Carson's Landing (BT-1)
Name of Property

Butler County, Kentucky
County and State

10. Geographical Data

Acreage of Property 2.2 +/- acres

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	16	521970	4127300
2			

Cromwell Quad

	Zone	Easting	Northing
3			
4			

☐ See continuation sheet

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Janet L. Johnston

organization _____ date 3/16/98

street & number 308 North Mantle Avenue telephone (502) 763-0090

city or town Elizabethtown state Kentucky zip code 42701

Additional Documentation

`ubmit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items
(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name Carroll & Doris A. Tichenor

street & number 1086 Annis Ferry Road telephone (502) 728-2561

city or town Morgantown state Kentucky zip code 42261

US GOVERNMENT PRINTING OFFICE

7. Narrative Description

Narrative Description

Carson's Landing (BT-1) is situated on approximately 301 acres located within the Big Bend of the Green River and one mile north of Logansport in Butler County, Kentucky. Carson's Landing was strategically located on the banks of the Green River, and the landing, ferry, owners, and operators played a significant role in the development and growth of commerce and transportation along the Green River in Butler County between 1853 and 1924. The nominated property includes approximately 2.2 acres, one contributing building, one contributing site, and three noncontributing buildings.

Carson-Annis Residence (circa 1853-1854)

The Carson-Annis residence is a two-story, frame building situated on the easternmost portion of the farmstead and approximately two hundred feet from the Green River. Its design is simple in its use of natural materials, such as poplar and ash wood, and its workmanship. It also exhibits the Greek Revival style by its applied ornamentation and the two-story front portico. This house incorporates the simple detail and construction with the high style ornamentation of the Greek Revival style of architecture.

The Carson-Annis residence is a typical I-house in its configuration and features the rectangular plan (18' 7" x 48' 7 ½") with a one-story, rear ell addition (36' 7" x 24' 4 ½"). The original I-house has a side-gabled roof covered with composition shingles. The balloon framing of the Carson-Annis residence is poplar wood and was originally covered with hand-planed, poplar weatherboarding. To reduce maintenance costs and improve energy efficiency, previous owner, Lena Grey Annis, installed aluminum siding on the original section of the house. The rear addition still has the original poplar weatherboarding. Although the original section has aluminum siding, it matches the reveal and profile of the original weatherboarding. This alteration to the integrity of materials does not destroy the integrity of association, which is critical for the home's eligibility. In 1991, the current owners removed the aluminum siding from the fascia and eaves of the original section.

The foundation of the Carson-Annis residence originally was hand-shaped sandstone piers. In the 1960s, the house was underpinned with concrete blocks between the sandstone piers. The original section of the Carson-Annis residence also features two exterior, gable-end chimneys constructed of common bond brick. Due to floodwater damage and general deterioration, the northwest chimney was rebuilt using the original materials, and the southeast chimney was repointed.

The northeast façade of the Carson-Annis residence faces the Green River and features a two-story, full-height entry porch. Constructed circa 1879, this Greek Revival porch has square columns and railings and tongue and groove flooring. The first floor entry door (40 ½" x 83") is a four-paneled, poplar door and features a Greek Revival rectangular glazed transom and sidelights encased in a larger decorative wood enframement. The second floor porch door (37" x 79 ¼") originally was a window and was installed with the construction of the entry porch circa 1879.

The windows of the original section are six-over-six, double-hung windows with beaded facings. In 1905, a "sewing window" was installed in the second floor, northwest bedroom for greater light and ventilation. This window is a four-over-four window without beaded facings. The window facings today are encased in aluminum siding installed in the late 1960s, and all thirty-one windows in the Carson-Annis residence have aluminum storm windows.

The interior of the original Carson-Annis residence features a "socially-locked plan." The large hall and open stairway are flanked by large rooms on the northwest and southeast sides and create a "social lock" from the remainder of the house. The vertical bay on the south side of the residence originally was utilized as a parlor and today is used as the master bedroom. This bedroom has 5"-wide ash floors, and the walls and ceilings are plastered. The interior walls feature a 34"-high wainscot. The master bedroom contains four windows (35" x 63") with 5"-wide facings and has two, two-paneled, grained doors (51" x 77 ½"). The door to the first floor bathroom was installed in 1987 and is a reproduction. The fireplace in the master bedroom features a Neoclassical mantel and surrounds.

The north vertical bay today is utilized as a living room and features a partially enclosed, U-shaped staircase to the second floor bedroom. This room also has plastered walls with a 34"-high wainscot and 10' 2"-high, plastered ceilings. This room also has 5"-wide ash flooring. The fireplace features a mantel with Neoclassical surrounds with simple pilasters and square panels. The windows in the living room feature simple wood surrounds with 5"-wide facings.

The main hall on the first floor features an open, U-shaped staircase with a landing. The staircase has a starting, landing, and two ending newels that are simple and waisted poplar posts with newel caps. The baluster features 30 ¼"-high and 2-3"-wide simple, square poplar posts. The stair treads are poplar and 10" wide, and the risers are poplar and 7" high. The staircase landing is illuminated by a 35" x 63" six-over-six, double-hung window with 5"-wide facing. The interior doors of the main hall are two-paneled, grained doors with decorative surrounds and 5"-wide facings. The walls are plastered and feature a 34"-high, hand-hewn wainscot. The ceilings are 10' 2" high. The first floor hall also contains a bathroom located in the space under the staircase. Originally this space

served as a closet and was reconfigured as a half bathroom in 1987.

The second floor of the original Carson-Annis residence is identical to the first floor layout. It has a large central hall flanked by a large bedroom on each side. The hall features access to the second floor porch overlooking the Green River. The walls are plastered with simple baseboards, and the ceilings are 8' 4" high and plastered. The doors have been grained and exhibit simple surrounds. The door to the northwest bedroom was installed in the late 1960s.

The second floor bedrooms have poplar flooring and plastered walls and ceilings. The fireplaces feature simple, Neoclassical mantels and surrounds. The windows and doors have 4 ½"-wide facings, and the doors are two-paneled, grained doors. The second floor, northwest bedroom also features the 1905 "sewing window".

The one-story, rear ell addition is located on the rear (southwest side) of the original Carson-Annis residence. Originally a one-story, log kitchen was situated on this site and adjacent to the door of the first-floor, northwest living room. About 1879, John Carson moved the log kitchen to the southwest corner of the property and constructed a frame addition. This ell addition features balloon framing covered by the original poplar weatherboarding and has a side-gabled shingle roof.

Today the rear addition consists of a dining room, kitchen, bathroom, utility porch, and a long porch. The dining room features plastered walls with a 34"-high wainscot. The windows and doors feature 5"-wide facings. The dining room also features a double chimney which extends to the adjoining kitchen. The chimney is constructed of hewed sandstones to the roofline and brick above the roofline. The fireplace surrounds are simple square panels and pilasters. The dining room also has a closet constructed between 1905 and the 1930s.

The kitchen has plastered walls with simple baseboards and a 9' 10 ½"-high plastered ceiling. The double chimney has a simple fireplace mantel and surround, and the fireplace grate has been enclosed. The kitchen doors are two-paneled, grained doors with simple surrounds. On the northwest side of the kitchen is a 7' x 13' 6" utility porch. Constructed between 1905 and the 1930s, this porch was enclosed in the late 1960s and now features four windows and one interior door. On the southeast side of the kitchen, the pantry was reconfigured as a bathroom in the late 1960s. This bathroom was again remodeled in 1987.

The long porch on the south side of the rear addition originally was constructed as an open porch circa 1879. Between 1905 and the 1930s, the owners extended the width of the porch by two feet and underpinned the porch with brick. The porch was also boxed to the railing height and screened. In the late 1960s, Lena Grey Annis enclosed the porch with seven, 32" x 46", six-over-six, double-hung windows and one six-paneled door. In 1994, the current owners constructed a 2' x 6' stoop with a railing on the southeast side of

this long porch.

The Carson-Annis residence has undergone significant restoration and rehabilitation since its construction in 1853-1854. Due to flooding damages and general deterioration, significant repairs have occurred. During the 1960s, Lena Grey Annis undertook considerable work, including new roofing, aluminum siding, and storm windows. In 1986, Doris Tichenor, the granddaughter of W.T. Annis, acquired Carson's Landing, and since that time, Carroll and Doris Tichenor have undertaken extensive restoration and preservation of the Carson-Annis residence. The Tichenors have attempted to restore and maintain the historic integrity of Carson's Landing through the careful study and use of historic materials and workmanship on the restoration of the residence and outbuildings. The Tichenors have replaced many of the original components of the residence and have utilized reproductions to enhance the overall integrity of the structure.

Steamboat Landing and Ferry Site (1854-1924)

The site of the steamboat landing and ferry is a contributing site. Located on the northeast side of the nominated property, this site is marked by a visible depression in the river bank and landscape. This contributing site was designated as a ferry site in August 1854 and later became a popular steamboat landing along the Green River. This site continued operations as a steamboat landing and ferry until the construction of the new road bypassing Big Bend and Carson's Landing in 1924. At that time, the Annis family discontinued the ferry operations.

Garden House (Former Smokehouse) (circa 1938-1939)

The garden house is located on the northwest side of the nominated property. Constructed circa 1938-1939, this outbuilding served as the smokehouse for the Annis family. This structure was constructed following the 1937 flood which destroyed the original log smokehouse on the site. This agricultural outbuilding is a noncontributing structure. It was built by Sherman Borah, a local carpenter and member of the prominent Borah family in the Big Bend community. In 1994, the current owners undertook considerable repairs of the former smokehouse. The repairs included the installation of two windows that were removed from another residence on the farm.

Wellhouse (circa 1930s)

The wellhouse is located on the north side of the nominated property. The actual date of construction of the wellhouse is unknown; however, it is assumed that it was constructed after the 1937 flood. This agricultural outbuilding is also a noncontributing structure.

Garage (circa 1960s)

The garage located on the east side of the nominated property is a metal building constructed in the late 1960s. This noncontributing building is situated to the rear of the Carson-Annis residence and does not detract from the historic integrity of the site.

8. Statement of Significance

Carson's Landing (BT-1) meets National Register Criterion A and is historically significant within the context of evaluation, "Commerce and Transportation along the Green River in Butler County, 1853-1924." The nominated property is significant for its contributions to the development and growth of commerce and transportation along the Green River in Butler County between 1853 and 1924. During the period of significance, the nominated property was one of many steamboat landings and ferry sites along the Green River in Butler County and Kentucky. Its development paralleled the improvements of the Green River as a navigable waterway and the development and growth of commerce and transportation along the Green River in Butler County and Kentucky. Carson's Landing served the needs of the local community and was the site of stores, warehouses, two post offices, livestock scales, ferry, and steamboat landing. Today Carson's Landing is one of the few sites in Butler County that represents the commerce and transportation along the Green River and is a material reminder of the importance of the Green River as an artery for transportation, commerce, and communication for Logansport, Butler County, and Kentucky.

The period of significance, 1853-1924, is the time in which Carson's Landing grew to its present-day form. The beginning date 1853 constitutes the construction of the existing residence and the opening of the Logansport Post Office at Carson's Landing. The ending date 1924 signifies the closing of the Annis Ferry at Carson's Landing and the decline of the transportation on the Green River.

Commerce and Transportation Along the Green River in Butler County, 1854-1931

To evaluate the historic significance of Carson's Landing and to begin to understand its role in the development and growth of transportation along the Green River in Butler County, historical documentation was reviewed. Source materials, such as the *Pennyrile Cultural Landscape*, *Butler County, Kentucky: A History of Butler County, Kentucky and Its People*, *Green River Steamboating: A Cultural History, 1828-1931*, and *Steamboats on the Green and the Colorful Men Who Operated Them*, provided detailed information on the development and growth of commerce and transportation along the Green River in Butler County and Kentucky. The archival and literature review included the seventy-one years of the existence of the steamboat landing and ferry at Carson's Landing and showed that the survival of the structure and site is a significant reminder of the importance of the Green River as a means for commerce and transportation.

"The Green River was the life-line of Butler County, as evidenced by the profitable business ventures and the export and import businesses. It brought life, beauty and

productivity to the county" (Butler 18). Originating in the foothills of the Appalachian Mountains, the Green River flows 370 miles west and north to the Ohio River. During the 19th and early 20th century, this waterway served as a significant artery for commercial shipping for southcentral Kentucky communities. Beginning in the early 19th century, the Green River served as a primary route for shipping goods via flatboat to the Ohio River and ultimately to New Orleans.

As the demands for commercial routes and navigable waterways increased, the Kentucky legislature responded by the enactment of legislation for improvements to the Green River throughout the 19th century. In 1808, the Kentucky legislature enacted the first act providing for Green River improvements. Between 1811 and 1815, steamboats began plying the Ohio River, and southcentral Kentucky citizens recognized the economic gains of year-round navigation. "By the end of the 1820s many valley residents had contracted serious cases of steamboat fever" (Crocker 13). During the next century, Butler County residents witnessed two eras of river improvements and steamboat navigation on the Green River. The first era, 1828-1888, began with the arrival of the first steamboat, the *United States*, on the Green River in January 1828 and ended with the termination of private control of the Green River locks and dams.

The arrival of the *United States* in 1828 stimulated the demand for river improvements and year-round navigation on the Green River. As a response, the Kentucky legislature initiated a slackwater navigation system. It authorized a private company, the Green and Barren River Navigation Company, to construct channels and build locks and dams on the Green River and its tributaries on January 29, 1830. In 1835, the Kentucky legislature enhanced its slackwater navigation system with the creation of the Board of Internal Improvements. This independent board provided for projects to enhance the year-round navigation of the Green River. By October 1842, the efforts of the Navigation Company and Board of Internal Improvements resulted in the construction of four locks and dams, including lock and dams at Rochester (No. 3) and Woodbury (No. 4) in Butler County (Crocker 14; Gannaway 1).

With the completion of this slackwater navigation system, the Green River valley witnessed and prospered from the first boom in river improvements and steamboat navigation. Numerous landings and river communities developed along the banks of the Green River.

Logansport, Butler County, Kentucky was one community that evolved as a response to the development and growth of year-round navigation on the Green River. This rural community was located within the Big Bend of the Green River. The Big Bend consisted of approximately nine thousand acres surrounded by fifty miles of the Green River, and it derived its name from its "horse-shoe" shape formed by the winding river (Butler 29). Logansport derived its name from the steamboat, *Captain Logan*, which sunk downriver

from Carson's Landing. Carson's Landing played a significant role in the development and growth of the Big Bend community and Logansport. Its strategic location along the banks of the Green River and within Big Bend provided for the evolvement of a commercial center, steamboat landing, and ferry.

By a will dated September 21, 1852, Thomas C. Carson (1823-1897) received 400 acres situated on the Green River and in the Big Bend from his father, William Carson (Butler County Will Book A, page 329-329). About 1853, Thomas Carson began construction of a two-story, frame residence on the river-bottom farm and completed the house before his marriage to Sarah Wilson on February 6, 1854. His bride was the daughter of William Wilson, owner of the property and ferry located across the Green River. Thomas Carson was a prominent member of the Butler County community. He served as county judge (1870-1874), assisted in the organization of the Butler County Bank (later known as the Morgantown Deposit Bank) in 1881, and served as the bank's first president.

On May 5, 1854, Thomas Carson opened the first Logansport post office on his river-bottom farm. Carson was named Logansport's first postmaster and held the contract for the mail delivery from Bowling Green to Owensboro until 1858 (Logansport 10). In August 1854, Carson's father-in-law, William Wilson, received approval for the re-establishment of the ferry, and Thomas Carson posted a surety bond for the ferry's re-establishment. According to Butler County Court records, the Wilson ferry was to be ". . . a good substantial flatbottom boat, securely banistered, be at least two foot from the top of the gunwater, be manned at all times by one able-bodied person, and be propelled by oars or otherwise worked by human strength." Thomas Carson also recognized the demands and opportunities created by the enhanced commercial and passenger shipping on the Green River. He constructed a large barn to accommodate loading and unloading of freight and livestock and opened a store to provide for the needs of local residents and passengers. With the development of this complex of structures, this site became a popular location along the Green River for the steamboats and its passengers and became known as Carson's Landing.

By 1879, Thomas Carson and his wife moved to Morgantown, and their only son, John M. Carson (1856-1937), came into possession of Carson's Landing and farm. John M. Carson was also a prominent Butler County resident. He was elected county court clerk in 1882 and was a founder of the Butler County Bank. John M. Carson and his new bride, Lulie Guffy, resided at Carson's Landing for approximately two years and made several changes to the residence during their residency. According to descendents of the Carson family, Carson's Landing was then occupied and operated by Alonzo Forsythe (1844-1895) between 1883 and 1894.

In the late 19th century, many southcentral Kentucky communities were more dependent on rail transportation for the transporting of goods and passengers. However, Butler County

was not served by the railroad, and its communities continued to depend on the Green River for commerce and transportation.

