sidescrapers - Three complete end/sidescrapers and the distal ends of two other specimens were found at 40Dv400 (Figure 13). Two of the examples are spurred end scrapers which are diagnostic of the Clovis occupation (Stanford 1991). One of these exhibits polish along the working margin of the distal end, such polish is thought to be an indication of hide working activities. Of the total (n=5) one specimen is of St. Louis chert, two are manufactured from Dover chert, and the remainder are made of Ft. Payne material.

Sidescraper/ Denticulate - One item, manufactured from Ft. Payne chert, was placed in this tool category. It is a blade-like flake with one margin that appears to have been used as a sidescraper and the other as a saw or rasp (Figure 14).

Perforator/Graver - This category includes small uniface tools that were based on the proximal ends of prismatic blades. A single sample is represented (Figure 14). It is made of Ft. Payne chert. The tool's waxy appearance suggests that it may have been heat-treated. This tool was either used to engrave wood or bone, or perhaps it was used as a perforator in hide or leather working activities.

Figure 10. Prismatic Blades with One Lateral Edge Retouched.

Figure 11. Prismatic Blades with Both Lateral Edges Retouched.

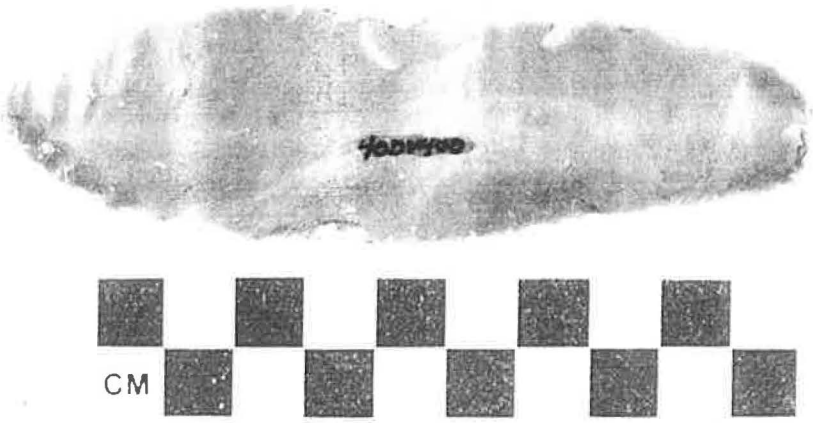


Figure 12. Prismatic Blade Recovered In Situ From Stratum IV.

Figure 13. Endscrapers.

Figure 14. Sidescraper (L) and Perforator/Graver (R).

