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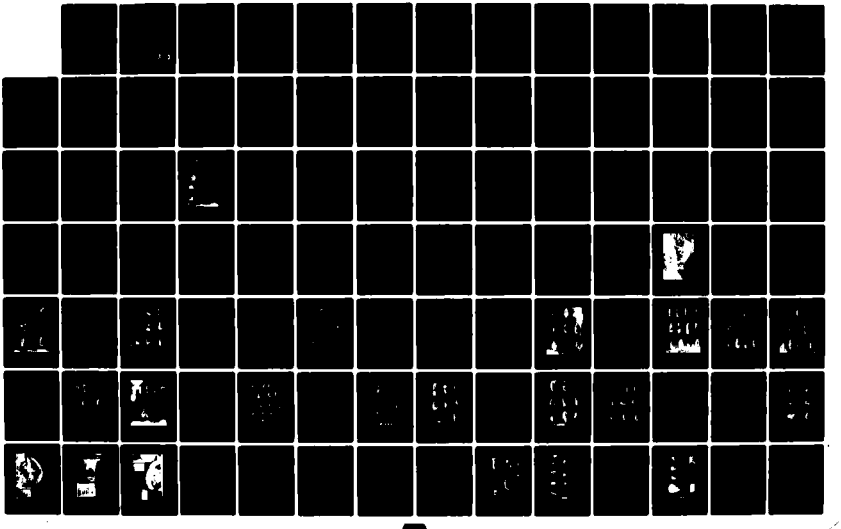

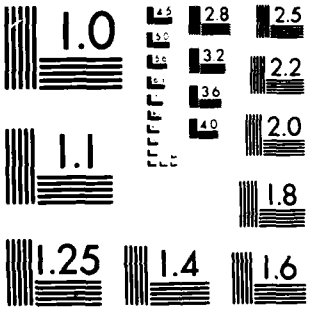

AUGUSTA BLUFF

A Late Archaic Site on the Leaf River Perry County, Mississippi

by

Newell O. Wright

Archaeological Research Associates
Report of Investigations 13
1982

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Archaeological Research Associates, Inc., under contract with Dames & Moore, conducted an excavation program at Site 22Pe543 (Augusta Bluff) in Perry County, Mississippi, where construction is planned by the Leaf River Corporation. The work was performed between May 28, 1982, and June 29, 1982. The Principal Investigator was Newell O. Wright.

Historic and prehistoric occupations were revealed during the previous survey and testing which were performed in the area (Wright 1981). Based upon these findings, Site 22Pe543 was determined eligible for nomination to

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The historic component consisted of materials associated with the town of Old Augusta, dating primarily from the first half of the nineteenth century. The prehistoric component consisted of Late Archaic materials, dating from approximately 3,600 B.P. Exploratory excavations at 22Pe543 have given an initial look at Late Archaic adaptive patterns of the Pine Hills region.

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ACKNOWLEDGEMENTS

This report is based on an intensive survey, testing, and excavation program performed in an area of proposed construction by the Leaf River Corporation near Old Augusta, Perry County, Mississippi. The work, funded by the Leaf River Corporation, a company of Great Northern Nekoosa Corporation, was performed in order to meet the state and federal guidelines established for the protection of cultural resources.

The project, which has taken more than a year from onset to completion, is the result of the cooperation of a large number of individuals. All deserve recognition and we take this opportunity to acknowledge their contributions. Several people from Leaf River Corporation and Great Northern Nekoosa Corporation provided valuable assistance. They found time in their already hectic schedules to meet with and help solve any problems Archaeological Research Associates, Inc. encountered. While the process may have seemed long and arduous, the personnel were most accomodating. Jerry Perkins, Stan Leighton and Don Hawthorn, thank you.

Once again, Dottie Gibbens of the U. S. Army Corps of Engineers, Mobile District helped in ways too numerous to mention. Neil Robison, of the same office, was also valuable to the project's successful completion. The suggestions concerning typological analysis made by Sam McGahey of the Mississippi Department of Archives and History are appreciated. Sam assisted Archaeological Research Associates, Inc. on several occasions.

Mr. Timothy Doyle of Dames & Moore was a most valuable liason between Archaeological Research Associates, Inc. and Leaf River Corporation. His efforts made our job much easier. A very special thanks goes to Marvin Smith. Marvin, Dames & Moore's field representative, sacrificed many of his weekends during 1981 and 1982 to assist and advise Archaeological Research Associates, Inc. work crews. He was always a pleasant working companion.

Personnel at the Perry County Public Library and the library at the University of Southern Mississippi were helpful during the background research. Also, the Pat Harrison Waterway District provided important historic data.