A new source of control over Green River traffic ushered in a second era of river transportation between 1888 and 1931. On December 11, 1888, the U.S. Corps of Engineers took control of the locks and dams on the Green River. This governmental control provided for enhanced year-round navigation of the waterway. Although the Green and Barren River Navigation Company no longer provided packet service on the Green River, private companies, such as the Evansville and Bowling Green Packet Company, formed to provide for the transporting of passengers and goods to and from Bowling Green and Evansville. Small river communities and steamboat landings continued to flourish along the banks of the Green River during the second era of steamboat navigation.

On October 2, 1894, Thomas C. and John M. Carson transferred the farm and Carson's Landing to a local entrepreneur, John Quincy Davenport (1860-1909) (Butler County Deed Book 7, page 135). Davenport and his family operated the steamboat landing, store, ferry, and warehouse at Carson's Landing between 1894 and 1904. According to an unpublished manuscript written by a Davenport descendent, "[s]ince he had a large farm to look after, together with a blacksmith shop, and the ferry across to the north side of the river, not to mention the warehouse at the river, where the up and down packet steamboats brought in and unloaded freight and supplies for the storehouse, and took aboard shipments of cattle, hogs and coops of chickens destined for the markets down at Evansville, Ind. on the Ohio river . . . . " (Davenport 29). In addition to the commercial enterprises, Davenport established and was the postmaster of the second post office at Carson's Landing in June 1903. Davenport named the Noka Post Office in honor of the birth of his friend's daughter Noka and operated the post office at Carson's Landing until July 1906 (30).

On October 5, 1904, John Quincy Davenport sold Carson's Landing and farm to William Thomas Annis (1858-1919) (Butler County Deed Book 14, page 287). Lena Grey Annis (1897-1996), daughter of W.T. Annis, wrote in her personal notes: "At that time my father bought the farm, a store built by Mr. Davenport was standing across the road from the house. It enclosed a post office named Noka. My father wanted to give his attention to the farm rather than to the store and post office so the store was rented to Mr. Dave Kelley of Morgantown who attended to it for one year and boarded in our home. After that time the store and post office were no more." Annis continued the operations of the steamboat landing, livestock scales, warehouse, ferry, and farm until his death on February 22, 1919. At that time, Carson's Landing and Annis Ferry Farm were bequeathed to his five children, and his heirs continued the ferry and landing operations. In 1924, a new road was constructed through the Big Bend community and thereby bypassing Carson's Landing. Subsequently the Annis family ceased the ferry and landing operations. The closing of the Annis Ferry at Carson's Landing paralleled the conclusion of steamboat navigation on the

Green River. The last steamboat packet, the *Evansville*, to ply the Green River burned in 1931, and "[t]hough steam-towed barges of asphalt and coal continued to use it, Green River ceased carrying life's necessities" (Crocker 133).

Integrity Considerations

Today Carson's Landing exhibits the spatial organizations, physical components, and historic associations originally affiliated with the steamboat landing and ferry. Although the Carson-Annis residence has been renovated and many of the original outbuildings and commercial structures have been destroyed and demolished, the historic integrity of the nominated site and components has been retained. Changes to the property exemplify the continual use of the nominated property as a residence and farmstead. The feeling and the character of Carson's Landing are maintained. To fully assess the historic integrity of Carson's Landing, all seven integrity factors – location, setting, design, materials, workmanship, feeling, and association -- were examined.

The location and setting of Carson's Landing remain intact and represent the development of steamboat landings and ferries on the Green River in the 19th century. The location and setting of steamboat landings and ferries were often determined by the topography, accessibility, and proximity of communities. Carson's Landing was strategically located on the banks of the Green River and within the Big Bend community. Its proximity to Logansport supported the development of the landing, ferry, and commercial operations. Since 1904, the Annis family has maintained ownership of the farmstead. Therefore, Carson's Landing still reflects its visual and functional relationships. The primary land uses of adjoining tracts remain agricultural and single-family residential. While the owners have removed original structures damaged by floodwaters or deteriorated beyond repair, Carson's Landing has retained its integrity of location and setting.

The design of Carson's Landing evolved over time and in response to the demands created by enhanced transportation on the Green River between 1853 and 1924. Although many of the original commercial structures and outbuildings have been removed, the existence of the Carson-Annis residence and its proximity to the Green River exhibit the importance of the Green River to its inhabitants. Its proximity to the Green River has disadvantaged the retention of the property's original design. Most of the structures were damaged by floodwaters throughout the period of significance.

Although the Carson-Annis residence has been altered, enough of its historic materials, design, and workmanship are still evident. This contributing building can be recognized as a product of the 1850s, and its alterations were made during and are representations of the changing preferences and attitudes of the period of significance. Its simple plan, detail, and use of natural materials exhibit the typical workmanship and relationships of the rural

community.

Throughout its existence, the Carson-Annis residence has undergone numerous repairs and renovations. Moreover, this residence has sustained considerable damages from the 1913, 1937, and 1962 floods. For instance, in 1937 floodwaters rose to the ninth step of main staircase of the Carson-Annis residence. During the 1950s and 1960s, the Carson-Annis residence was often unoccupied and had deteriorated because of the lack of use and maintenance. Therefore, owner Lena Grey Annis undertook a significant renovation and stabilization project in the late 1960s and early 1970s. This project included site work and interior and exterior alterations, including the installation of aluminum siding on the original section of the residence. Although the original house was covered in aluminum siding, the structure's historic integrity was enhanced through the installation of aluminum siding that matched the reveal and profile of the original weatherboarding. Accordingly, the current owners have retained the integrity of historic materials and workmanship through the re-installation of original windows and doors and the integrity of design through the use of reproductions for missing or damaged components.

Because the location, setting, materials, and workmanship have been maintained, Carson's Landing still evokes a sense of past time and place. The residence's proximity to the river reflects the importance of the river to the lives of the past residents. The layout and construction of the noncontributing structures and the addition and demolition of buildings reflect the changing circumstances of the Green River and the residents of Carson's Landing. The nominated property has contributed to the development of a larger rural historic landscape and reflects the tradition of the river and culture.

The association of Carson's Landing and the development and growth of commerce and transportation along the Green River in Butler County still exists. The nominated property and adjoining acreage have been maintained and continually utilized as an agricultural complex by the Annis family. Carson's Landing is clearly associated with the transportation along the Green River. This site and its elements provide one of only two existing known links to steamboat navigation on the Green River in rural Butler County. Carson's Landing and the Finney Hotel (BT-W-7) in Woodbury, Kentucky exemplify the importance of the Green River to the development and growth of rural communities along its banks during the period of significance.

Carson's Landing has retained its historic integrity and clearly represents the importance of commerce and transportation on the Green River. Alterations in its design represent the changing circumstances of commerce and transportation along the Green River in the 19th and early 20th centuries. It is one of the remaining material reminders and a clear representation of a successful steamboat landing and ferry on the Green River in Butler County, Kentucky.

Summary

Carson's Landing operated as a steamboat landing and ferry continuously for seventy-one years, and its development paralleled the existence of steamboat navigation on the Green River in Butler County during the period of significance. The nominated property includes only 2.2 acres of the 301-acre farm originally associated with the steamboat landing and ferry. However, the nominated property clearly exhibits the relationship of the site and river transportation and commerce. Due to floodwaters of the Green River, Carson's Landing is one of the only intact sites along the Green River representing the era of steamboat navigation on the Green River in Butler County. Carson's Landing and its owners played significant roles in the development and growth of Logansport, Big Bend, and Butler County. It is a physical reminder of the importance of the Green River as an artery for commerce and transportation.

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Unpublished Works (continued)

Tichenor, D.A. "Annis Ferry Farm, Butler County, Kentucky." 1991.

Tichenor, D. A. *A Brief History of Annis Ferry Farm and the House at Carson's Landing.* 23 Aug. 1996.

Tichenor, D.A. "History of the Thomas C. Carson, Davenport and Annis Landmark." 1997.

10. Geographical Data

Verbal Boundary Description

Beginning at a point on the southwest bank of the Green River, located near Logansport in Butler County, Kentucky, thence with the southwest bank of the Green River, N 48 deg. 09 min. W, 232.92 feet to a point; thence leaving the southwest bank of the Green River S 61 deg. 01 min. W, 401.72 feet to a point; thence S 28 deg. 59 min. E, 220.00 feet, crossing Annis Ferry Road to a point; thence N 61 deg. 01 min. E, 478.22 feet to the beginning, containing 2.2 acres more or less.

And being a portion of a tract conveyed to Carroll and Doris Tichenor by Deed Book 114, page 842 recorded in the Butler County Court Clerk's office.

Verbal Boundary Justification

The boundary for the nominated property includes the contributing Carson-Annis residence, three noncontributing outbuildings, and 2.2 acres. This portion of the 301-acre Annis Ferry Farm has historically been associated with the steamboat landing and ferry and maintains its historic integrity. The remainder (298.8 acres) of the Annis Ferry Farm has been excluded because the original buildings associated with the ferry and steamboat landing, including the warehouse, livestock scales, store, and post office, no longer exist. The remaining acreage and existing structures do not exhibit the associations with the steamboat landing and ferry.

The nominated property represents the late 19th and early 20th century steamboat landing and ferry and shows the visual and functional interrelationships of its components. The setting of the Carson-Annis residence is intact and maintains its historic integrity.

Additional Documentation

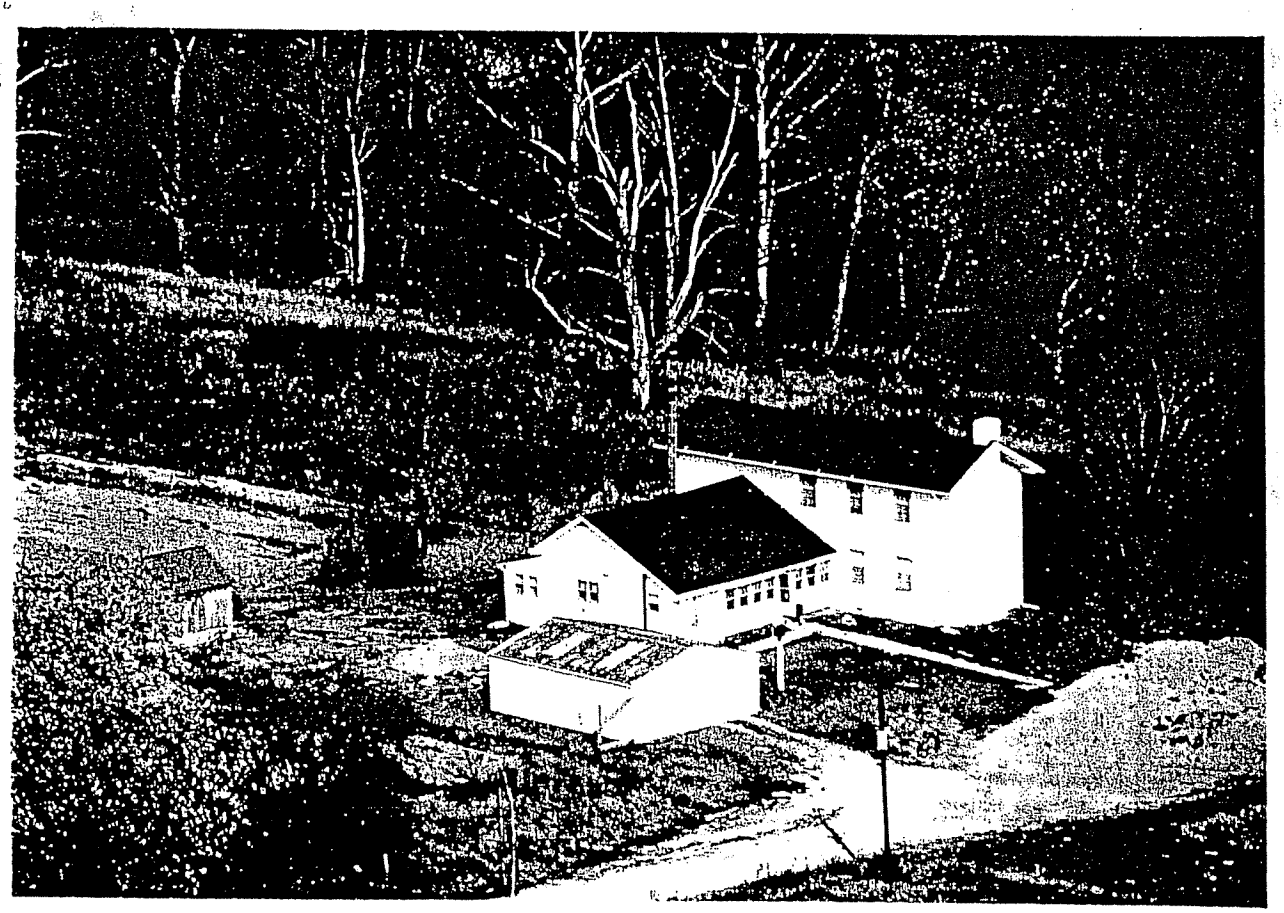
Early Photograph of Carson's Landing, circa 1910-1918