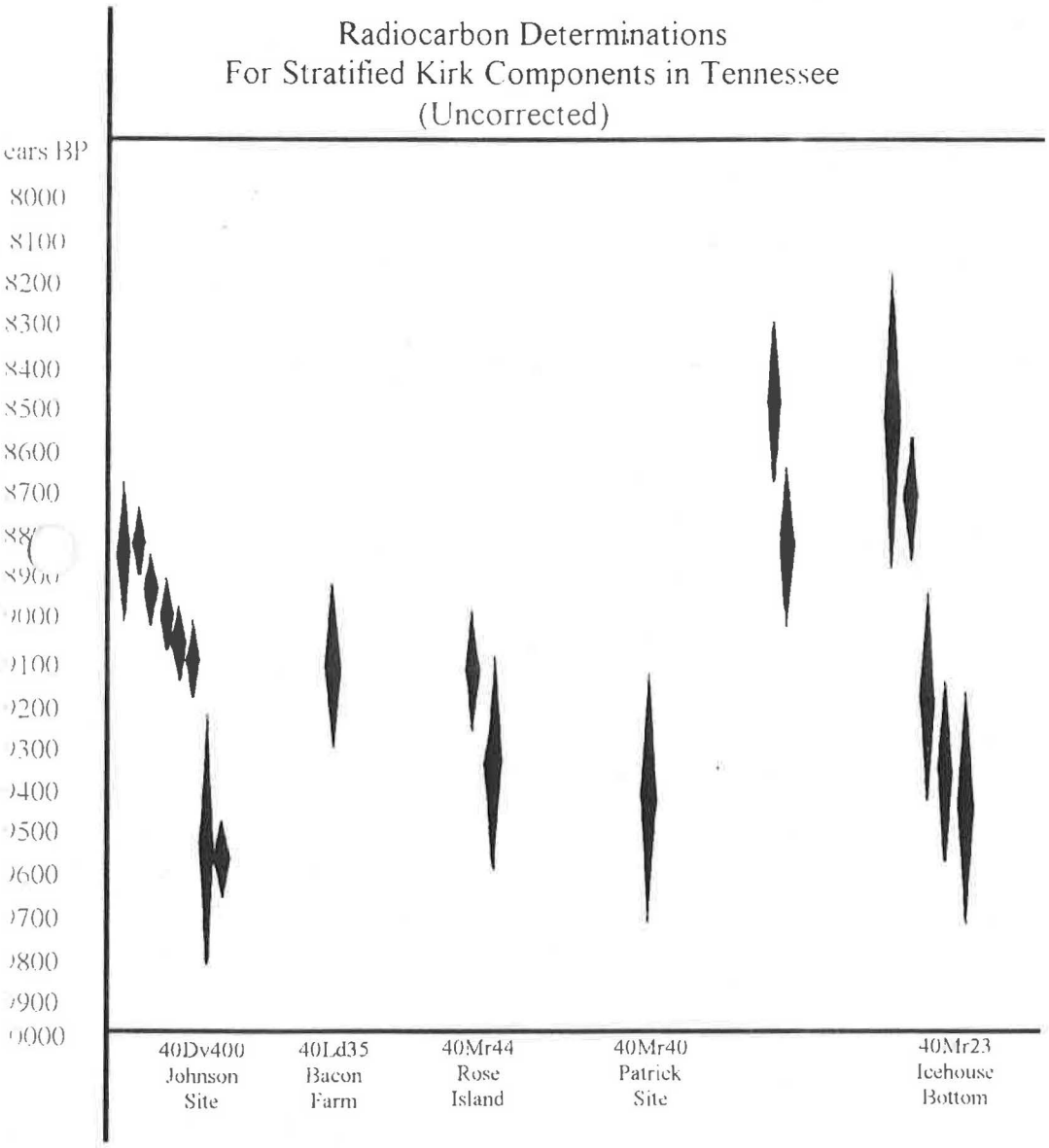
Stratum III

Eighty-five projectile points have been recorded that are believed to be associated with the Stratum III deposit at Johnson. Although the majority (n=64) were recovered on the beach, twenty-five percent (n=21) were identified in the bank stratigraphy. The Kirk Corner Notched type (Coe 1964) is by far the most frequently occurring PPK from the deposit at ninety-seven percent (n=83). The remainder consists of a single Decatur (Cambron 1957) and a Lost Lake (Cambron and Hulse 1964), both of which are believed contemporaneous with the Kirk Corner Notched type (Justice 1987:58, 81).

Kirk Corner Notched (n=83): This projectile point type, first described by Coe (1964) and later identified at other sites in the Eastern Woodlands (Broyles 1966, 1971; Chapman 1975, 1977a, 1978; Griffin 1974; Norton and Broster 1993; Tomac 1994), constitutes the vast majority of diagnostic tools from the Johnson site. Since Coe's initial definition, Kirk Corner Notched projectile points have been generally split into two groups (large and small varieties [Palmer]) according to size, basal characteristics and stratigraphic affiliation (Broyles 1966, 1971; Chapman 1975, 1977a, 1978). Other variants of the type are also noted in the literature, including the Pine Tree variety (Cambron 1957), the Pine Tree Corner Notched (Cambron and Hulse 1964), and the Stilwell (Perino 1970). Radiocarbon determinations suggest that the Kirk Corner Notched projectile point type dates between 7500-6900 B.C. (Chapman 1977a:166). The chronological assays from the Kirk deposit at Johnson cluster around 7,000 B.C.