There were many people in New Augusta and Hattiesburg who freely gave information and time to the project. Most of their names we never knew, but hospitality in the southern tradition was offered on many occasions and we are thankful to them.

Archaeological Research Associates, Inc. crew members performed admirably to collect the data from the field. As always the case, long hours and hard work were required. For their special efforts and a job well done, the author thanks Alan Bailey, Johnny Bailey Jack Bergstresser, Austin Breland, Carol Griffis, Margaret Hicks, Lance Lufkin, Jane Neal and Cleveland Smith. Jack Bergstresser a Lance Lufkin are additionally noted for their administrative ass[illegible]e. Jack served as field supervisor and Lance was project coordinator. The additional photographic work done by Johnny Bailey is very much appreciated. Cheryl Hatcher and Jane Neal worked numerous hours typing and retyping the manuscript. The editorial advice which Jane also provided was invaluable.

INTRODUCTION

In May 1981 Archaeological Research Associates, Inc. performed an archaeological survey of an area where construction is planned by the Leaf River Corporation in Perry County, Mississippi (Figures 1 and 2). To aid in site discovery and as a means of subsurface testing, a fire plow was used in the survey. Revealed in the fire plow trench were stone tools, the byproducts of their manufacture as well as historic artifacts. This particular area was given the temporary site number 22-ARA-Pr-5. This and some additional property were later given the Mississippi site designation 22Pe543.

Formal testing ensued where concentrated numbers of artifacts were discovered. An attempt was made to determine the stratigraphic sequence, areal extent, presence of subsurface features, cultural affiliation and temporal placement of the site (Wright 1981).

The artifacts recovered during the testing phase confirmed that historic and prehistoric occupations are represented at the site. The historic material dates from the nineteenth and twentieth centuries. The nineteenth century materials are probably associated with the town of Augusta, a site which has been discussed previously by Wright (1981) and Heisler and Wells (1980). The prehistoric artifacts which are temporally or culturally sensitive suggest a Late Archaic affiliation.

In the vicinity of the area originally designated as the site, surface concentrations of historic artifacts and several structures were tested. During this phase of work, Archaic artifacts were found mixed with and underlying historic material. The presence of aboriginal artifacts near the original concentration led to the belief that one cultural episode could be represented. Isolated surface concentrations were found over an area of approximately 9 hectares; thus, it was surmised that Site 22Pe543 was unusually large and had the potential to reveal much information about Archaic inhabitants.