Additional Documentation

Early Photograph of Carson's Landing, circa 1910-1918

Additional Documentation

Aerial Photograph of Carson's Landing, circa 1977

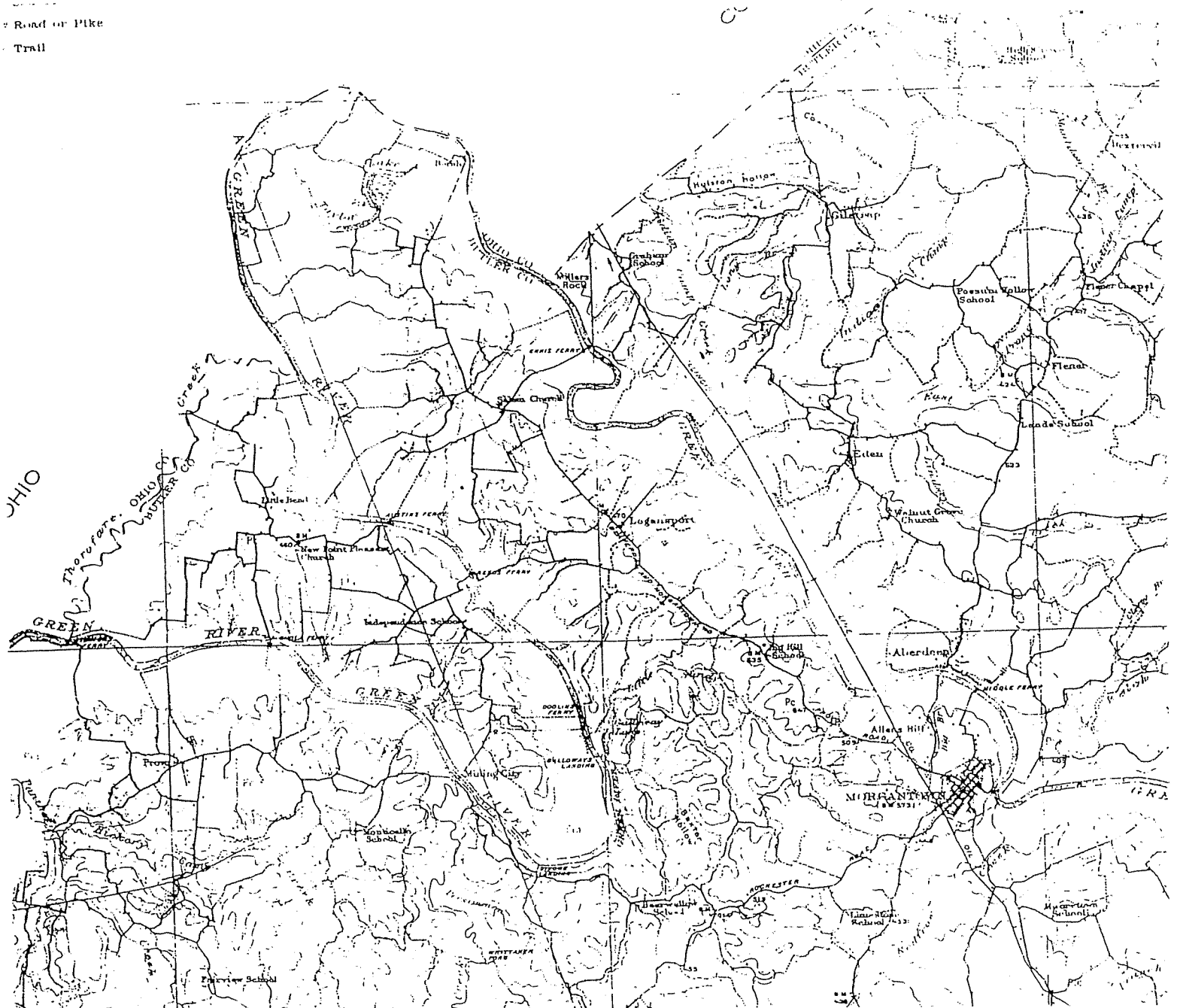


Additional Documentation

Photograph of Carson's Landing and Flood of 1962, March 3, 1962

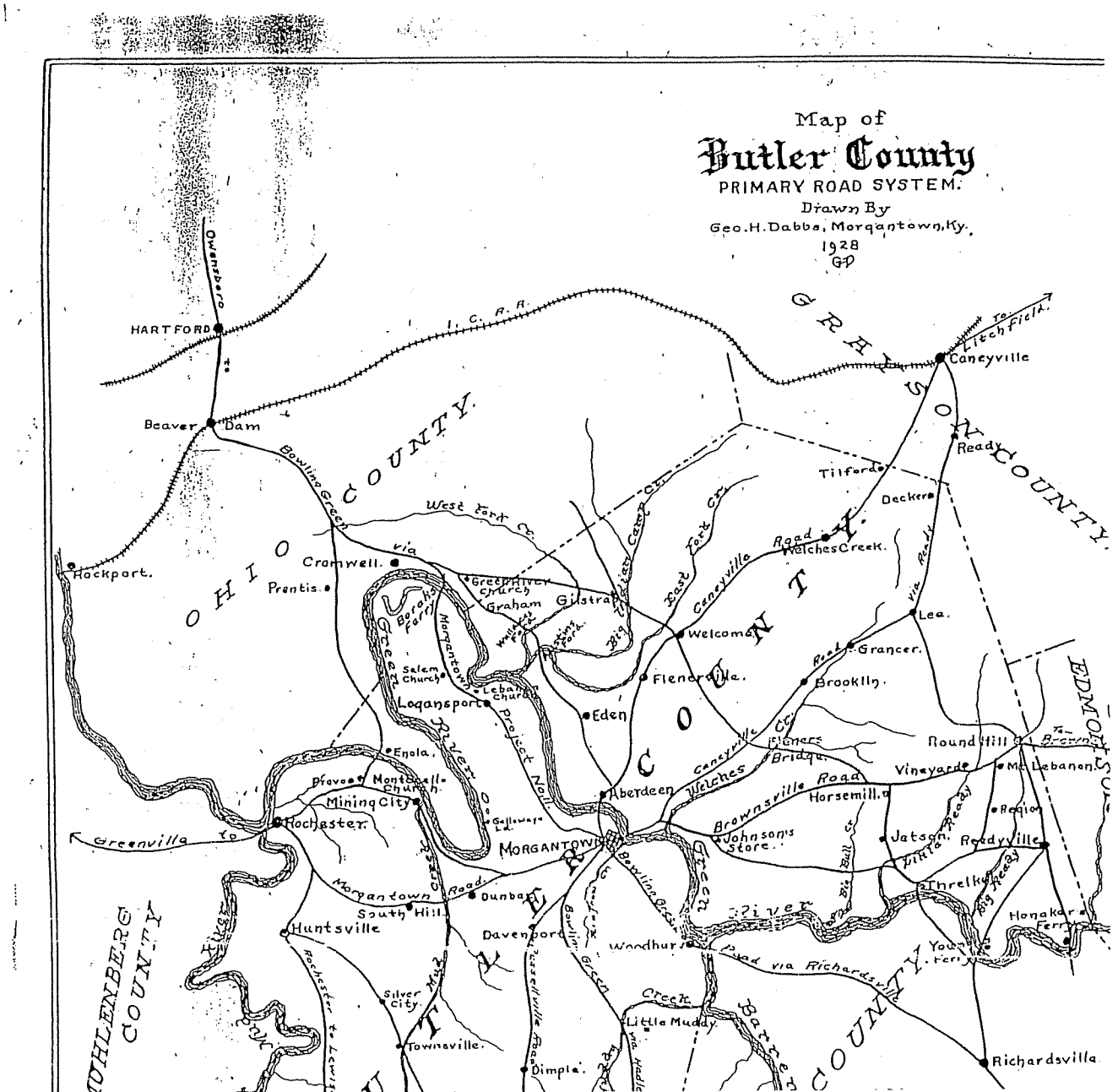
Additional Documentation

Geological Map of Butler County, Kentucky, 1928 (Reduced. Not to scale.)
Prepared by the Kentucky Geological Survey, Frankfort, Kentucky



Additional Documentation

Map of Butler County Primary Road System, 1928 (Reduced. Not to scale.)
Drawn by George H. Dabbs, Morgantown, Kentucky.



Photograph Log

Doris A. Tichenor took the following photographs in November 1997 at Carson's Landing. All negatives are located at Carson's Landing, 1086 Annis Ferry Road, Morgantown, Kentucky 42261. The attached site plan shows the location of all photographs by photograph number and camera direction.

Photo #	Description	Negative #
1	This photograph shows the west portion of Carson's Landing and provides an excellent perspective of the site in relation to Annis Ferry Road and the Green River. The camera direction is northeast.	2-27 (10)
2	The northwest portion of Carson's Landing is shown in this photograph. The camera direction is east.	1-6 (31)
3	The northwest side of the Carson-Annis residence and the site are shown in this photograph. The camera direction is southeast.	2-4 (33)
4	Annis Ferry Road and the southwest side of Carson's Landing are shown. The camera direction is northeast.	2-1 (36)
5	This photograph provides a closer view of the southwest side of Carson's Landing and its proximity to the Green River. The camera direction is northeast.	1-8 (29)
6	This photograph shows the east side of Carson's Landing, the garage, and wellhouse from upriver. The camera direction is west.	1-3 (34)
7	Carson's Landing from the bank of the Green River is shown in this photograph. The camera direction is northwest.	1-2 (35)

Photograph Log (continued)

Photo #	Description	Negative #
8	This photograph shows a view of the northeast façade of the Carson-Annis residence. The camera direction is southeast.	1-36 (1)
9	The northeast façade of the Carson-Annis residence facing the Green River is shown. The camera direction is southeast.	1-17 (20)
10	This photograph shows the northeast and southeast facades of the Carson-Annis residence. The camera direction is west.	1-35 (2)
11	The southeast façade of the original section and the rear ell addition of the Carson-Annis residence are shown. The camera direction is northwest.	1-34 (3)
12	This photograph shows the chimney, roof, and wall junction of the southeast corner of the original section of the Carson-Annis residence. The camera direction is northeast.	2-28 (9)
13	The stoop constructed in 1994 on the southeast side of the rear ell addition is shown in this photograph. The camera direction is northwest.	2-5 (32)
14	This photograph shows the southwest side (rear façade) of the Carson-Annis residence. The camera direction is northeast.	1-12 (25)
15	The northwest side of the Carson-Annis residence is shown. The camera direction is southeast.	1-14 (23)
16	The front door and the first floor hall balustrade are shown in this photograph. The camera direction is northeast.	1-32 (5)

Photograph Log (continued)

Photo #	Description	Negative #
17	This photograph shows the main staircase and shows the notches and dates on the staircase indicating the water height of the 1913 and 1937 floods. The camera direction is southeast.	2-33 (4)
18	The photograph shows the landing newel of the main staircase. The camera direction is south.	2-36 (1)
19	This photograph shows the stairway landing and balustrade on the second floor of the Carson-Annis residence. The camera direction is southwest.	1-30 (7)
20	The decorative surrounds on the first floor doors are shown in this photograph. The camera direction is northwest.	2-17 (20)
21	The bathroom located under the main staircase is shown in this photograph. The camera direction is northwest.	2-32 (5)
22	This photograph shows the fireplace and wainscot in the northwest room on the first floor. The camera direction is north.	2-12 (25)
23	This photograph shows the fireplace in the northwest room on the first floor. The camera direction is northwest.	2-13 (24)
24	The partially enclosed stairway in the first floor living room and leading to the second floor bedroom is shown. The camera direction is southeast.	2-15 (22)

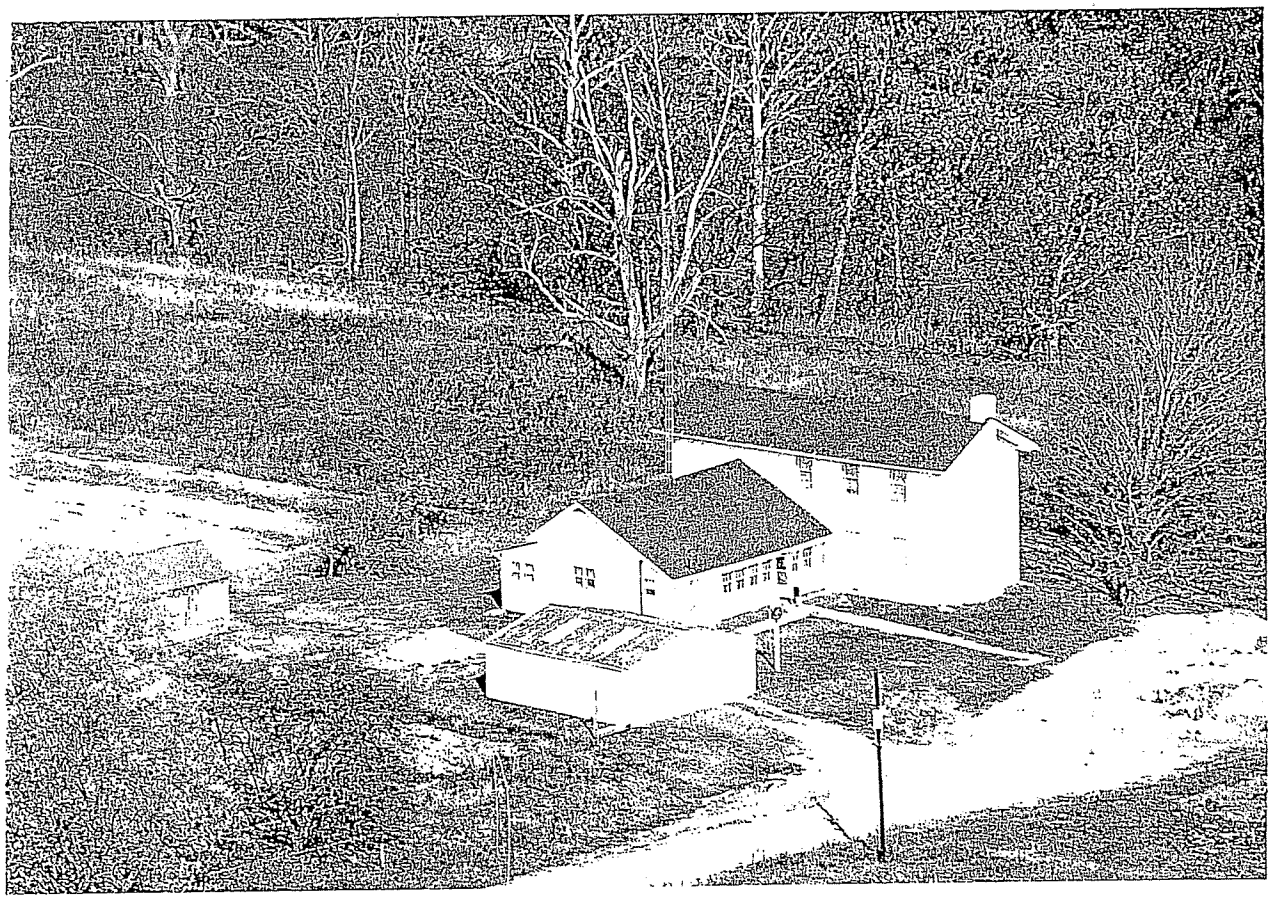
Photograph Log (continued)

Photo #	Description	Negative #
25	This photograph provides a view of the Green River and landing and ferry site from the second floor porch. The camera direction is northeast.	1-24 (13)
26	This photograph shows the second floor hall and the door installed in the late 1960s. The camera direction is northwest.	1-27 (10)
27	This photograph shows the southeast bedroom and fireplace on the second floor. The camera direction is south.	1-22 (15)
28	This photograph shows the south corner of the southeast bedroom on the second floor. The camera direction is south.	1-21 (16)
29	The second floor southeast bedroom is shown. The camera direction is northwest.	1-23 (14)
30	This photograph shows the fireplace in the dining room of the ell addition. The camera direction is southwest.	2-7 (30)
31	This photograph shows the doorway between the dining room and long porch and the exterior door of the long porch. The camera direction is southeast.	2-19 (18)
32	The fireplace in the kitchen is shown in this photograph. The camera direction is northeast.	2-29 (8)
33	The second floor door providing access to the second floor porch on the northeast side of the house is shown. The camera direction is northeast.	1-28 (9)

Photograph Log (continued)

Photo #	Description	Negative #
34	This photograph shows a full view of the long porch and main hall. The camera direction is northeast.	2-11 (26)
35	This photograph shows a full view of the long porch. The camera direction is southwest.	2-9 (28)
36	The southeast and northeast sides of the garden house (former smokehouse) are shown. The camera direction is west.	1-19 (18)
37	The northwest and southwest sides of the garden house are shown. The camera direction is east.	1-20 (17)
38	The northwest and southwest sides of the wellhouse are shown. The camera direction is east.	1-15 (22)
39	This photograph shows the southeast and northeast sides of wellhouse. The camera direction is northwest.	1-16 (21)
40	The southeast and northeast sides of the metal garage are shown. The camera direction is north.	1-18 (19)

CARSONS LANDING (BT-1
BUTLER COUNTY, KY.



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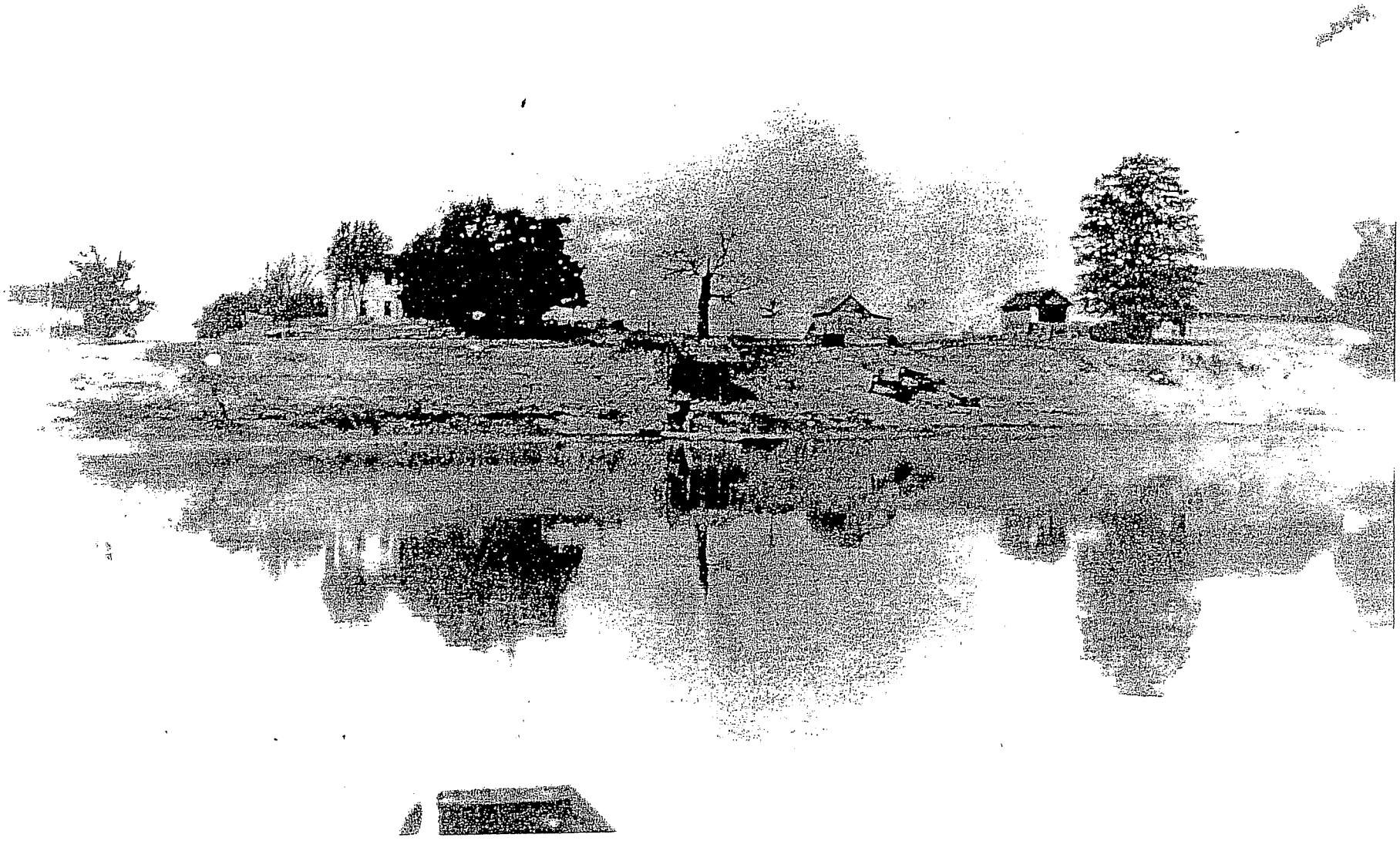
BUTLER COUNTY, KY