At 40Dv400, the morphological variation among Kirk type projectile points is believed to be primarily the result of artifact rejuvenation and task utilization rather than chronological variability (i.e, projectile points or knives). The tightly clustered radiocarbon determinations for Stratum III tend to support this hypothesis (Figure 15). However, the internal stratigraphy of the Stratum III deposit can only be fully understood by reconstructing the complex depositional history of the site and this is presently not possible due to the limited nature of investigation.

The Johnson site Kirk Corner Notched variant is a medium to large projectile point/knife that exhibits a triangular blade, straight to incurvate base, corner notches, and expanded shoulders (Figure 16). Blades are incurvate to recurvate and generally biconvex in cross section (Figure 17). Flaking is random with flake scars often running toward the base. Blade edges are off centered and serrated (Figure 18),



igure 15. Radiocarbon Determinations for Stratified Kirk Components in Tennessee.

Figure 16. Selected Kirk Projectile Point/Knives from Stratum III.

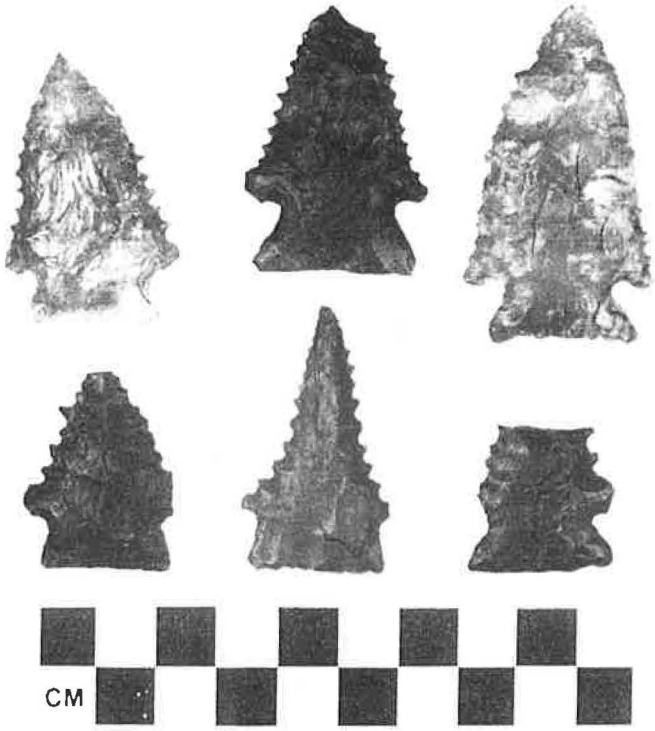


Figure 17. Selected Kirk Projectile Point/Knives from Stratum III.