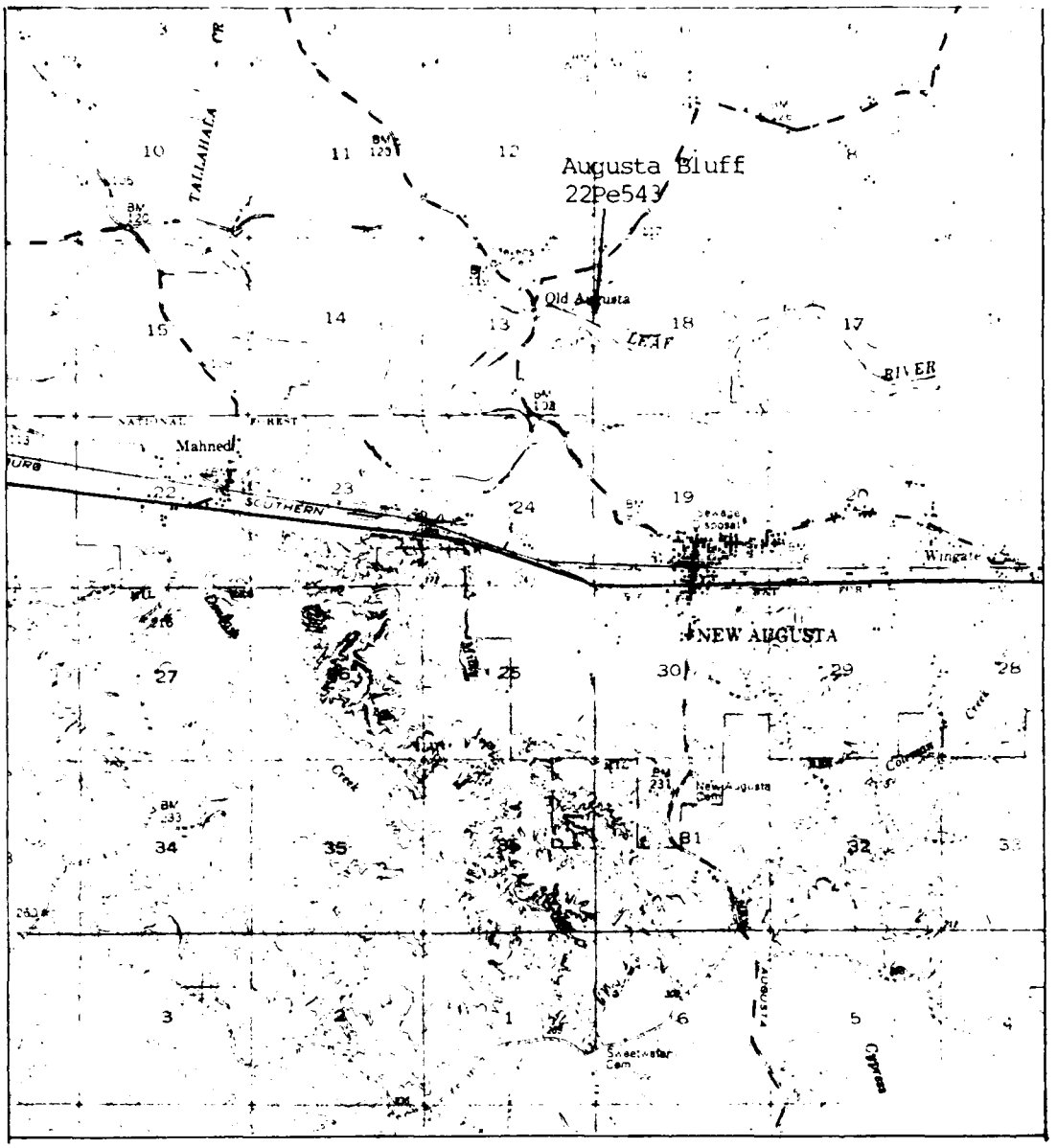

Figure 1. Map showing location of Augusta Bluff Site.
New Augusta Quadrangle, Mississippi
15 Minute Series 1947