CARSON'S LANDING (BT-1
BUTLER COUNTY, KY

CARSON'S LANDING (BT-1)
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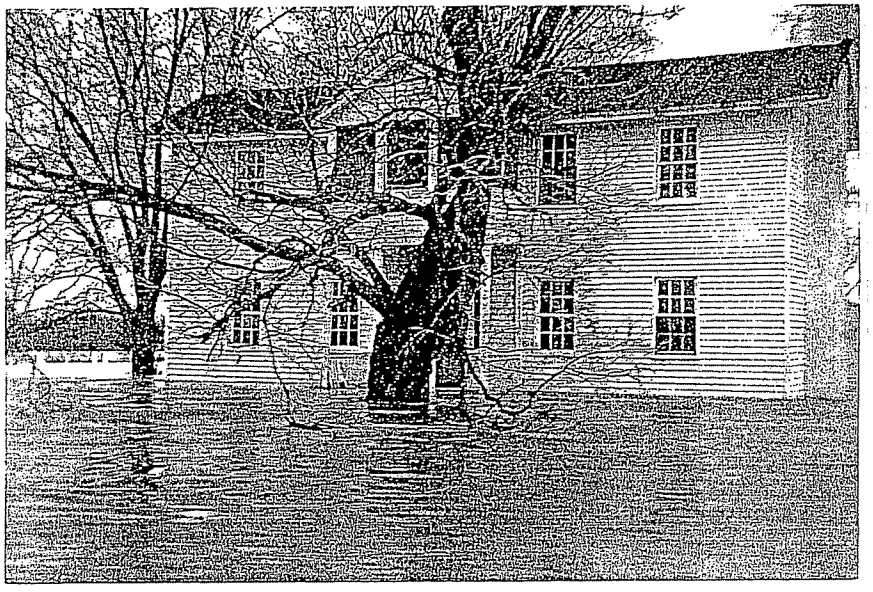
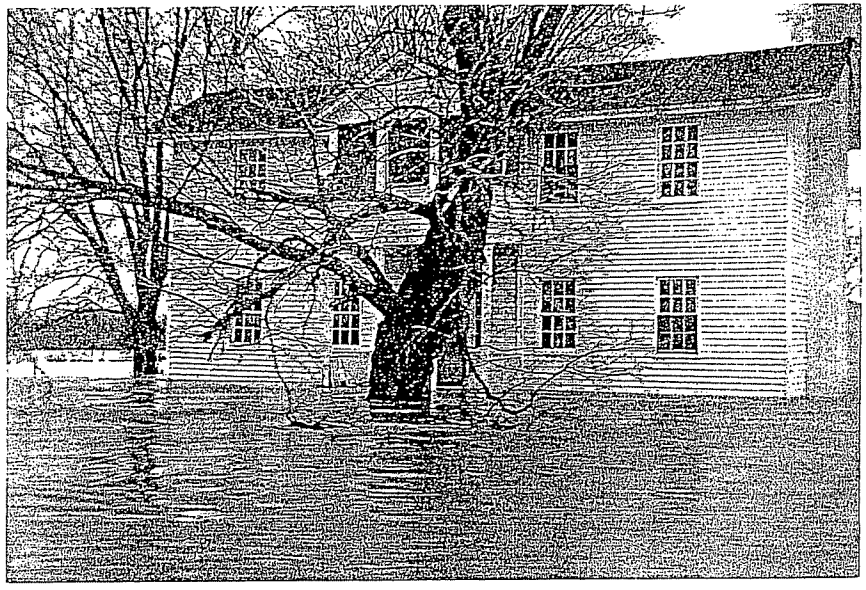
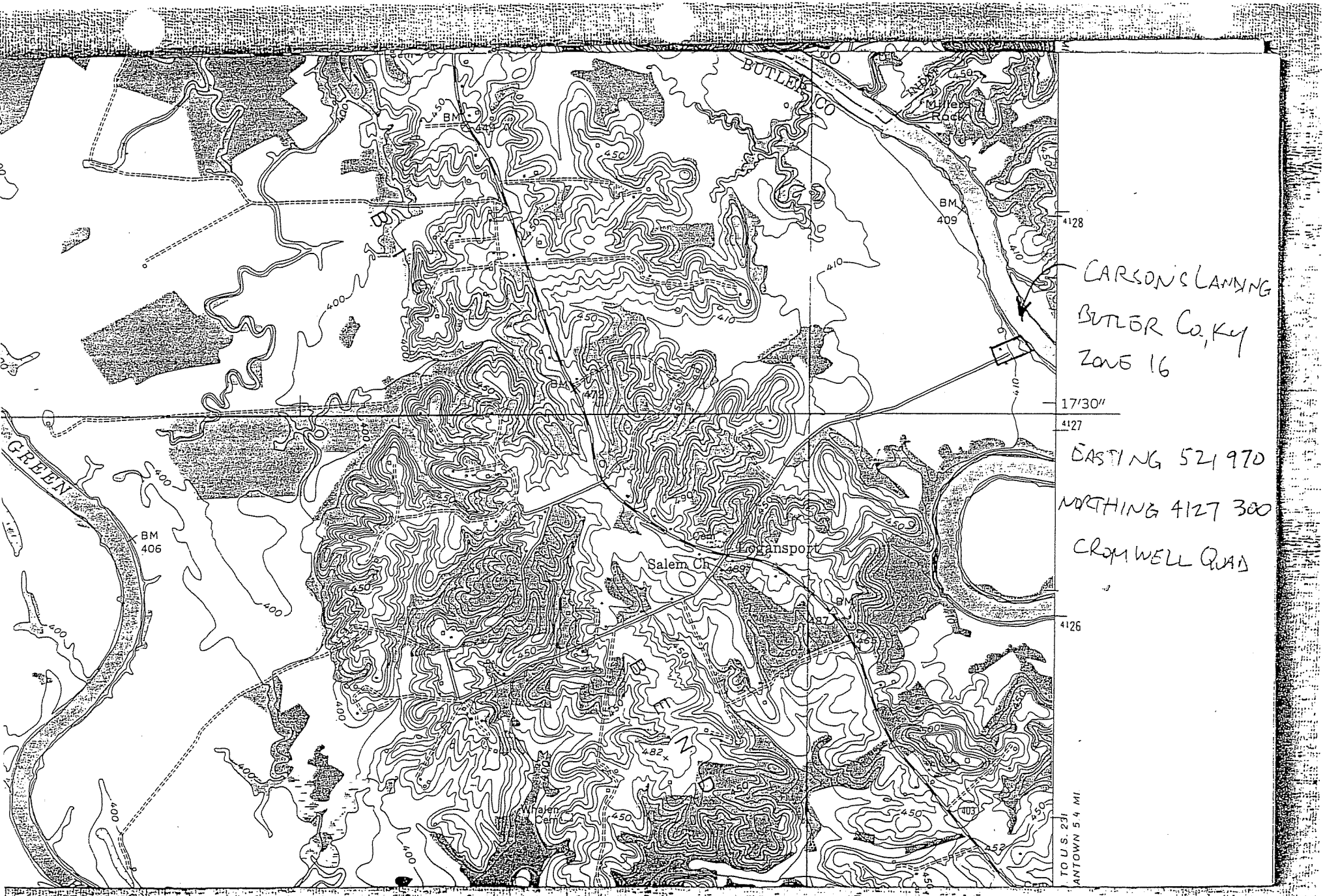


CARSONS LANDING (BT-1)
BUTLER COUNTY, KY
1963 FLOOD



CARSON'S LANDING (BT-1)
BUTLER COUNTY, KY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TO U.S. 231
ANTOWN 5.4 MI

Phillips, James L. and James A. Brown (editors).
ARCHAIC HUNTERS AND GATHERERS IN THE AMERICAN MIDWEST.
New York: Academic Press, 1983.

15

The Shell Mound Archaic of Western Kentucky

William H. Marquardt and Patty Jo Watson

The shell mounds along the Green River in Butler, McLean, Muhlenberg, and Ohio counties, western Kentucky, have long been known to archaeologists as a result of early work by C. B. Moore (1916) and extensive excavations by Works Progress Administration (WPA) archaeologists (Webb 1946, 1950a, 1950b; Webb and Haag 1939, 1940, 1947) in the late 1930s and early 1940s. We became interested in these sites in 1971, wishing to compare the subsistence patterns of their inhabitants with those known for the prehistoric cave miners of Salts (Watson *et al.* 1969) and Mammoth (Watson 1974) caves. We developed new equipment, strategies, and techniques to investigate the shell middens and we have been able to contribute to advances in our collective knowledge of horticultural origins in the eastern woodlands (Chomko and Crawford 1978; Crawford 1982; Marquardt and Watson 1983; Wagner 1979). The surprising complexity of the shell middens' stratification convinced us that a broader and, at the same time, more intensive study of shell midden formation processes was necessary, and this activity has occupied the bulk of our research efforts over the past few years (Gorski 1981, Marquardt and Watson 1983; May 1982; Stein 1980, 1982; Wagner 1983). As our analyses of paleoenvironment, subsistence, and midden formation processes approach completion, we are beginning to look toward larger scale questions such as local and regional settlement patterns and the role of the shell mound populations in long-distance trade and information networks. In this chapter we summarize our findings and suggest some directions for further research.

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RECENT RESEARCH BY THE SHELL MOUND ARCHAEOLOGICAL PROJECT

In 1972, we began work in the Western Coal Field region of Kentucky at the Carlston Annis shell mound (15 Bt 5), near Logansport in the Big Bend of the Green River, with the primary objective of detailing the subsistence pattern of the Late Archaic population made widely known to archaeologists by the WPA workers of the 1930s. Our first season at Bt 5 (Marquardt 1972) produced two major results:

1. We recovered sufficient material for two radiocarbon determinations, dating the deposits to the late third millennium B.C.—4000–4300 years ago.
2. We recovered sufficient charred botanical material from throughout the 2-m deposit in a 1- × 1-m stratigraphic test pit to demonstrate the feasibility of detailed analyses of prehistoric plant use.

Our interest in the Late Archaic subsistence data we hoped were preserved in the shell middens stemmed from previous research in Mammoth Cave National Park, some 65 km upstream. From prehistoric remains preserved in the large dry caves of the Flint–Mammoth Cave System, especially Salts Cave and Mammoth Cave, ethnobotanist Richard A. Yarnell (1969, 1974, 1976, 1978) had defined a very interesting early horticultural complex (late second millennium B.C.) that included two of the aboriginal American tropical cultigens: Squash and gourd were present, without maize or beans, but in close association with nontropical North American cultigens (sunflower, sumpweed, and a semicultivated or encouraged weed, chenopod). Consumption of large quantities of hickory nuts was also evidenced in the Salts and Mammoth cave archaeological remains. Unfortunately, there are no substantial archaeological deposits in the immediate vicinity of the caves that would allow us to investigate the processes resulting in the beginnings of plant cultivation in this part of the eastern woodlands. Hence, we turned to the Green River shell middens known to be rich in archaeological remains, about the right age, fairly nearby (Figure 15.1), and also on the banks of the same river that drains the Flint–Mammoth region.

Since the 1972 testing, we have obtained more radiocarbon dates (Table 15.1) and have intensified our investigations at Bt 5 to include more detailed archaeobotanical analyses (Crawford 1982; Wagner 1979), both vertical and horizontal microstratigraphic recording (Gorski 1981; May 1982), and regional geoarchaeology (Stein 1980, 1982).

Gary Crawford, a student of Yarnell's, carried out the initial analysis of macrobotanical remains from Bt 5. In an analysis of flotation samples from a 100%-floated 1- × 1-m test pit excavated in 10-cm levels, he discovered no trace of the Salts–Mammoth Cave subsistence pattern so amply documented by Yarnell's earlier work. Instead, he found the plant food remains at Bt 5 to

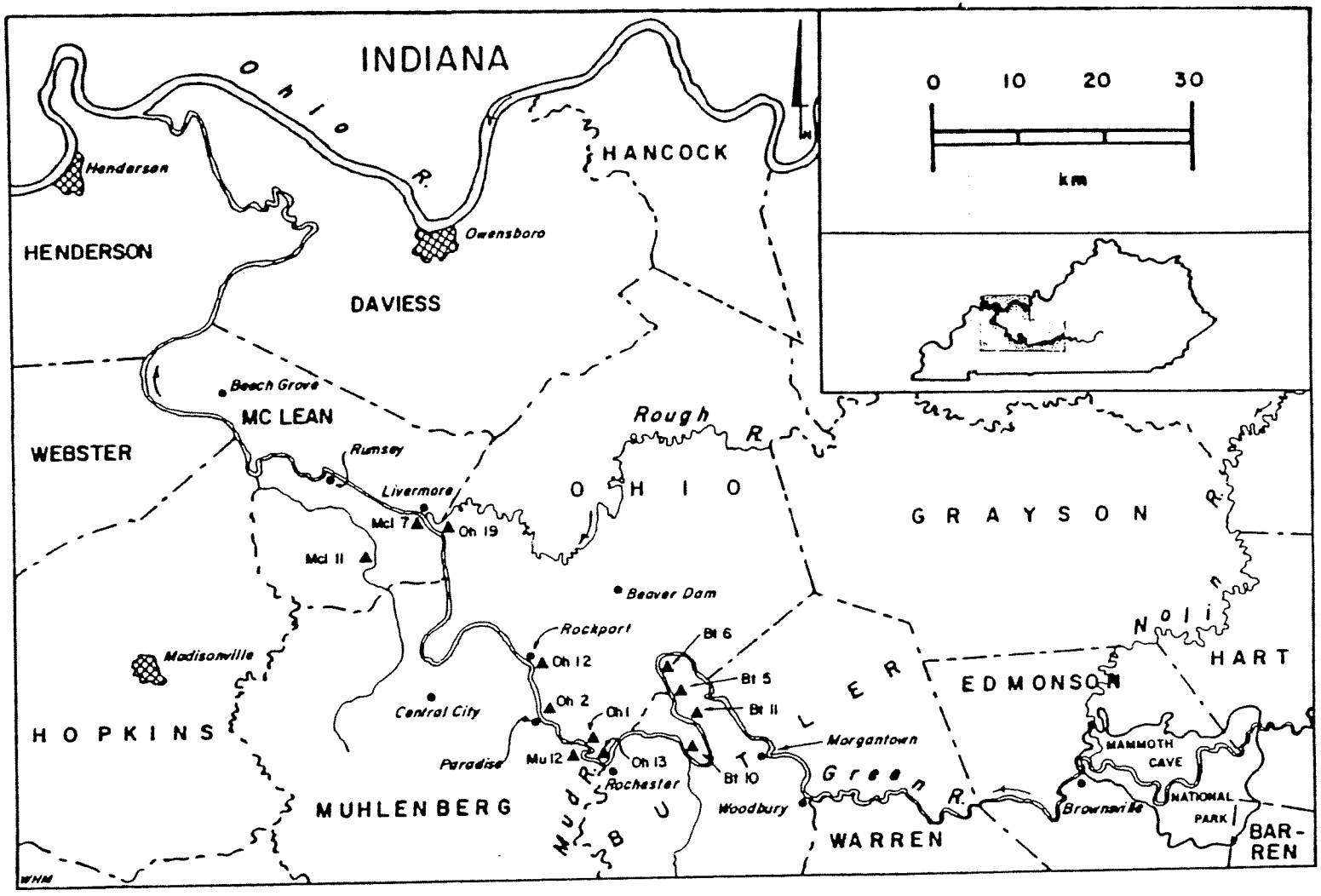

Figure 15.1 A portion of western Kentucky, showing certain shell midden sites (▲).

TABLE 15.1

Radiocarbon Dates Obtained by the Shell Mound Archaeological Project

Site	Date[a]	Elevation (m)	Unit	Level	Provenience	Laboratory number
15 Bt 5	2515 ± 80	99.78	C13	15	general level	UCLA-2117D
Carlston Annis	3330 ± 80	100.61	C3	5	hearth	UCLA-2117B
	4040 ± 180	100.17	A1	8	general level	UCLA-1845B
	4250 ± 80	99.84	A1	10	charcoal concentration	UCLA-1845A
	4350 ± 85	99.32	D14-2	20	charcoal concentration	UGa-3390
	4500 ± 60	100.08	C13	12	hearth	UCLA-2117I
	4655 ± 540	100.55	D14-3	7	charcoal concentration	UGa-3395
	4670 ± 85	99.83	D14-2	15	hearth	UGa-3391
	4760 ± 90	99.96	D14-2	13	general level	WIS-1301
	5030 ± 85	100.41	D14-2	9	general level	UGa-3393
	5350 ± 80	99.42	D14-2	19	general level	WIS-1302
15 Oh 13	1820 ± 300	101.48	A2	2	charcoal under Burial 2	UCLA-2117E
Bowles	2420 ± 200	101.01	A3	7	hearth	UCLA-2117F
	3440 ± 80	100.58	A3	11	general level	UCLA-2117G
15 Oh 94 Peter Cave	3415 ± 105	98.70	A	6	charcoal concentration	UGa-3454

[a]All dates are on charcoal, are uncorrected, and are based on the Libby half life of 5570 ± 30 years.

comprise mostly hickory nuts (according to the light fractions of the 1974 samples, the nutshell makes up 90% of the total plant food weight) and acorn, along with a total of 467 seeds. The identifiable seeds include blackberry, grape, grasses, honey locust, knotweed, and persimmon as the most abundant taxa. In addition to these wild foods, seven small fragments of squash rind (*Cucurbita pepo* L.) and one sunflower seed were present. Thus, insofar as plant food is concerned, the picture is one of dependence on wild species, especially hickory nuts, but with at least one of the tropical cultigens (squash) also being present (Crawford 1982).