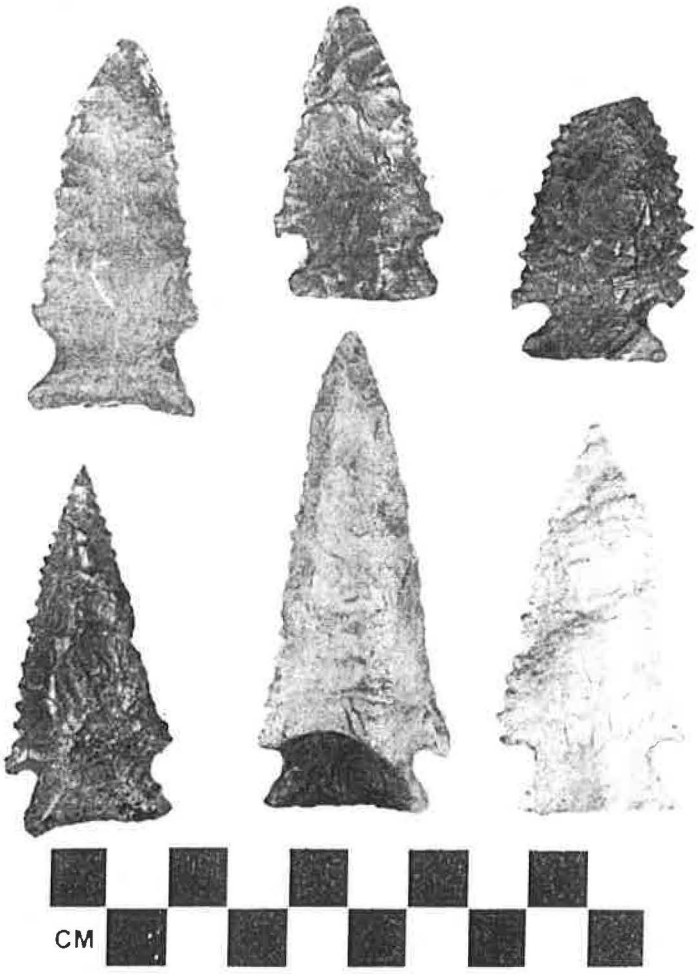


Figure 18. Selected Kirk Projectile Point/Knives from Stratum III.

although several examples are beveled. Shoulders are barbed and wider than the base in most examples (88 percent of the comparative sample). Corner notches are more shallow than they are wide resulting in a stem with edges that are straight to slightly convex (Figure 19). Grinding is evident on eighty-four percent of the samples (n=75). The metrical attributes of the recovered Johnson site Kirk Corner Notched PP/Ks are shown in Table 4 and synthesized in Table 5.

Decatur (n=1): This projectile point type is distributed primarily in the southeast (Cambron 1957; Cambron and Hulse 1964; Chapman 1977a, 1977b; Justice 1987). It occurs in low frequency in Kentucky (Boisvert et al. 1979), Ohio (Geistweit 1970) and across portions of Indiana (Tomak 1970). Points of the type are believed to date between 7000-7500 B.C. and are generally included within the Kirk Corner Notched Cluster (Chapman 1977a:49).

The single Decatur example recovered from the beach at 40Dv400 is a small to medium projectile point/knife that exhibits a serrated incurvate blade, expanded shoulders, corner notches and a biconvex cross-section (Figure 20). This PP/K has a damaged haft element, but is distinguishable from the Kirk Corner Notched type in that it exhibits signs of basal burination.

Lost Lake (n=1): This projectile point type, first called Plevna after a site of that name in Madison County, Alabama (DeJarnette et al. 1962), has been recovered at other sites with Early Archaic components in the southeast; including the Stanfield-Worley Bluff Shelter (DeJarnette et al.1962) and Ice House Bottom (Chapman 1977a). Other correlates occur in the north-east including the St. Charles (Scully 1951) and Thebes (Luchterhand 1970) projectile points. Based on morphological and chronological data, Justice (1987:54-60) combines these types into a single cluster and estimates their age at between 8000-6000 B.C. This indicates contemporaneity with the Kirk Corner Notched type.

The single Lost Lake from 40Dv400 is a medium to large projectile point/knife that exhibits a triangular blade, straight base, and deep narrow corner notches (Figure 20). Its blade is beveled on one edge of each face resulting in a cross-section that is rhomboid. Flaking is random broad and shallow. Shoulders extend downward and are wider than the base. Corner notches are deep, narrow and longer than they are wide. The base is heavily ground and exhibits thinning across its entire dorsal surface.

Table 4. 40Dv400 SIII Kirk Corner Notched Metrical Data (n=83).