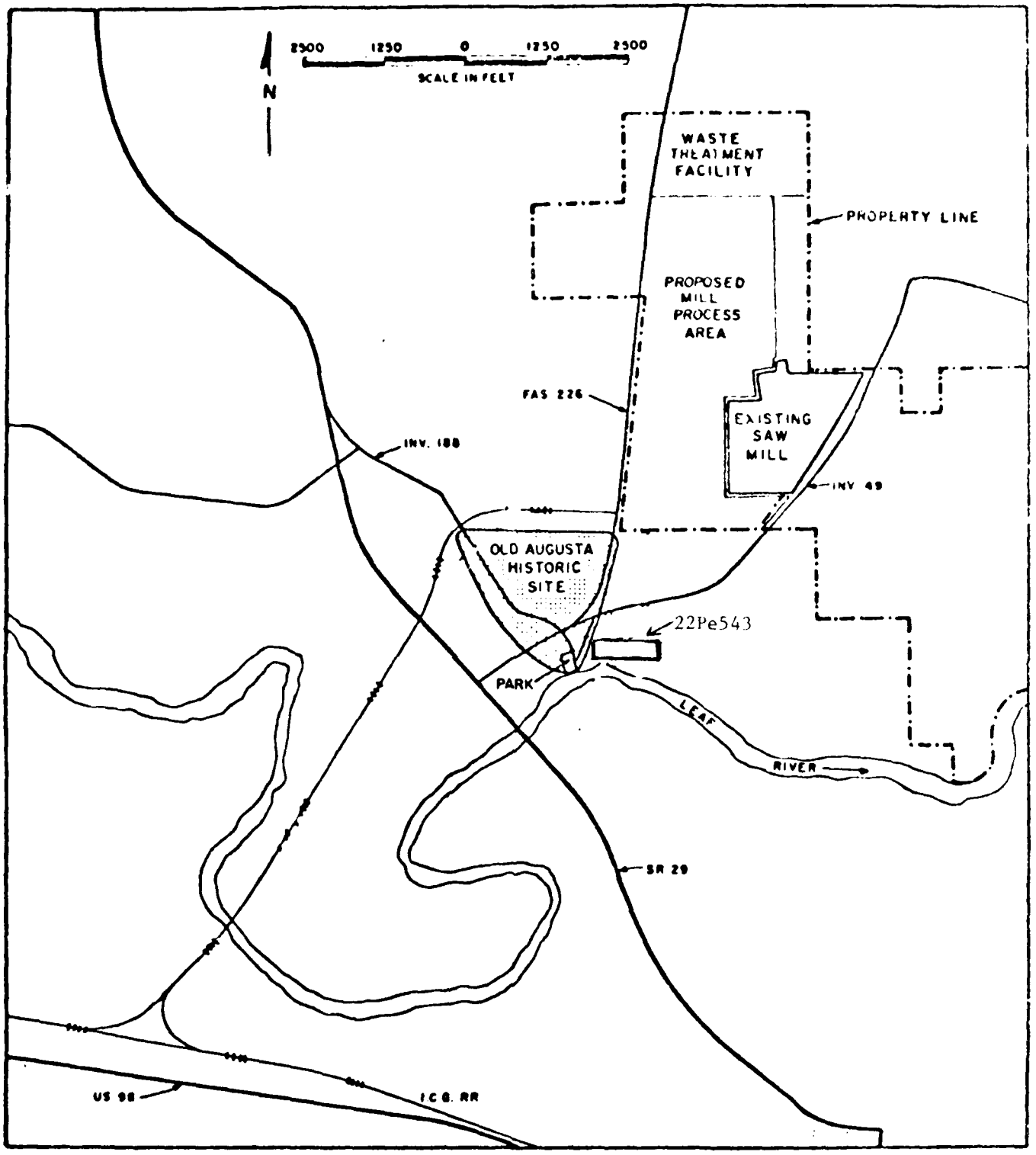

Figure 2. Sketch map of Site 22Pe543.

Following the testing program, a report was submitted to Dames & Moore which described the work Archaeological Research Associates, Inc. performed at Site 22Pe543. Based upon the findings, forms were submitted for the determination of 22Pe543's eligibility for listing with the National Register of Historic Places. The site was determined eligible for such nomination.

Because proposed construction would impact Site 22Pe543, Archaeological Research Associates, Inc. submitted a plan for mitigation of impact. The plan was accepted and excavation began in May 1982. Several weeks of intensive work at Site 22Pe543 produced material which is the basis for the following report.

RESEARCH DESIGN

At the onset of this study, little was known about the prehistory of the Pine Hills region of Mississippi. Very few sites have been reported and none of these had received professional attention. Prior to this time, only limited surveys had been conducted, and the existence of sites had been merely recorded (Padgett and Heisler 1979).

Several sites were discovered during the cultural resources survey in Perry County, Mississippi (Wright 1981). The sites date primarily from the Late Archaic Period; but a few Early and Middle Archaic artifacts were found in isolation, signifying some limited type of human utilization of this area during those periods. The Late Archaic sites were tested to determine their significance. Testing at most sites failed to reveal more than small lithic scatters. Possible explanations for this are: (1) the site(s) could have been previously destroyed, (2) inadequate search techniques were implemented or (3) the size of the site(s) was small and therefore contained limited evidence. The latter explanation seems most probable. The sites containing very restricted artifactual remains represent loci of limited activity but which are important in interpretation of the total range of Late Archaic human activity.

Site 22Pe543 is larger in area and had a much larger number of artifacts than those which were discussed above. The research design for excavation of 22Pe543 was planned with the goal of discovering some of the archaeological and, thus, behavioral benchmarks of the region. Because no previous professional work was known from Perry County and knowledge of past human activity is lacking, the work described herein was fundamentally exploratory and took place with few preconceived hypotheses which could be generated and tested.

Although the work was exploratory, the following goals were set:

(1) To determine the size of the site and ultimately to explain the variation in site size recorded during the survey.

(2) To assess the temporal placement and duration of the occupation.

(3) To determine the range of activities represented at the site.

(4) To seek information on resource utilization.

(5) To seek information on determinants of site location and compare the findings at 22Pe543 with the hypotheses of Tesar (1974), Atkinson and Blakeman (1975) and Padgett and Heisler (1979).

(6) To gather data on social organization.

(7) To analyze the lithic industry in terms of the technological and cultural processes which created it.

(8) To search for evidence of structures.

(9) To investigate intrasite and intersite relationships.

Emphasis had to be placed on developing a description of the industry of Pine Hills prehistory. In this stage of research, it is essential that data is presented that will allow comparison between materials from within this region and those found elsewhere.

ENVIRONMENTAL BACKGROUND

The Augusta Bluff site is in Perry County in southeastern Mississippi (Figure 1). This area is in the Gulf Coastal Plain Geological Province, which was formed by Mesozoic and Cenozoic Era deposits. Some portions of these deposits overlay what were formerly the Appalachian and Ouachita Mountains. The Coastal Plain was at one time a sea bottom which emerged during the Cretaceous Period of the Mesozoic Era. Although above sea level, extensive portions are marshy lands and, with only minor exceptions, lie below the 500-foot contour mark. Based on National Geodetic Vertical Datum (NGVD), elevation of the study area ranges from 80 feet to approximately 120 feet. The Leaf River is the major drainage; it converges with the Chickasawhay and flows to the Gulf through the Pascagoula River (Johnson and Gonzales 1978, Cross and Wales 1974, Dames & Moore 1981).