A Late Archaic, third millennium B.C. date for the presence of *C. pepo* in the southeastern and midwestern United States is substantiated by recent finds from several other localities: (1) the lower Illinois River valley at Napoleon Hollow and Koster in contexts dating to the fifth and fourth millennia B.C. (Asch and Asch n.d.); (2) the Phillips Spring site on the Pomme de Terre River in western Missouri (Chomko and Crawford 1978; Kay, King, and Robinson 1980); (3) Cloudsplitter Shelter on the Red River in eastern Kentucky (Cowan n.d.); (4) the Bacon Bend, Iddins, and Icehouse Bottom sites on the Little Tennessee River in eastern Tennessee (Chapman and Shea 1981); and (5) the Jernigan II site on the Duck River in central Tennessee (Crites 1978; McCollough and Faulkner 1976).

On the basis of our collective understanding at this moment, it appears that tropical cultigens (at least *C. pepo*, perhaps valued primarily as a container

rather than as food) had chronological priority over the native species in the origins of aboriginal midwestern horticulture. There is, however, evidence for the intensive use of *Iva annua* at Koster as early as the first archaeological record for *C. pepo* there, and the question of priority cannot be considered closed by any means (Watson n.d.).

A major part of our work over the past 4 years has involved the paleoenvironment around the Carlston Annis site (Figure 15.2) and the site's internal structure. Although there are still major questions about Archaic lifeways at the site that we cannot answer, we do now have a much better understanding of the general situation than we did a few years ago (Baerreis 1983; Gorski 1981; May 1982; Stein 1980, 1982; Wagner 1983). Site Bt 5, together with Bt 6 and Bt 11, lies in a loop of the Green River called the Big Bend. This portion of the river is incised into ancient sediments left by a lake (Green Lake) that formed when the Ohio River and its tributaries were blocked by glacial debris in Wisconsinan times (Stein 1980). Therefore, the behavior of this major stream is constrained and unusual for a river of its size. It has migrated little through the cohesive lake sediments.

The poorly drained bottomlands (most of which are composed of the old lake-bed sediments, rather than true riverine floodplain) now support dense woody vegetation and a number of vines and herbs. The banks of sloughs meandering from the uplands toward the river are also heavily overgrown. Arboreal species vary in frequency from zone to zone, but include a number of hickories, oaks, and other nut trees, as well as maple, gum, ash, and tulip trees. Berry bushes (especially blackberry) are common in open places, and some of the weedy plants the seeds of which were used prehistorically can also still be seen in abundance (*Chenopodium, Polygonum, Ambrosia*), and at least one substantial patch of *Iva* has been observed by us in the Big Bend.

The structure of the shell mound itself provided a number of interpretive problems. Not only are there no natural depositions separating occupational horizons, but also the color and texture of the midden matrix lack any obvious differentiation. It became clear to us that our understanding of shell midden formation processes was insufficient for the kinds of questions we were posing concerning the stratigraphic relationships between artifacts, datable charcoal, and both native and tropical cultigens. Thus, we approached the study of shell midden formation processes from a number of perspectives.

First, the location of the channel at the time of mound occupation was determined by mapping the contact between the lake and river sediments (see Stein 1980:90–115). All three large shell mounds (Bt 5, 6, and 11) are situated on top of the boundary.

Mapping the preoccupational surface required systematic coring with a 12.7 mm split-spoon soil probe. The paleotopographic map thus produced provided further confirmation that the river was adjacent to the mound at the time of occupation (Figure 15.3; Stein 1978). The coring also revealed a distinct shell-free cultural deposit containing dark sediment blanketing the mound, but

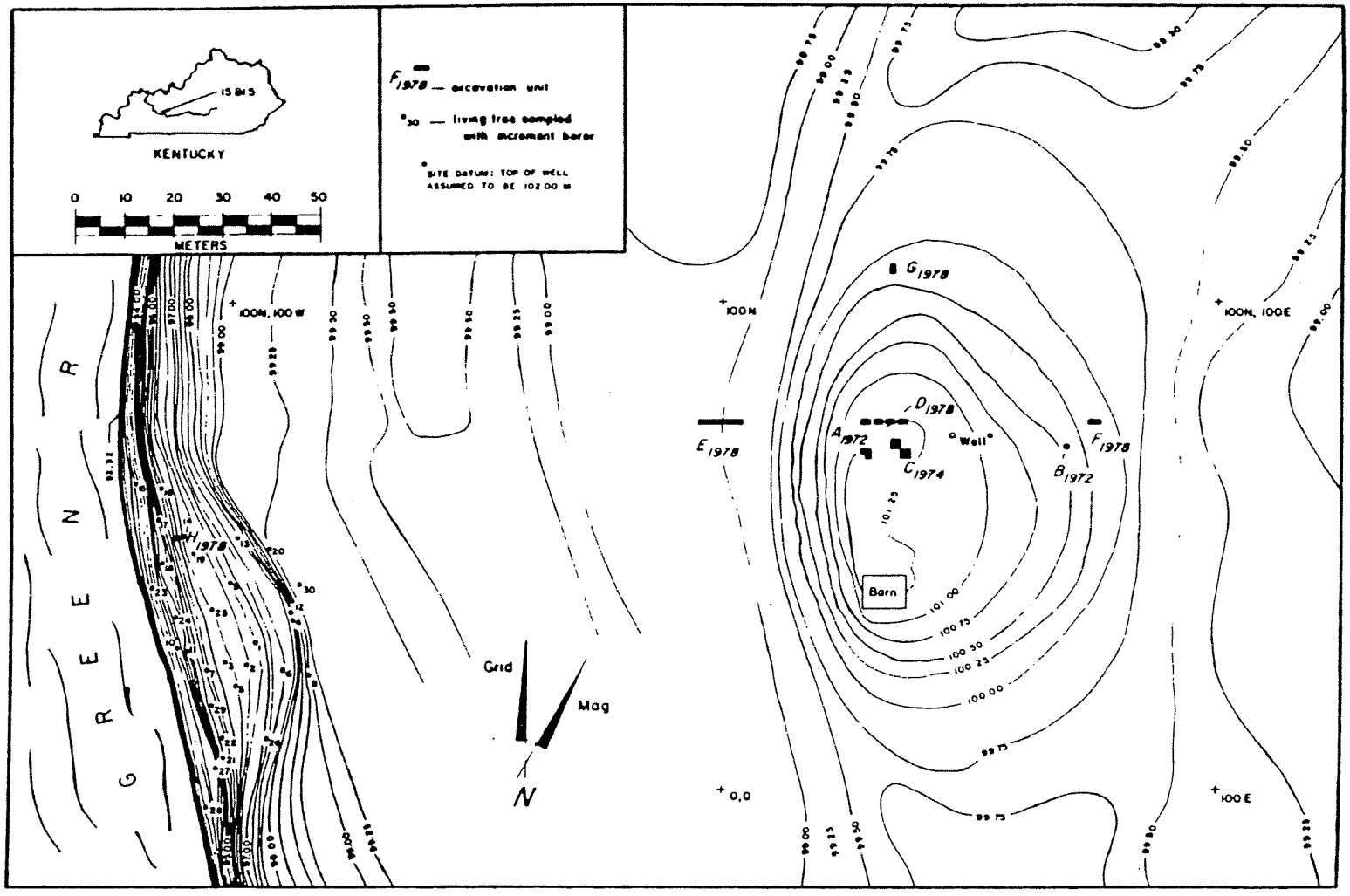

Figure 15.2 The Carlston Annis shell mound (15 Bt 5), Butler county, Kentucky.

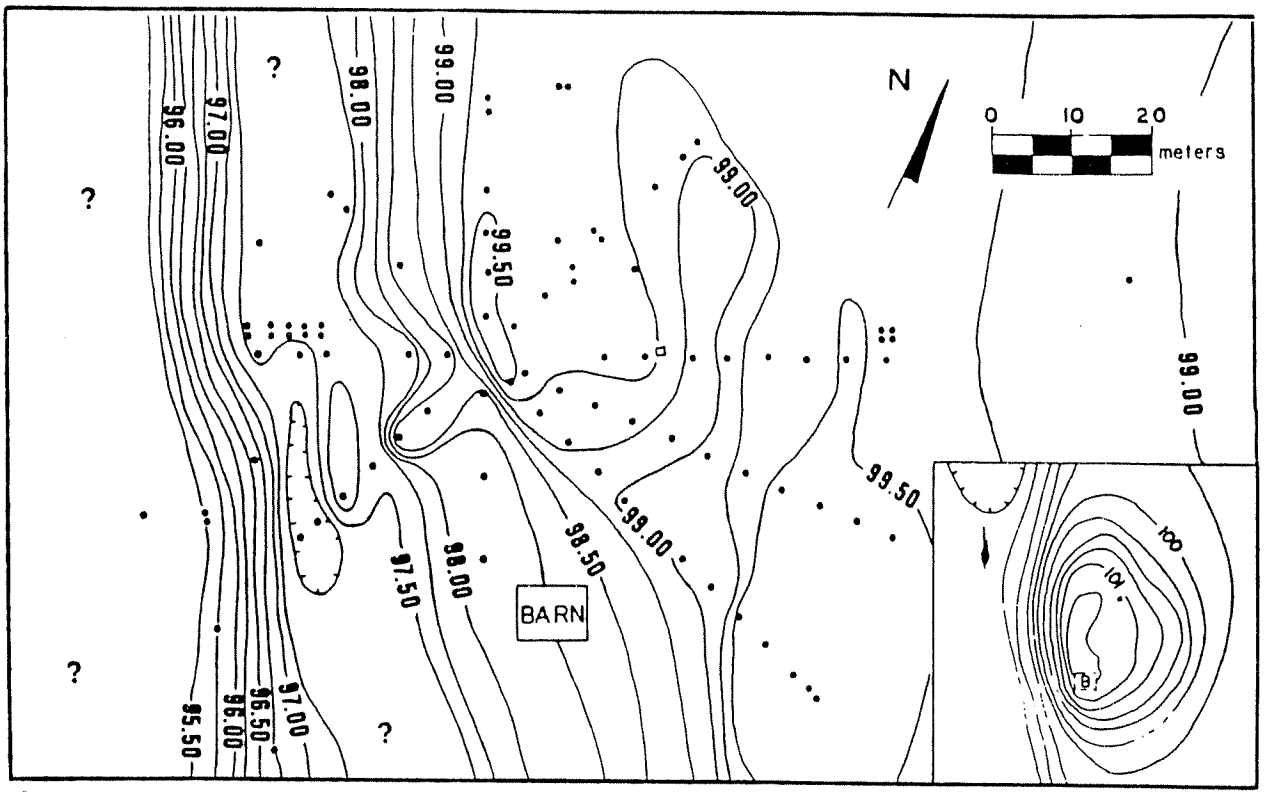

Figure 15.3 Paleotopography of the area of the Carlston Annis shell mound (15 Bt 5) and data points (●). Modern barn is shown to facilitate comparison with plan view map (see Figure 15.2). Contour interval is .25 m.

appearing deepest and thickest on the side of the mound toward the river. A hydraulic, truck-mounted (Giddings) probe allowed the retrieval of deep and uncontaminated cores. Grain size and chemical analyses revealed that the *shell-free midden*, as we now call it, has a higher percentage of organic matter than the shell midden, but that both the shell and the shell-free middens have high phosphorous values and are composed of an undifferentiated mixture of river and lake sediments (Stein 1980:116–169; 1982:32–37).

We have concluded that the apparent lack of horizontal differentiation is due to (1) a lack of deposition during floods, because of the lacustrine history of the river; and (2) pedoturbation, mainly faunalturbation in the form of earthworms, moles, crayfish, and other creatures (Stein 1980:170–199).

The cultural depositional processes consist of an initial occupation by people who consumed river mussels, among other foods, and a subsequent occupation by people who excluded shellfish from their diet. During both periods, people transported to the site sediment, sandstone, plants, and animals, which

resulted in an accumulation of approximately 6000 m^3 of debris (Stein 1980:189).

The mound center varies in thickness from 1.5 to 2.3 m (Figure 15.4), and the first people to camp at this spot were living at the edge of the river. (The river is now 150 m west of its Late Archaic position.) There was a riffle-run in the stream bed at this point, which was the habitat of at least two dozen species of mussels (Patch 1976). During much of the occupation period, the mound served as a cemetery for both humans and dogs, as well as a late summer–early fall settlement. More than 400 burials have been removed from Bt 5, at least 390 by the WPA by 1940 (Webb 1950a). Robbins (1983) and Ward (1983) are examining the skeletal remains, most of which had not been unpacked since shipment to Lexington during the WPA excavations.

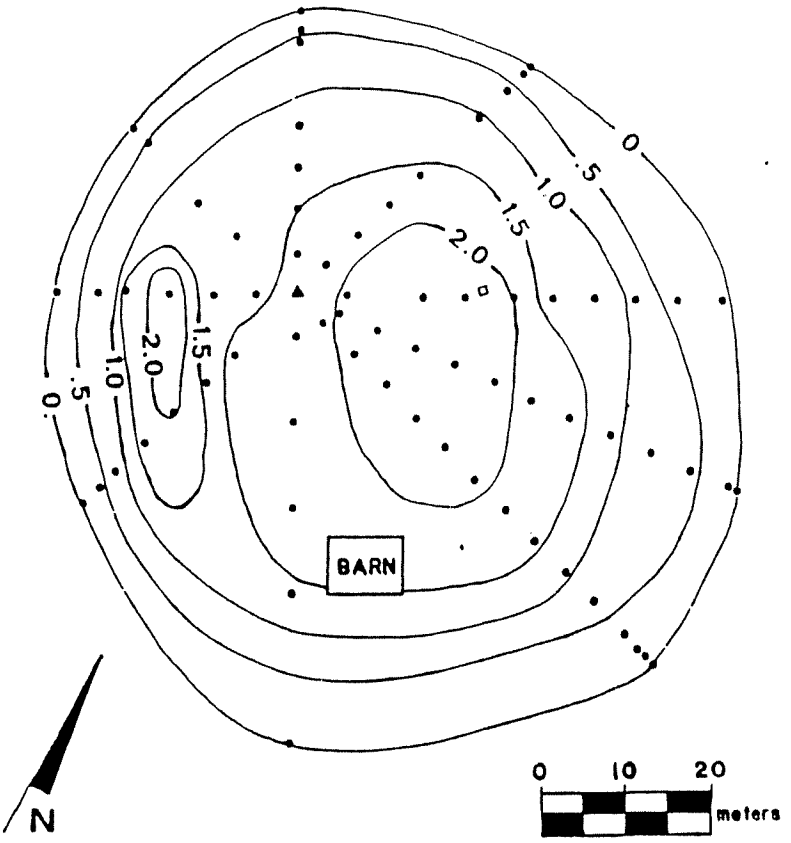

Figure 15.4 Isopach map of the Carlston Annis shell mound, 15 Bt 5, Butler county, Kentucky, based on auger holes (●). Contour lines (interval = .5 m) indicate thickness of midden deposits; compare with Figures 15.2 and 15.3.

In spite of the lack of apparent differentiation in the middens, we have been able to document some of the activities of the Late Archaic people by use of detailed mapping procedures. Structural remains are scarce and elusive except for some burned, floorlike features, also found by the WPA at several of the other Green River sites, and paralleled by finds described for some shell mound sites in Tennessee and Alabama (Dye 1980). We have as yet no adequate explanation for these, but it has been suggested that they functioned in steaming the mussels, a practice with considerable precedent in the ethnographic record (May 1983a).

Elsewhere in the mound, Gorski (1981) has been able to detect surfaces on the basis of hydraulically aided microstratigraphic mapping of profiles (Figures 15.5 and 15.6) and May (1983b) has defined dumping episodes by means of a detailed analysis of shell, sandstone, and artifact associations. Floral and faunal studies by Crawford (1982), Wagner (1983), and Duffield and Wilson (1983)

Figure 15.5 Spraying the profiles (sometimes called *nozzle facing*) of the Carlston Annis shell midden (see Gorski 1981).