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE
Count =	49	61	51	77	82	75	79
Sample No.							
1	64.51	26.38	30.83	19.88	7.07	No	Ser
2	49.50	29.02	---	21.75	7.19	Yes	Ser
3	62.05	26.13	26.16	19.62	7.74	Yes	Ser
4	55.65	25.28	32.03	17.93	7.37	No	Ser
5	44.28	23.85	29.49	18.77	6.77	Yes	Ser
6	84.96	---	33.24	19.33	8.80	Yes	Ser
7	84.07	26.60	33.71	19.15	7.17	Yes	Ser
8	67.44	30.26	31.96	21.61	8.42	Yes	Ser
9	40.72	22.66	26.51	15.63	5.36	Yes	Str
10	71.49	---	32.65	18.44	7.45	Yes	Ser
11	76.02	28.76	24.89	19.61	5.69	Yes	Ser
12	44.05	30.05	29.87	20.86	6.61	Yes	Ser
13	51.29	25.87	30.38	19.86	6.49	Yes	Str
14	76.72	24.81	29.15	19.74	7.51	Yes	Ser
15	53.57	27.25	27.59	19.84	7.27	Yes	Ser
16	43.86	27.85	23.11	19.86	5.94	Yes	Bev
17	48.04	25.43	31.46	19.90	5.98	Yes	Ser
18	42.73	20.90	---	15.18	6.63	Yes	Ser
19	58.44	---	---	15.86	7.57	Yes	Ser

Table 4. 40Dv400 SIII Kirk Corner Notched Metrical Data (n=83) (continued).

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE
Count =	49	61	51	77	82	75	79
Sample No.							
20	48.79	21.05	24.55	15.29	6.35	Yes	Ser
21	50.60	26.47	---	18.77	6.66	Yes	Str
22	64.49	22.80	30.30	18.53	8.61	Yes	Str
23	69.89	28.21	---	19.97	8.54	Yes	Ser
24	44.61	21.14	26.56	15.09	6.50	Yes	Str
25	52.70	22.98	---	15.94	5.77	Yes	Ser
26	66.42	25.18	31.72	18.76	8.22	Yes	Ser
27	61.04	---	---	18.23	7.53	No	Ser
28	56.64	---	---	15.85	6.48	Yes	Ser
29	53.79	21.04	22.27	15.91	7.80	Yes	Ser
30	78.74	22.06	23.41	15.97	7.47	Yes	Ser
31	49.57	22.35	27.44	15.94	7.04	Yes	Ser
32	47.14	22.24	---	20.24	7.99	Yes	Str
33	65.51	29.61	33.26	21.60	7.50	Yes	Ser
34	43.96	22.52	24.45	20.02	5.50	No	Ser
35	33.00	21.84	---	19.03	5.62	Yes	Ser
36	---	26.85	30.13	18.50	6.93	Yes	Ser
37	---	22.71	20.54	15.27	5.37	Yes	Ser
38	---	23.67	25.34	15.69	6.89	Yes	Ser

Table 4. 40Dv400 SIII Kirk Corner Notched Metrical Data (n=83) (continued).

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE
Count =	49	61	51	77	82	75	79
Sample No.							
39	---	24.24	26.08	18.43	5.72	Yes	Ser
40	---	23.69	27.93	18.30	6.44	Yes	Ser
41	---	25.26	32.70	16.92	6.46	Yes	Ser
42	---	30.35	---	20.88	7.21	Yes	Ser
43	---	23.20	32.66	16.72	6.73	Yes	Ser
44	---	25.30	30.48	19.72	7.19	No	Ser
45	---	---	---	21.30	8.23	Yes	Str
46	---	---	26.95	15.90	7.30	---	Ser
47	---	24.91	---	18.16	5.74	Yes	Ser
48	---	25.16	---	16.25	6.94	Yes	Ser
49	---	---	26.89	19.85	6.85	Yes	Str
50	---	25.28	27.97	19.65	7.46	Yes	Ser
51	---	26.23	29.60	19.78	7.00	Yes	Ser
52	---	---	29.32	19.44	7.81	Yes	Ser
53	---	---	23.87	18.05	7.65	Yes	Ser
54	---	27.57	---	19.86	5.32	No	---
55	---	---	---	18.19	5.14	Yes	---
56	---	---	29.36	17.36	8.18	---	Ser
57	---	30.38	---	21.96	5.50	Yes	---

Table 4. 40Dv400 SIII Kirk Corner Notched Metrical Data (n=83) (continued).