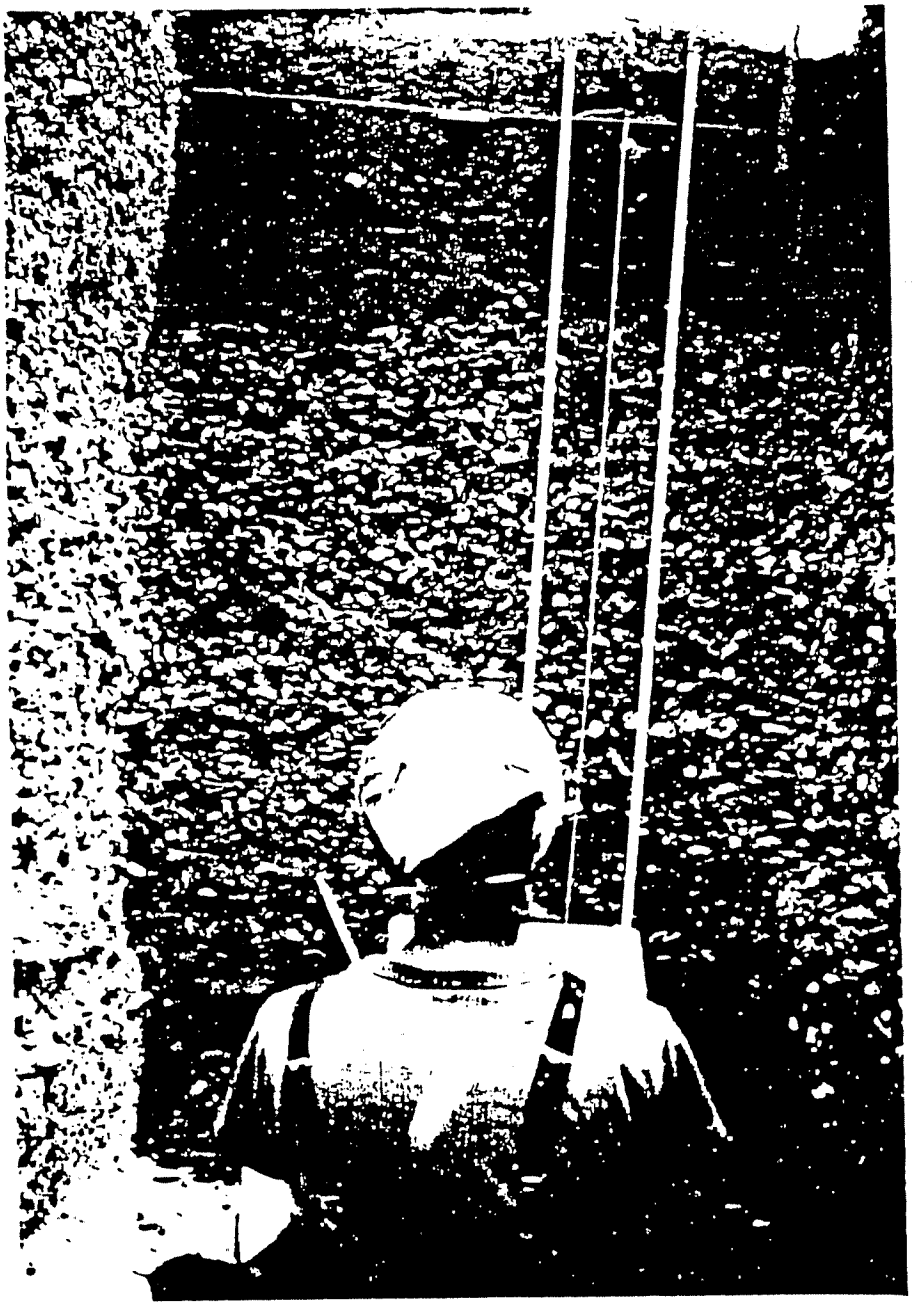

Figure 15.6 After spraying the profiles, all objects greater in size than 1 cm are drawn, working across the profile in 10-cm vertical strips (see Gorski 1981).

indicate greater attention to (or success in obtaining) plant foods than mammals, but fish remains are abundant, and, of course, mussels were taken in quantity.

All of the analyses in this phase of our work are now nearing completion. A multi-authored volume (Marquardt and Watson 1983) reports our data and interpretations so that they may be compared with those of other sites in the Midwest and Midsouth. A description of chipped-stone (Marquardt 1983a), ground-stone (Marquardt 1983b), bone (Duffield 1983), and shell (Marquardt 1983b) artifacts are included, along with interpretations of botanical (Wagner 1983), zoological (Duffield and Wilson 1983), and human skeletal (Robbins 1983; Ward 1983) data.

FUTURE WORK

Having spent parts of the past few years in intensive investigations of limited scale, concentrating primarily on the Carlston Annis site and its immediate environs, we will next turn our attention to issues and implications of broader scale: (1) a survey of areas near the Big Bend to discover intersite spatial and temporal relationships, and (2) analysis and comparison to evaluate the role of the shell mound dwellers in interregional networks.

Regarding the first of these two foci, we initiated a reconnaissance for sites other than shell mounds in and near the Big Bend and Little Bend in the summer of 1980. With the help of local collectors as well as our own systematic walking surveys of the river bottoms, we located in a 3-week period one multicomponent rock-shelter, several bluff-top sites with abundant lithic materials, one small, previously unknown shell midden, and a score of lithic scatters. We also relocated two previously known shell mounds and two Mississippian period site complexes recorded by WPA surveyors. Local collectors have shown us lithic material from all Archaic horizons, but our preliminary impression is that the earlier Archaic materials are found mainly on tributary streams leading to the Green River, whereas later Archaic materials are more often found on river bottom sites and sites overlooking the river. This observation is highly tentative in the absence of systematic survey data. Of course, the numerous undiagnostic lithic scatters found near the river could represent any period or combination of periods from Early Archaic to Mississippian. We still have the impression that occupation of both Big Bend and Little Bend was most pronounced in Late Archaic times, say 4500–3000 years ago, with some sporadic and short-lived occupation by later Woodland and Mississippian peoples.

A second focus of our future research will be interregional patterns of exchange and communication. It has been known for many years that the Green River Archaic people were participating in long-distance trade, both to the north (copper from the Great Lakes area) and to the southeast (marine shell

from the south Atlantic coast of the Carolinas and Florida). Goad (1980) has recently taken up a suggestion of Howard Winters's (1968:217) that some of the inhabitants of these Green River communities sometimes may have acted as middlemen between the northern copper area and the southern shell area. Although this is an intriguing idea, we cannot yet evaluate it adequately. Two points can be made, however.

First, the actual quantity of copper found at the Green River sites is quite small: 13–16 artifacts and fragments, all from graves at Indian Knoll (Oh 2) and Barrett (McL 4), and from the midden at Carlston Annis (Bt 5) (Rolingson 1967:344–345; Winters 1968:Table 10; their respective tabulations differ somewhat from each other and from the figures in the University of Kentucky publications). The quantity of marine shell is more difficult to estimate but it is much greater than that of copper (Winters 1968: Table 3), a fact that led Winters to conclude that the copper trade probably could not have provided a basis for shell procurement over the centuries of occupation at the Green River sites (Winters 1968:217).

Second, it would seem likely that middlemen communities facilitating and profiting from exchange between the Great Lakes and southeastern regions might be found much closer to the middle Mississippi River or to the Ohio River than is the Big Bend of the Green River. Our area lies in a somewhat peripheral portion of the Ohio drainage, and is therefore even more remote from the Mississippi River mainstream. This is not to say that the Green River was not an artery of travel, or that overland routes were not used by long-distance travelers. But it is one thing to say that the Green River shell-mound dwellers participated in a sphere of trade and communication that reached ultimately from the Great Lakes to the Gulf of Mexico, and quite another to argue that they played a focal or intermediary role in such an exchange system. We remain to be convinced of the latter.

CONCLUSION

In summary, our research points to the following conclusions. On the basis of present evidence, we believe the Carlston Annis site to have been a seasonal camp, perhaps occupied by a few dozen people from late summer to late fall. Population estimates are difficult to derive in the absence of more reliable chronological information from the shell mounds. Dates from our limited testing at the Bowles shell mound (Oh 13) cluster in the first millennium B.C., and those for Carlston Annis (Bt 5) and Indian Knoll (Oh 2) cluster in the late third millennium B.C. Obviously we must have more extensive excavations of Green River shell middens, with careful attention to midden stratification, before we will even be in a position to tell whether the mounds were occupied sequentially, concurrently, or some combination of these. The need for refining cultural sequences in the Western Coal Field area was recently stressed by

Clay (1980:57); we could not agree more. Further artifact analysis and more radiocarbon dates, along with attention to what we have learned about midden structure in the Green River area, may shed light on these basic questions.

However sketchy our chronological understanding may now be, we do know that the Archaic people fished, hunted, grew gourd-like squashes, and collected mussels, hickory nuts, and other riverine and forest foods. The quantity of hickory nutshell is overwhelming. Its ubiquity in the archaeological record at Bt 5 and elsewhere may be partially because it was a superior fuel, rather than because of food processing practices. If the nuts were pounded into pieces and thrown into hot water to make hickory nut butter, some of the nutshells may have been carbonized, but it seems more likely to us that the nutshells, ubiquitous by-products of nut-processing activity, were used for fuel. Squash may have been used primarily as a container, although we know from the Salts Cave fecal deposits that Late Archaic–Early Woodland cavers sometimes ate squash and gourd seeds. The role of squash in the diet of the shell mound dwellers remains unclear.

A generation ago Joseph Caldwell (1958) characterized the lifeway of Archaic peoples in the eastern woodlands as that of efficient and specialized local adaptations to material environmental resources. A corollary to this belief would be that any impact of tropical cultigens on Archaic subsistence would have been slight because the forest environment was so rich in wild food resources. In spite of the discovery of the presence of tropical cultigens by Late Archaic times, we have yet to recover evidence that conclusively refutes Caldwell's basic ideas. This is not to say that tropical cultigens, whether grown locally or imported, were unimportant; they may have played an important role in social life and ideology. But, based on our research to this date, we think it unlikely that there was a significant dependence on tropical domesticates for food.

ACKNOWLEDGMENTS

The work of the Shell Mound Archaeological Project has been supported in part by the National Geographic Society, the National Science Foundation, the National Endowment for the Humanities, Washington University, the University of Missouri, and the University of South Carolina. In addition, we are deeply indebted to the inhabitants of Logansport, Kentucky, especially Mr. and Mrs. Waldemar Annis and Mr. John L. Thomas. Mr. Annis, the present owner of Bt 5 and the nephew of Mr. Carlston Annis after whom Webb named the site, not only gave us permission to work there but also provided us with field headquarters in a bluff-top farmhouse near the mound. Waldemar Annis and his wife, Ethie, have been unfailingly and exceedingly generous with advice, help, and hospitality throughout our period of research in the Big Bend. John L. Thomas, Logansport postmaster and general store manager, has also worked with us since our first days in the area. He has aided and facilitated our research in every conceivable way, from housing and feeding varying numbers of us to furnishing strange and unusual material and equipment, and turning his home and telephone into a day-and-night communication center for weeks on end during our field seasons. His concern and enthusiasm for our work, and the warm hospitality he and his aunt,

Kathleen Thomas, have displayed, are seemingly boundless. In this they exemplify the general attitude of all of the people in the Big Bend, to whom we are deeply grateful for making the logistical aspects of the Shell Mound Project a positive pleasure.

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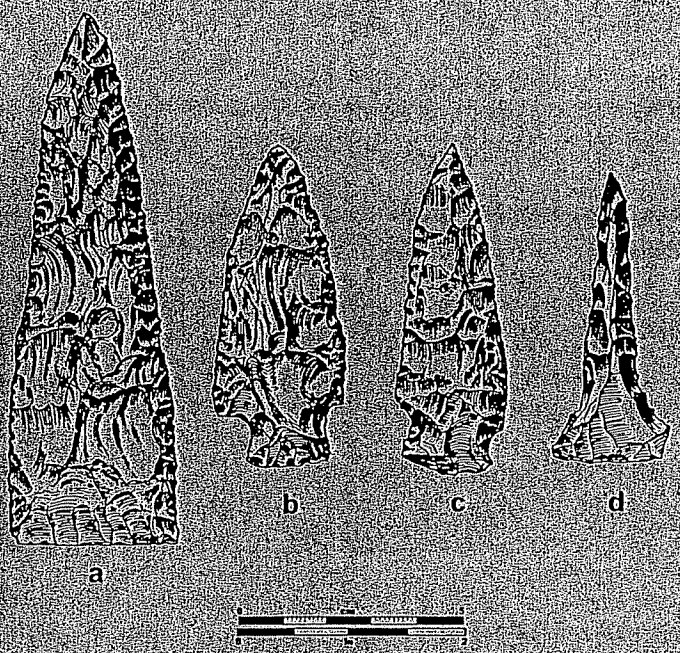
Archaeology of the Middle Green River Region, Kentucky

edited by William H. Marquardt and Patty Jo Watson



The shell-bearing sites of the middle Green River region in western Kentucky have played a defining role in how archaeologists conceptualize Middle Holocene fisher-hunter-gatherers. This book presents new interpretations of data gathered over a 30-year period about the Native American people who lived along the middle Green River from about 4500 to 2000 B.C.

Interdisciplinary by design, the Shell Mound Archaeological Project, directed by William Marquardt and Patty Jo Watson, focused first on subsistence, particularly the emergence of indigenous agriculture in eastern North America. As more was learned, the research focus broadened to include not only archaeobotany and zooarchaeology, but also geoarchaeology, pedoarchaeology, archaeomalacology, paleodemography, dental biology, and other specialties.

Results of all these investigations are included, as well as comparative studies of stone, bone, and shell artifacts. Accounts of how archaeologists have revised their interpretations of the Green River sites over time provide insight into the history of archaeology in the Mid-South and Midwest. In the final chapter, the co-editors synthesize their findings and suggest research directions for the future. Richly illustrated with over 240 photos and drawings, this volume will serve as an invaluable reference work for all those interested in eastern United States archaeology.

686 pages, 242 figures, 171 tables, bibliography, index
ISBN 1-881448-14-2
October, 2005. Distributed by University Press of Florida, $65.00.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INFORMATION REQUEST RESPONSE

INTERVENORS CARROLL & DORIS TICHENOR'S FIRST DATA REQUEST DATED 8/3/05

ITEM 8

RESPONSIBLE PARTY: Mary Jane Warner

REQUEST: Any studies, evaluations, discussions and/or communications concerning EKPC's application to the Federal Energy Regulatory Commission ("FERC") for an Order Requiring Interconnections, including all documents filed with FERC and all related documents.

RESPONSE: The email information is included in **Exhibit 8-1**. The attachments contained in the emails identified as Exhibit 8-1 are included on a CD identified as **Exhibit 8-2**.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00207

INTERVENORS CARROLL & DORIS TICHENOR'S FIRST DATA REQUEST DATED 8/3/05

INFORMATION REQUEST RESPONSE

EXHIBIT 8-1

Darrin Adams

From: Diane C. Wilkie [dcwilkie@cai-engr.com]
Sent: Thursday, July 15, 2004 4:59 PM
To: WRTiller@tva.gov; Al Corbett (E-mail)
Cc: tomm@wrecc.com; Chris Bradley (E-mail); Mary Jane Warner; Michael Spurlock; Darrin Adams; David A. Shafer
Subject: Draft EKPC Report Transmission Service to Warren

Rpt1Rev1.pdf

Attached is the revised text, tables, and exhibits for your review before the conference call at 1:00 pm Friday, July 16. Two more emails will follow with Appendices attached.

Diane

Diane C. Wilkie
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Darrin Adams

From: Diane C. Wilkie [dcwilkie@cai-engr.com]
Sent: Thursday, July 15, 2004 5:04 PM
To: WRTiller@tva.gov; Al Corbett (E-mail)
Cc: tomm@wrecc.com; cbradley@bigrivers.coop; Mary Jane Warner; Michael Spurlock; Darrin Adams; David A. Shafer
Subject: Draft EKPC Report Transmission Service to Warren App A-C

Rpt1Rev1Appendices A-C.pdf

Attached are appendices A through C

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From: Diane C. Wilkie [dcwilkie@cai-engr.com]
Sent: Thursday, July 15, 2004 5:05 PM
To: WRTiller@tva.gov; Al Corbett (E-mail)
Cc: tomm@wrecc.com; cbradley@bigrivers.coop; Mary Jane Warner; Michael Spurlock; Darrin Adams; David A. Shafer
Subject: Draft EKPC Report Transmission Service to Warren App D-F

Rpt1Rev1 Appendices D-E.pdf

Attached are appendices D through F

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From: Diane C. Wilkie [dcwilkie@cai-engr.com]
Sent: Thursday, July 15, 2004 5:09 PM
To: WRTiller@tva.gov; Al Corbett (E-mail)
Cc: cbradley@bigrivers.coop; Mary Jane Warner; Michael Spurlock; Darrin Adams; David A. Shafer; tomm@wrecc.com
Subject: Transmission Service to Warren Power Flow Model Rev 1

BREC-EKPC-TVA_2010S_REV1.zip

A revised power flow base model is attached.

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Darrin Adams

From: Mary Jane Warner
Sent: Thursday, July 15, 2004 7:44 PM
To: Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Billy Tiller (E-mail); Al Corbett (E-mail); David Hall (E-mail); Thomas PE Martin (E-mail); Douglas Elliott (E-mail); Chris Bradley (E-mail); Dave Shafer (E-mail); 'donnaw@wrecc.com'
Subject: Action Items FW: 7-15 Conference Call

Please review these action items from our call earlier today and send me your corrections/additions.