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE
Count =	49	61	51	77	82	75	79
Sample No.							
58	---	---	---	15.18	6.27	No	Ser
73	---	25.27	---	---	6.83	Yes	Ser
74	---	---	---	---	7.52	---	Str
75	---	---	---	---	6.94	---	Ser
76	---	---	---	---	8.47	---	Ser
78	---	---	---	---	7.50	---	Bev
79	---	---	---	23.29	7.55	---	Bev
80	---	33.03	---	22.29	---	Yes	---
81	---	---	---	---	7.94	---	Ser
82	78.84	28.43	---	19.46	8.36	Yes	Ser
83	---	24.76	29.82	17.02	7.21	Yes	Ser
84	43.17	---	35.21	22.44	7.45	No	Ser
85	80.48	26.86	---	17.32	8.21	Yes	Ser
86	79.14	27.81	32.43	22.10	8.20	Yes	Str
87	55.62	28.90	28.09	19.91	7.31	No	Ser
88	48.34	25.40	28.49	19.62	6.66	Yes	Ser
89	50.41	24.22	32.26	19.90	7.03	Yes	Ser
90	61.82	28.01	---	19.86	8.47	Yes	Ser
91	49.61	24.38	---	17.44	6.72	Yes	Ser

Table 4. 40Dv400 SIII Kirk Corner Notched Metrical Data (n=83) (continued).

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE
Count =	49	61	51	77	82	75	79
Sample No.							
92	59.77	24.61	---	19.04	8.55	No	Ser
93	30.80	21.41	25.00	17.06	5.60	No	Ser
94	28.53	21.76	25.98	18.37	5.61	No	Ser
95	50.21	---	28.95	19.51	8.04	Yes	Ser
96	38.25	---	28.61	16.88	6.46	Yes	Ser
97	---	29.22	32.64	20.75	8.26	Yes	Ser
98	---	26.16	---	18.93	8.00	Yes	Ser

Table 5. 40Dv400 Kirk Corner Notched Projectile Points/Knives (n=83): Synthesis of Metrical Data.

	Range	Mean	*S.D.	Range at 1 S.D.
Length (n=49)	28.53 - 84.96 mm	56.35 mm	14.05 mm	42.30 - 70.40
Base Width (n=61	20.90 - 33.03 mm	25.50 mm	2.80 mm	22.70 - 28.30
Shoulder Width (n=51)	20.54 - 33.71 mm	28.71 mm	3.32 mm	25.39 - 32.03
Stem Width (n=77)	15.09 - 22.44 mm	18.71 mm	2.00 mm	16.71 - 20.71
Maximum Thickness (n=82)	5.14 - 8.80 mm	7.07 mm	.93 mm	6.14 - 8.00

*S.D. (Standard Deviation)

Blade Morphology (n=79)

Serrated	66 = 83%
Straight	10 = 13%
Beveled	3 = 4%

Base Morphology (n=75)

Ground Base	63 = 84%
Unground Base	12 = 16%

Figure 19. Selected Kirk Projectile Point/Knives from Stratum III.

Figure 20. Lost Lake Projectile Point/Knife (L), Large Blade (C) and Decatur Projectile Point/Knife (R).

In addition to diagnostic PP/Ks, nineteen expended preforms (Figure 21) and fifteen cobble bifaces (Figure 22) have been recovered from the site. Although the majority of these items can not be provenienced in terms of stratigraphic affiliation they are believed to be associated with the Early Archaic occupation of the locality.

At 40Dv400, the majority of Kirk Corner Notched projectile points (n=78), were manufactured from Ft. Payne chert. Two are of Dover and the remainder (n=3) have not been lithologically provenienced. Both the Lost Lake and Decatur are also of Ft. Payne material. The recovery at 40Dv400 of cobble bifaces and core trimming flakes that exhibit hard stream rolled cortex indicates that cobble forms of Ft. Payne chert were the primary source of raw material for flaked tool production during the Early Holocene occupation of the site.

Stratum II

Twelve bifurcated base projectile points have been examined from 40Dv400. All are believed to be associated with the Stratum II deposit. Of the total, four were recorded in situ and the remainder were found on the lower beach (Figure 23). In addition, two Kirk Stemmed variants were also available for study (Figure 24). Both of these specimens were found by a local collector and their exact provenience is unknown, however, based on the existing literature, they are likely associated with the Stratum II deposit.

Bifurcated base projectile points date to the later part of the Early Archaic period and have been recovered in good stratigraphic context above Kirk Corner Notched components at other deeply buried sites in the Eastern Woodlands (Broyles, 1971; Chapman 1975, 1977a, 1979). Projectile points of the type are classed according to three main categories. These are MacCorkle (Broyles 1966:23, 1971:71; Chapman 1977:6), St. Albans (Broyles 1966:23, 1971:72-75) and LeCroy (Broyles 1966:27). Other types are also noted in the literature (Justice 1987:85-98). Due to the small size of the Johnson site bifurcate sample and the lack of internal stratigraphy within the Stratum II deposit, the authors make no attempt at splitting the Johnson bifurcated base PP/K sample according to any of the above categories. The metrical attributes of the recovered specimens are presented in Table 6.

Table 6. 40Dv400 SII Bifurcated PPK Morphology (n=12)

	Length	BS Width	SH Width	ST Width	Max Thick	GRND	BLDE	BS Depth
Count =	8	10	9	9	11	12	10	11
Sample No.								
61	85.38	22.37	30.90	19.48	7.34	No	Ser	3.47
62	56.22	26.44	28.45	22.62	5.50	Yes	Str	3.39
63	57.32	23.52	25.87	19.03	6.53	Yes	Ser	4.17
64	45.20	26.43	24.08	21.62	7.20	Yes	Ser	4.17
65	---	21.78	27.82	18.68	7.29	Yes	Str	5.74
66	---	24.02	---	---	---	Yes	---	4.49
67	---	23.15	---	19.41	6.97	Yes	Str	5.68
68	49.43	---	30.65	---	6.17	Yes	Ser	---
69	---	26.07	---	---	9.57	No	---	3.85
99	46.14	---	28.34	20.21	5.78	Yes	Ser	4.71
100	55.79	26.11	31.39	21.31	7.17	Yes	Ser	4.37
101	68.66	27.88	40.84	25.27	7.98	Yes	Str	2.49

Figure 21. Expended Preforms.

Figure 22. Selected Cobble Bifaces.

Figure 23. Bifurcated Projectile Points/Knives from Stratum II.

Figure 24. Unprovenienced Kirk Stemmed Variants.

CONCLUSIONS

The need for data recovery and subsequent shoreline stabilization of semi-inundated archaeological sites negatively impacted by modern control and usage of the nation's drainage system is demonstrated all too vividly at 40Dv400. In less than four years a minimum of twenty ancient cultural features have been destroyed there. This figure likely reflects only a fraction of the material culture washed away daily as a result of erosion. The limited investigations at 40Dv400 suggest that, although monitoring is not a preferred archaeological method, it can be used to obtain meaningful data and should be considered by researchers in situations where shoreline sites are threatened and deep testing and stabilization are unlikely to occur in the foreseeable future.