1) Dave Shafer will send the complete preliminary report (dated and in pdf) to all parties immediately

2) A conference call will be held on Friday - July 16, 2004 - 1:00 to discuss modeling issues and more depth on the preliminary results - Mary Jane Warner will arrange the call - Dave Shafer will summarize the discussion and distribute to all parties.

3) Billy Tiller will inform Dennis To about the study and timeline - Mary Jane Warner will contact Dennis to initiate the IA initiation as a parallel effort to the completion of the planning study.

4) Parties agreed to a 3 week timeline projection for completion of the study - a conference call will be held in the middle of week 2 (around July 28th) and a face-to-face meeting will be held at the end of the 3 week period (around August 6th) - Mary Jane Warner will set up those communications.

5) EKPC will contact LGEE as soon as possible with the combined preliminary results in order to solicit their input and to incorporate them into the study.

Thank you
Mary Jane

Mary Jane Warner

Please note my e-mail address change - maryjane.warner@ekpc.coop

-----Original Message-----
From: Mary Jane Warner
Sent: Monday, July 12, 2004 3:11 PM
To: 'Thomas PE Martin (E-mail)'; 'Douglas Elliott (E-mail)'; 'Chris Bradley (E-mail)'; 'Dave Shafer (E-mail)'; Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Billy Tiller (E-mail); Al Corbett (E-mail); David Hall (E-mail)
Cc: Ron Brown
Subject: 7-15 Conference Call

Instructions for our conference call on Thursday (July 15th) are listed below.

This call will involve EKPC, WREC, BREC, TVA and CAI and will begin at 9:00 a.m. (Eastern).

We plan to exchange updates and preliminary results from our respective studies of the EKPC proposed transmission plan to serve WREC including a tie with BREC.

Please call or respond by e-mail if you have questions.

Thank you

Mary Jane Warner

-----Original Message-----
From: emailresv@confcenter.info [mailto:emailresv@confcenter.info]
Sent: Monday, July 12, 2004 12:22 PM
To: Judy Riddell
Subject: Confirmation for Order #9443164

*** Lightyear Confirmation Number 9443164 ***

This is to confirm the conference call #9443164, on 07/15/2004 09:00 AM Eastern Time.

Company: East Kentucky Power
Host: Mary Jane Warner
Call Title/Reference: Mary Jane Warner's Call
Confirmation Number: 9443164
Dial In: 1 (888) 443-6515
Alternate Dial-In:
International participants should dial: 1 (847) 619-6545
Passcode: 9354160

Number of Participants: 10

The Host and Participants will dial in and enter the Passcode 9354160, followed by the pound key (#).

Important Notes:

** As a courtesy to others and to improve sound quality, please have all participants mute their phones when not speaking. **

Press *0 at anytime during your conference call for operator assistance.

To convert to other time zones using Daylight Saving Time, please refer to the following:
7/15/04 06:00 AM PT. *** 7/15/04 07:00 AM MT. *** 7/15/04 08:00 AM CT. ***
7/15/04 09:00 AM ET. *** 7/15/04 02:00 PM GMT.

If there are any questions or changes regarding this or any other conference call please call us at 1 (800) 782-3330
or fax us at 1 (800) 837-4274.
Please refer to confirmation number 9443164. Thank You!

This Email Confirmation was sent at 07/12/04 11:21

Please note my e-mail address change - maryjane.warner@ekpc.coop

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Friday, July 16, 2004 3:43 PM
To: Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Billy Tiller (E-mail); Al Corbett (E-mail); David Hall (E-mail); Thomas PE Martin (E-mail); Douglas Elliott (E-mail); Chris Bradley (E-mail); donnaw@wrecc.com; Mary Jane Warner
Cc: Richard D. Cook; Raymond S. Smith
Subject: July 16 Teleconference Notes - Draft

TM040716.doc

Draft notes of the telephone conference are attached. Please send me any comments or corrections. Thanks.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

Telephone Conference Notes - Draft
July 16, 2004

Subject: EKPC Transmission Service to WREC Study

Attendance:
TVA – Billy Tiller
TVA – Al Corbett
TVA – Phil Yum
EKPC – Mike Spurlock
EKPC – Darrin Adams
EKPC – Greg McKinney
CAI – David Shafer
CAI – Rick Cook

Discussion:
CAI provided a draft report of study results to-date and the study Rev. 1 case to study participants on Thursday, July 15, 2004. The purpose of the conference call was to discuss power flow modeling details and results to-date. David Shafer briefly presented the format of the report. The following points were highlighted:

1. The results of the study are presented in the computer-generated tables, Case A in Appendix A, Case B in Appendix B, and Case C in Appendix C. The information provided in the text portion of the report is intended to briefly summarize the data in the Appendices and is not comprehensive. Darrin Adams commented that we had edited out of the text some important lines that were in the early draft. CAI's review confirmed that to be true. We will update the text portion of the report to include a better summary of the results.

2. We have included revised Exhibits 3, 4 and 5 which provide one-line diagrams of Cases A, B and C, respectively. We believe the exhibits and the text portions of the report accurately represent the changes used to create the various power flow models of these cases.

The following changes were noted as the differences between the original study case provided to TVA and the Rev. 1 case provided on July 15, 2004:

1. Added 69 kV detail model of the WREC system between East Bowling Green and Memphis Junction.

2. Revised incorrect line ratings in model.

TVA asked if we could provide a bullet list of the changes that are included in the Rev. 1 case over the original case provided. CAI will provide that list.

Reviewing the study results, TVA does not see the overloads that CAI is reporting in the report. TVA is using the 2003 series MMWG 2010 Summer model. TVA noted that the interchange is different between the MMWG 2010 summer model and the model provided. We discussed the 2003 series ECAR case is based on the same 2010 Summer MMWG case that TVA is using. CAI will review the differences between the MMWG case and the current study case. TVA had mentioned in yesterday's telephone conference that the study case has TVA dispatch at Browns Ferry too low. For those cases with WREC served by EKPC, Browns Ferry should be dispatched to maximum and the generators at Johnsonville reduced.

For the case with Thoroughbred Unit 2, we should include a new 500 kV transmission line from Paradise to TVA Wilson. Other than the direct connect facilities to connect the Thoroughbred generator unit #2 to the Paradise 500 kV bus and the above mentioned 500 kV line, there are no other transmission upgrades or changes that are needed in the 2010 case. TVA will provide the parameters of the new 500 kV line to be included in the case. TVA asked for the modeling details for Thoroughbred Unit 1. CAI responded that we have listed the known transmission upgrades for Unit 1 in the report. We will verify with BREC that these are still the correct transmission system improvements planned with Unit 1. Also, CAI will check with BREC to determine what is the presently proposed in-service date for Unit 1.

Action Items
The following action items were agreed to:

1. TVA will provide dispatch with Johnsonville generation reduced
2. TVA will provide list of single contingencies typically used to study the TVA system.
3. TVA will provide critical double contingencies to be studied.
4. TVA will provide the 500 kV line parameters for the Paradise-Wilson 500 kV line to model it in the Thoroughbred Unit 2 study case.
5. CAI will provide bullet list of changes between the original case and Rev. 1 case to TVA.
6. CAI will provide dispatch used to create Case A.
7. CAI will provide review of differences between MMWG case and study case.
8. CAI will check with BREC and confirm that we have correctly listed the transmission upgrades proposed for Thoroughbred Unit 1.

End of Teleconference Notes

After completing the telephone conference, David Shafer remembered that we had not discussed modeling beyond the 2010 summer conditions. David Shafer called Al Corbett to discuss the status of an earlier action item with regard to modeling a future year beyond 2010. EKPC has an internal 2015 model but this is probably not suitable for study of interconnection issues. Al Corbett was to review what models TVA may have available.

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Monday, July 19, 2004 8:26 AM
To: Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Chris Bradley (E-mail)
Subject: FW: Information from TVA

FYI, here is the info I received from TVA.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Monday, July 19, 2004 7:05 AM
To: David A. Shafer
Subject: FW: Information

Dave,

Here is the information we promised in the telecon.

Billy
-----Original Message-----
From: Yum, Phil Soo
Sent: Friday, July 16, 2004 3:20 PM
To: Tiller, William R.
Cc: Corbett, Alfred B
Subject: Information

Billy,

TVA Johnsonville units turned off

18214, 18215, 18216, 18217, 18218, 18219: 300 MW

Line information between Paradise – Wilson 500kV

R (pu): 0.001378
X (pu): 0.02067
B (pu): 1.6961
Rating A: 2598
Rating B: 2598
Length: 90miles

Thanks.

Phil Yum

Darrin Adams

From: Michael Spurlock
Sent: Monday, July 19, 2004 3:25 PM
To: David Shafer (E-mail); 'ABCorbett@tva.gov'; 'WRTiller@tva.gov'
Cc: Paul Atchison; Mary Jane Warner; Darrin Adams
Subject: Future cases beyond 2010 Summer for Warren RECC Service Studies

David,

Today, I had a discussion with Al Corbett at TVA concerning future models beyond 2010 Summer which may be needed to complete the Warren RECC service studies we are conducting.

It was decided that TVA would determine if these cases are needed to complete the study.

If TVA decides they are necessary, then they will identify the cases they want, and send them to CAI within the next couple of days, in order to allow for screening for problems within the 3 week target date (beginning July 16) for completion of the study analysis.

Thanks,

Michael K. Spurlock
Senior Engineer Transmission Planning
Power Delivery Expansion
859-744-4812 Ext. 393

Please note my e-mail address change: michael.spurlock@ekpc.coop

Darrin Adams

From: Michael Spurlock

Sent: Wednesday, July 21, 2004 12:27 PM

To: 'dashafer@cai-engr.com'; Paul Atchison; Mary Jane Warner; Darrin Adams; Greg McKinney; 'ABCorbett@tva.gov'; 'WDHall@tva.gov'; 'WRTiller@tva.gov'; 'cbradley@bigrivers.coop'

Subject: Status of Action Items: July 16 Teleconference Notes - Draft

Everyone,

If possible, I would like to know the current status of the action items which were included on the subject teleconference notes, including the status of TVA's decision on whether to include future cases(beyond 2010 Summer) and, if applicable, which cases these should be. I mentioned the future cases in a recent email to Dave Shafer, Al Corbett, and Billy Tiller dated July 19.

It appears to me that TVA has provided the response to Action Items 1 (TVA re-dispatch) and 4 (Paradise-Wilson 500 kV line parameters). If this is incorrect, please advise.

Thanks,

Michael K. Spurlock

Senior Engineer Transmission Planning
Power Delivery Expansion
859-744-4812 Ext. 393

Please note my e-mail address change: michael.spurlock@ekpc.coop

****

-----Original Message-----
From: David A. Shafer [mailto:dashafer@cai-engr.com]
Sent: Friday, July 16, 2004 3:43 PM
To: Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Billy Tiller (E-mail); Al Corbett (E-mail); David Hall (E-mail); Thomas PE Martin (E-mail); Douglas Elliott (E-mail); Chris Bradley (E-mail); donnaw@wrecc.com; Mary Jane Warner
Cc: Richard D. Cook; Raymond S. Smith
Subject: July 16 Teleconference Notes - Draft

Draft notes of the telephone conference are attached. Please send me any comments or corrections. Thanks.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

Darrin Adams

From: Tiller, William R. [wrtiller@tva.gov]
Sent: Wednesday, July 21, 2004 12:37 PM
To: Michael Spurlock; David Shafer (E-mail); Corbett, Alfred B
Cc: Paul Atchison; Mary Jane Warner; Darrin Adams
Subject: RE: Future cases beyond 2010 Summer for Warren RECC Service Studies

Mike and all,

I think it would be good if we studied out that far, but I am concerned about many aspects of the cases that far into the future.

For this reason I do not see us studying beyond 2010.

Billy

> -----Original Message-----
> **From:** Michael Spurlock [mailto:michael.spurlock@ekpc.coop]
> **Sent:** Monday, July 19, 2004 3:25 PM
> **To:** David Shafer (E-mail); Corbett, Alfred B; Tiller, William R.
> **Cc:** Paul Atchison; Mary Jane Warner; Darrin Adams
> **Subject:** Future cases beyond 2010 Summer for Warren RECC Service Studies
>
> David,
>
> Today, I had a discussion with Al Corbett at TVA concerning future models beyond 2010 Summer which may be needed to complete the Warren RECC service studies we are conducting.
>
> It was decided that TVA would determine if these cases are needed to complete the study.
>
> If TVA decides they are necessary, then they will identify the cases they want, and send them to CAI within the next couple of days, in order to allow for screening for problems within the 3 week target date (beginning July 16) for completion of the study analysis.
>
> Thanks,
>
> *Michael K. Spurlock*
>
> **Senior Engineer Transmission Planning**
> **Power Delivery Expansion**
> **859-744-4812 Ext. 393**
>
> **Please note my e-mail address change: michael.spurlock@ekpc.coop**

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Friday, July 23, 2004 11:35 AM
To: Darrin Adams; Mary Jane Warner; Michael Spurlock; Paul Atchison
Cc: Richard D. Cook; Raymond S. Smith
Subject: FW: list

FYI - additional TVA data

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Friday, July 23, 2004 11:08 AM
To: David A. Shafer
Subject: FW: list

I did not have time to call right now, but wanted to get you the list. These are the worst contingencies for us that we have seen so far. These actually go through several of our scenarios.

I will try to call you later today.

Billy

-----Original Message-----
From: Yum, Phil Soo
Sent: Friday, July 23, 2004 11:05 AM
To: Tiller, William R.
Cc: Corbett, Alfred B
Subject: list

Billy,

Here is the N-2 critical contingency list, which violated our criteria in our cases. The selected contingency lines are only based on our first phase study, and it doesn't necessary that it contains every critical N-2. Thanks.

N-1: Memphis Junction (TVA) -MJN (EKPC)
N-2: Aberdeen Tap -Wilson 161KV and E.Bowling (TVA)- EBG (EKPC)
MJN(EKPC) -BGMU (EKPC) and Memphis Junction (TVA) - MJN (EKPC)
Memphis Junction (TVA) -MJN (EKPC) and E.Bowling Green - EBG (EKPC)

Darrin Adams

From: Mary Jane Warner
Sent: Tuesday, August 10, 2004 12:51 PM
To: Michael Spurlock; Darrin Adams; Greg McKinney; Paul Atchison; Billy Tiller (E-mail); Al Corbett (E-mail); Douglas Elliott (E-mail); Chris Bradley (E-mail); 'donnaw@wrecc.com'; 'psyum@tva.gov'; 'sgcullom@tva.gov'; 'tlsmith3@tva.gov'; Mary Jane Warner; David Hall (E-mail); Thomas Martin (E-mail); Dave Shafer (E-mail); 'jrgardner@tva.gov'
Cc: Roy Palk; 'WTBoston@tva.gov'
Subject: Interim Teleconference

Please review the action item list below resulting from our call this morning and note any items that require your attention.

Also please let me know if there are errors or omissions.

I added one item (Caneyville Tap) we did not discuss as a planning issue, but that is a current issue we would like to review.

Thank you

Mary Jane Warner

Action Item list - 8/10/2004

Parties represented - EKPC, WREC, Ottis Jones, TVA, BREC, CAI

1) **Billy Tiller** will send detailed study results of overloads, fixes currently planned by TVA and impacts to transfers into and out of TVA, to Mary Jane Warner, Dave Shafer, Darrin Adams, Mike Spurlock and Chris Bradley.

2) **Dave Shafer and Billy Tiller** will exchange cases as soon as possible for evaluation and reconciliation of results.

3) **John Gardner** will look for generic provisions related to an Transmission Interconnection Agreement and contact Mary Jane by e-mail regarding same.

4) **Chris Bradley** will check on permission to share MMWG stability cases - then notify **Dave Shafer** who (if permitted) will forward the stability model to Phil Yum.

5) Using the model in 4) above, **Phil Yum and Dave Shafer** will perform stability screening for the proposed transmission plan based on the detailed analysis done for the Thorobred generator addition.

6) **Phil Yum** will develop a stability model with the 69kV system in detail and forward to Dave Shafer as soon as it is available.

7) **Billy Tiller and Dave Shafer** will coordinate the discussions necessary to resolve or explain discrepancies between the two studies in preparation for a summary at the 8/17 meeting - all parties can be kept up to date via e-mail, as appropriate.

The following agenda has been proposed for our meeting on Tuesday August 17, 2004 in Chattanooga.

- Summary of Thermal Studies
- Transmission Interconnection Agreement
- Preliminary results of stabilty screening based on Thorobred analysis
- BREC tie - transfer implication, etc.
- Ownership of Caneyville Tap
- Miscellaneous
- Timeline for moving forward

Please note my e-mail address change - maryjane.warner@ekpc.coop

Darrin Adams

From: Tiller, William R. [wrtiller@tva.gov]
Sent: Thursday, August 12, 2004 4:01 PM
To: Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David

Mary Jane and Company,

Here are TVA's answers for our action items.