Lithic and chronological data obtained from 40Dv400 indicate that the site area was first utilized during the terminal Pleistocene. This Paleoindian occupation, from Clovis through late Dalton times, was of seasonal duration. In fact, occupation of the site appears to be greatest during the earlier Clovis period. The collection of locally available river cobble and the production of Clovis projectile points seem to be the main focus of this early occupation. The artifacts also denote at least light butchering and hide working activities. It should be noted that although no fauna specimens have been identified from the site, mastodon remains were recovered from a rock quarry that is situated within 150 meters of the 40Dv400 locality (Myer 1914, Purdue 1915). Such megafauna are believed to be a major focus of Paleoindian adaptation and, if present, likely attracted early migrants to the area.

The later Paleoindian use of the site appears even more ephemeral. One Dalton, five Greenbriar and two Harpeth River PP/Ks are the only late Paleoindian diagnostics obtained from 40Dv400. Data from sites of the period on the Tennessee River suggest late Paleoindian encampments of duration are much more prolific in terms of artifactual remains. This coupled with the lack of a Late Paleoindian level in the stratigraphic profile at Johnson suggest that 40Dv400 was used only sparingly during the terminal Paleoindian period. This may have been due to the unstable nature of the Cumberland River flood plain during the terminal Pleistocene. It is suggested that very short occupations for the purpose of gathering chert cobble may have been the only activity at the site during these times.

Although no features have been associated with either Clovis or Cumberland occupations at 40Dv400, a date of 11,700+/-980 BP (Tx-7000) was obtained in

association with a Clovis preform base embedded in Stratum IV. Two additional early dates were obtained for the site: 12,660 +/-970 for Feature 1 (Broster et al. 1991), and 11,980+/-110 (Tx-7454) for Feature 6. However their validity is presently inconclusive in light of more recent radiocarbon determinations and lack of geomorphological data.

It is likely that the Cumberland River flood plain became more stable during the Early Holocene, as the Early Archaic components at the site are the most prolific. The tightly clustered radiocarbon determinations for Stratum III coupled with an abundance of chipped stone tools and debitage in the deposit suggest intensive utilization of the Cumberland River flood plain around 9,000 years ago. As with the prior Clovis occupation, the presence of unfinished bifaces in the Kirk horizon indicates that the manufacture of chipped stone tools was also an important activity performed by Early Archaic peoples at the site. This also implies that raw material was locally available in the form of chert cobble. The recovery from the deposit of numerous exhausted PP/Ks suggests that the site continued to be used as a hunting camp where tools were either refined or replaced.

The chronometric assays for Stratum III represent the tightest cluster of dates for a Kirk deposit in the Central Basin, and combined with the existing database, further narrow the temporal affiliation of Kirk culture across the Eastern Woodlands. In addition, the metric data from the Johnson site Kirk sample can be used to aid in the establishment of a regional lithic chronology for the Central Basin.

The presence of an additional Early Archaic deposit (Stratum II) above the Kirk cultural component at 40Dv400 indicates that the site continued to be utilized by later Early Archaic peoples. The occurrence of somewhat different PP/Ks (bifurcates) in Stratum II and a radiocarbon determination of 8,940+/-110 (Tx-7453) for the deposit suggest that relatively little time occurred between the Kirk and bifurcate occupations. This is supported by the metric attributes of the Johnson bifurcate sample, which shares some commonalties with the earlier Kirk Corner Notched PP/K type. Until additional data is obtained this remains to be established. What is clear is that the Stratum containing bifurcated PP\Ks occurs above the Kirk component at Johnson not unlike other documented bifurcate horizons in the region.

Although the 40Dv400 data suggest seasonal utilization of the site area from Paleoindian through Early Archaic times, there is a virtual lack of evidence indicat-

ing later Archaic occupation of the site. This no doubt reflects either environmental factors or changes in adaptive strategies during Middle thru Late Archaic times.

The presence of a Woodland/Mississippian component (40Dv399) at the eastern margin of the site indicates that reuse of the area occurred after the advent of agricultural subsistence.

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