Action item #1

Facilities we see overloaded:

1. Glasgow tap to Bristow tap for the outage of Lafayette to Summershade (TVA) - Line will be uprated
2. Lafayette to Summershade (TVA) for the outage of E. Bowling Green to Summershade (TVA) - Line will be uprated
3. Summershade (TVA) to Summershade (EKPC) for the outage of Summershade (TVA) to Summershade tap - Line will be uprated
4. Summershade (TVA) to Summershade tap for the outage of the Summershade (TVA) to Summershade (EKPC) - Line will be uprated

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that we have fixes for.

1. Bowling Green to Lost City for the outage of Paradise to Bowling Green - Line to be uprated
2. Gallatin to Hartsville for the outage of E Gallatin to Fountainhead - Line to be uprated.

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that does not overload in TVA analysis

1. Franklin to Portland Switching Station for the outage of ?
2. Summershade (TVA) to Summershade (EKPC) for the outage of ?
4. Memphis Junction to South Bowling Green tap for the outage of ?
5. Bowling Green to South Bowling Green tap for the outage of ?
6. Paradise to Aberdeen tap for the outage of Paradise to Bowling Green

Transfer limit details:

Exports to:

1. AEP reduced by 52 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
2. BREC reduced by 563 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
3. EKPC reduced by 33 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
4. LGEE reduced by 105 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.

Action item #2 - Case has been sent to Dave Shafer

A note about the limits that are being seen. There seems to be a disconnect between TVA and EKPC on the nature of the "base case" to be used in evaluating the study results. TVA's "base case" is a case in which the Warren RECC load is served by EKPC with the EKPC line from Barren County to Wilson line in service, but no free flowing interconnections to TVA. In our opinion this is the best starting point for comparing to other

scenarios. We have compared this case to the proposal as submitted by EKPC.

If you have any questions let me know.

Billy Tiller

Darrin Adams

From: Chris Bradley [cbradley@bigrivers.com]

Sent: Thursday, August 12, 2004 5:02 PM

To: Tiller, William R.; Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock

Subject: RE: BREC ATC & Meeting

Billy,

In regard to the TVA export item listed below:

BREC reduced by 563 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade

1. Does this mean that the monthly firm ATC posting on the OASIS for the TVA to BREC path could be 0 MW? (Today, the monthly values on the TVA OASIS seem to vary from 0 MW to 600 MW.)

2. Did TVA look at the impact on deliveries from BREC to TVA and/or through TVA (i.e. ATC for BREC-TVA, BREC-SOCO, etc)?

Billy/Mary Jane,

Due to on-going efforts to prepare for our NERC audit (both ECAR Compliance Audit and the Readiness Audit are scheduled for the week of August 23), travel is proving to be a little more difficult than expected. Since the Big Rivers part of this study is relatively minor, would it be possible to discuss our part by phone? I can be available for a scheduled call to discuss any specific items and will also be available for any Big Rivers questions that may come-up during the meeting.

Chris Bradley
Big Rivers Electric Corporation
270-827-2561 x2226

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Thursday, August 12, 2004 3:01 PM
To: Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David
Subject:

Mary Jane and Company,

Here are TVA's answers for our action items.

Action item #1

Facilities we see overloaded:

1. Glasgow tap to Bristow tap for the outage of Lafayette to Summershade (TVA) - Line will be uprated
2. Lafayette to Summershade (TVA) for the outage of E. Bowling Green to Summershade (TVA) - Line will be uprated
3. Summershade (TVA) to Summershade (EKPC) for the outage of Summershade (TVA) to Summershade tap - Line will be uprated
4. Summershade (TVA) to Summershade tap for the outage of the Summershade (TVA) to Summershade (EKPC) - Line will be uprated

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that we have fixes for.

1. Bowling Green to Lost City for the outage of Paradise to Bowling Green - Line to be uprated
2. Gallatin to Hartsville for the outage of E Gallatin to Fountainhead - Line to be uprated.

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that does not overload in TVA analysis

1. Franklin to Portland Switching Station for the outage of ?
2. Summershade (TVA) to Summershade (EKPC) for the outage of ?
4. Memphis Junction to South Bowling Green tap for the outage of ?
5. Bowling Green to South Bowling Green tap for the outage of ?
6. Paradise to Aberdeen tap for the outage of Paradise to Bowling Green

Transfer limit details:

Exports to:

1. AEP reduced by 52 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
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Action item #2 - Case has been sent to Dave Shafer

A note about the limits that are being seen. There seems to be a disconnect between TVA and EKPC on the nature of the "base case" to be used in evaluating the study results. TVA's "base case" is a case in which the Warren RECC load is served by EKPC with the EKPC line from Barren County to Wilson line in service, but no free flowing interconnections to TVA. In our opinion this is the best starting point for comparing to other scenarios. We have compared this case to the proposal as submitted by EKPC.

If you have any questions let me know.

Billy Tiller

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Friday, August 13, 2004 8:53 AM
To: Corbett, Alfred B (E-mail); Cullom, Shirley G. (E-mail); Smith, Tim L. (E-mail); Tiller, William R. (E-mail); Yum, Phil Soo (E-mail)
Cc: Chris Bradley (E-mail); Darrin Adams; Mary Jane Warner; Michael Spurlock; Paul Atchison
Subject: Warren Transmission Study - Power Flow Cases A, B and C


EKPC_CaseA_R3.zip


EKPC_CaseB_R3.zip


EKPC_CaseC_R3.zip

Billy,

Here are the base cases A, B and C as we presently have them configured for the Warren study. We have saved these as PTI Version 28 .RAW files. Please let us know if they read correctly.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Friday, August 13, 2004 3:01 PM
To: Tiller, William R.; Mary Jane Warner; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David
Subject: CAI response to TVA Action Item #1

Billy,

I have attached a summary table that provides a list of the overload lines we have in our Case A. I have added to that table the worst contingency that caused the line to overload. This should help in trying to compare results between your case and ours. I will be taking a closer look at your base case to see if I can see what is different.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Thursday, August 12, 2004 4:01 PM
To: Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David
Subject:

Mary Jane and Company,

Here are TVA's answers for our action items.

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3. Summershade (TVA) to Summershade (EKPC) for the outage of Summershade (TVA) to Summershade tap - Line will be uprated
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Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that does not overload in TVA analysis

1. Franklin to Portland Switching Station for the outage of ?
2. Summershade (TVA) to Summershade (EKPC) for the outage of ?
4. Memphis Junction to South Bowling Green tap for the outage of ?

5. Bowling Green to South Bowling Green tap for the outage of ?
6. Paradise to Aberdeen tap for the outage of Paradise to Bowling Green

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3. EKPC reduced by 33 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
4. LGEE reduced by 105 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.

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A note about the limits that are being seen. There seems to be a disconnect between TVA and EKPC on the nature of the "base case" to be used in evaluating the study results. TVA's "base case" is a case in which the Warren RECC load is served by EKPC with the EKPC line from Barren County to Wilson line in service, but no free flowing interconnections to TVA. In our opinion this is the best starting point for comparing to other scenarios. We have compared this case to the proposal as submitted by EKPC.

If you have any questions let me know.

Billy Tiller

Table 3
Contingency Overload Comparison
(percent of emergency rating values)

	Emerg Rating MVA	Case A	Case B	Case C
161 & 138 kV Transmission				
TVA: Bowling Green - Lost City 161 kV	180	114	116	97
TVA: Paradise - Aberdeen Tap 161 kV	350	107	102	n/a
LGEE: Green River - Ohio Co. #1 138 kV	171	106	101	91
LGEE: Green River - Ohio Co. #2 138 kV	171	103	98	n/a
TVA: Gallatin - Hartsville 161 kV	371	105	98	n/a
TVA: Franklin - Portland SS 161 kV	227	102	n/a	n/a
LGEE: Ohio Co. - Shrewsbury 138 kV	171	103	98	n/a
LGEE: Leitchfield - Shrewsbury 138 kV	96	101	100	96
TVA-EKPC: Summershade 161 kV	239	101	n/a	n/a
TVA: Memphis Jct - S. Bowling Gr. T 161 kV	227	101	127	n/a
TVA: Bowling Green - S Bowling Gr. T 161 kV	227	100	127	n/a
LGEE: Kosmos - Mill Ck 138 kV	72	96	99	101
161 & 138 Transformers				
TVA: Huntsville 161-69 kV transfmr	50	120	94	n/a
EKPC: Bonnieville 138-69 kV transfmr	59	115	115	115
TVA-EKPC: Franklin 161-69 kV transfmr	50	109	111	110
LGEE: Leitchfield 138-69 kV transfmr	86	114	112	108
EKPC-LGEE: Taylor County 161-69 kV transfmr	72	100	99	101
LGEE: Ohio Co. 138-69 kV transfmr	86	100	97	91
69 kV Transmission				
LGEE: Leitchfield - Millwood 69 kV	52	113	107	95
LGEE: Green River - River Queen Tap 69 kV	54	104	110	96
LGEE: Greenville West - River Queen 69 kV	49	103	102	101
LGEE: Caneyille Jct Rosine Jct 69 kV	68	103	98	n/a
LGEE: Echols - Indian Hill 69 kV	56	102	99	93
LGEE: KU Park - Pineville 69 kV	80	101	n/a	n/a
LGEE: Etown - Kargle 69 kV	69	101	99	99
EKPC: Salmon - K30 69 kV	30	n/a	117	117
EKPC: K30 - L30 69 kV	42	n/a	114	114
LGEE: Indian Hill - Peabody West 69 kV	27	99	101	102
LGEE-EKPC: Eastview - Stephensburg 69 kV	41	93	96	102

n/a - below 90% not reported

Darrin Adams

From: Darrin Adams
Sent: Friday, August 13, 2004 3:10 PM
To: 'Tiller, William R.'
Cc: 'Hall, David'; Mary Jane Warner; 'David A. Shafer'; 'Chris Bradley (E-mail)'; Michael Spurlock
Subject: RE:

Tracking:

Recipient	Delivery	Read
'Tiller, William R.'		
'Hall, David'		
Mary Jane Warner	Delivered: 8/13/2004 3:10 PM	Read: 8/16/2004 8:39 AM
'David A. Shafer'		
'Chris Bradley (E-mail)'		
Michael Spurlock	Delivered: 8/13/2004 3:10 PM	Read: 8/13/2004 4:34 PM

Billy,

Can you provide us with some details regarding the assumed system configuration in the studies that found the overloads you listed below. Also, for the export scenarios, how was that analysis conducted? Was generation scaled up and down area-wide or changed at specific points? Was load scaled? Also, what are the absolute values of transfer capability for each of the interfaces you listed?

Thanks,

Darrin Adams
Senior Planning Engineer
Power Delivery Expansion
East Kentucky Power Cooperative
4775 Lexington Road 40391
P.O. Box 707
Winchester, KY 40392-0707
(859) 744-4864 ext. 874
(859) 744-6008 (fax)
darrin.adams@ekpc.coop

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Thursday, August 12, 2004 4:01 PM
To: Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David
Subject:

Mary Jane and Company,

Here are TVA's answers for our action items.

Action item #1

Facilities we see overloaded:

1. Glasgow tap to Bristow tap for the outage of Lafayette to Summershade (TVA) - Line will be uprated
2. Lafayette to Summershade (TVA) for the outage of E. Bowling Green to Summershade (TVA) - Line will be uprated
3. Summershade (TVA) to Summershade (EKPC) for the outage of Summershade (TVA) to Summershade tap - Line will be uprated
4. Summershade (TVA) to Summershade tap for the outage of the Summershade (TVA) to Summershade (EKPC) - Line will be uprated

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that we have fixes for.

1. Bowling Green to Lost City for the outage of Paradise to Bowling Green - Line to be uprated
2. Gallatin to Hartsville for the outage of E Gallatin to Fountainhead - Line to be uprated.

Overloads that EKPC/CAI discovered (Case A, WRECC service via TVA) that does not overload in TVA analysis

1. Franklin to Portland Switching Station for the outage of ?
2. Summershade (TVA) to Summershade (EKPC) for the outage of ?
4. Memphis Junction to South Bowling Green tap for the outage of ?
5. Bowling Green to South Bowling Green tap for the outage of ?
6. Paradise to Aberdeen tap for the outage of Paradise to Bowling Green

Transfer limit details:

Exports to:

1. AEP reduced by 52 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
2. BREC reduced by 563 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
3. EKPC reduced by 33 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.
4. LGEE reduced by 105 MW. Limit caused by E Bowling Green to Bristow tap for the outage of Lafayette to Summershade.

Action item #2 - Case has been sent to Dave Shafer

A note about the limits that are being seen. There seems to be a disconnect between TVA and EKPC on the nature of the "base case" to be used in evaluating the study results. TVA's "base case" is a case in which the Warren RECC load is served by EKPC with the EKPC line from Barren County to Wilson line in service, but no free flowing interconnections to TVA. In our opinion this is the best starting point for comparing to other scenarios. We have compared this case to the proposal as submitted by EKPC.

If you have any questions let me know.

Billy Tiller

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Friday, August 13, 2004 4:43 PM
To: Corbett, Alfred B (E-mail); Cullom, Shirley G. (E-mail); Smith, Tim L. (E-mail); Tiller, William R. (E-mail); Yum, Phil Soo (E-mail)
Cc: Chris Bradley (E-mail); Darrin Adams; Mary Jane Warner; Michael Spurlock; Paul Atchison; Elliott, Douglas (E-mail); Martin, Thomas PE (E-mail); White, Donna (E-mail)
Subject: Warren Transmission Study - CAI Draft Report 8/13/04


Rpt3.pdf


Rpt3 Tables and Exhibits.pdf

Billy,

Attached are two files. The first is a pdf file of the text portion of our report as it stands to-date. The second pdf file includes the report tables and exhibits. The exhibits include a map and one-line diagrams. This report includes the power flow, short-circuit and transient stability analysis.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

Darrin Adams

From: Tiller, William R. [wrtiller@tva.gov]
Sent: Monday, August 16, 2004 8:03 AM
To: Darrin Adams
Subject: RE:

Darrin,

I will get you an answer as quick as I can. I have a doctor appointment this morning, but will try to have it to you early.

Billy

-----Original Message-----
From: Darrin Adams [mailto:darrin.adams@ekpc.coop]
Sent: Friday, August 13, 2004 3:10 PM
To: Tiller, William R.
Cc: Hall, David; Mary Jane Warner; David A. Shafer; Chris Bradley (E-mail); Michael Spurlock
Subject: RE:

Billy,

Can you provide us with some details regarding the assumed system configuration in the studies that found the overloads you listed below. Also, for the export scenarios, how was that analysis conducted? Was generation scaled up and down area-wide or changed at specific points? Was load scaled? Also, what are the absolute values of transfer capability for each of the interfaces you listed?

Thanks,

Darrin Adams
Senior Planning Engineer
Power Delivery Expansion
East Kentucky Power Cooperative
4775 Lexington Road 40391
P.O. Box 707
Winchester, KY 40392-0707
(859) 744-4864 ext. 874
(859) 744-6008 (fax)
darrin.adams@ekpc.coop

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Thursday, August 12, 2004 4:01 PM
To: Mary Jane Warner; David A. Shafer; Darrin Adams; Chris Bradley (E-mail); Michael Spurlock
Cc: Hall, David
Subject:

Mary Jane and Company,

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5. Bowling Green to South Bowling Green tap for the outage of ?
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If you have any questions let me know.

Billy Tiller

Darrin Adams

From: David A. Shafer [dashafer@cai-engr.com]
Sent: Thursday, August 19, 2004 8:17 AM
To: Darrin Adams; Mary Jane Warner; Michael Spurlock; Paul Atchison
Subject: FW: TVA Case

Mary Jane,

For your file: here is an e-mail from TVA to CAI that was not previously copied to EKPC.

David A. Shafer, P.E.
Commonwealth Associates, Inc.
517-788-3242

-----Original Message-----
From: Tiller, William R. [mailto:wrtiller@tva.gov]
Sent: Friday, August 13, 2004 9:38 AM
To: David A. Shafer
Subject: RE: TVA Case

David,

Sorry about that. Here is a raw file.

Billy

> -----Original Message-----
> **From:** David A. Shafer [mailto:dashafer@cai-engr.com]
> **Sent:** Friday, August 13, 2004 8:42 AM
> **To:** Tiller, William R.
> **Subject:** RE: TVA Case
>
> Billy,
>
> This case is in .SAV. We cannot read a SAV file. Please resend as a .RAW file. Thanks.
>
> David A. Shafer, P.E.
> Commonwealth Associates, Inc.
> 517-788-3242
>
> > -----Original Message-----
> > **From:** Tiller, William R. [mailto:wrtiller@tva.gov]
> > **Sent:** Tuesday, August 10, 2004 2:01 PM
> > **To:** David A. Shafer
> > **Subject:** TVA Case
> >
> > Dave,

Here is our equivalent to your Case A. This is the case we see no overloads in.

Billy