The topography of the Coastal Plain varies and within Mississippi it is divided into several physiographic regions. Perry County and, thus, the study area are within the region known as the Pine Hills. The Pine Hills are bordered in the north by the Jackson Prairies, in the south by the Coastal Pine Meadows, and in the west by the Loess Hills. In the east, the Pine Hills cross into Alabama. The region's surface configuration is dissected by streams, producing a rolling effect with as much as 100 feet between hill tops and stream beds. The different elevations contributed a number of different, although not particularly rich, environmental niches for exploitation by peoples dependent upon wild resources. The subsurface strata are composed of Catahoula sandstone, Hattiesburg and Pascagoula sands, and clays (all of Oligocene Period). Higher levels have Citronelle deposits (Pleistocene) of stream-laid sands and gravels. Holocene alluvium is present and also contains unconsolidated sands, gravels and clays. The gravels were important to prehistoric occupants of the area because they provided them with raw materials for their tools.

Because of the late entry of humans into the New World, it is unlikely that they could have been in the Southeast prior to the Late

Pleistocene. Therefore, other than in geological events which effected resource distribution, the interest here is in reconstructing faunal and floral communities that would have been exploited by the region's human occupants.

Late Pleistocene environments are not well understood; however, pollen analyses indicate that climatic events of the Ice Age depressed floral and faunal communities several hundred miles farther south than in the present (Whitehead 1973). In Mississippi, fauna such as mastodon, tapir and bison have been recovered, demonstrating that the Pleistocene faunal spectrum had, in addition to those species present today, some rather dramatic inclusions. Human skeletal material was associated with this Pleistocene fauna and confirms that human presence in Mississippi is an ancient one (Marshall 1973).

Following the onset of Holocene conditions, an evolution toward the modern faunal and floral communities began. The development toward modern conditions was a process which took several thousand years; therefore, during the occupation of the area by humans, different resources became available. Evidence from stream scars suggests that the period between 12,000 and 6,000 B.P. was wetter than today (Swanson et al. n.d.). On the Atlantic Coastal Plain, however, pollen analyses point to a drier climate (Watts 1971). Between 6,000 and 4,000 B.P., modern climatic conditions developed and only minor temporary variations have occurred since then. Even minor changes could affect cultural adaptations and a correlation between environment and cultural changes should be sought.

The modern climate is humid-subtropical; it is characterized by long, hot summers with cool, short winters. The average summer temperature is 81 degrees Fahrenheit with an average daily maximum around 92 degrees Fahrenheit. Winter averages 51 degrees Fahrenheit with an average daily minimum of about 39 degrees Fahrenheit. The average yearly rainfall is approximately 57 inches.

The modern flora of the Pine Hills is dominated by pine (Pinus). Historically, longleaf pine was characteristic of the uplands. Prior to the development of modern fire control techniques, slash, loblolly and shortleaf were restricted to wetter areas since they are not as fire resistant as the longleaf; but they are now typical of the uplands

(Rowland 1925, Davis and Byers 1979). The streams which drain the region provide bottom lands which support an oak-gum-cypress forest (Sternitzke 1974). These bottomland forests support a fauna which include deer, turkey and various birds. The rivers and sloughs provide fish and other aquatic resources. While deer concentrate in the bottomlands, they are also found in the uplands.

Several variations on these general environmental themes exist in the area of interest and evidence suggests that these have some temporal depth. These microenvironments certainly have had an influence on past human utilization of the area and an analysis of available resources may produce insight into prehistoric adaptive patterns.

The most extensive vegetational community on the site is the pine flatwoods. Some areas of the flatwoods are often waterlogged and have standing water. Standing water is most likely found in the spring and least likely in the fall. Due to their natural protection from fire, the wetter portions of the pine flatwoods have the potential to support a population of hardwoods and shrubs. The characteristic species is slash pine (Pinus elliotti). Understory trees include sweetbay (Magnolia virginiana), wax myrtle (Myrica cerifera) and gallberry (Ilex glabra). Ground cover in these areas include clubmoss (Lycopodium sp.), pipewort (Eriocaulon decangulare), pitcher plant (Sarracenia alata) and peat moss (Sphagnum).

The drier portions of pine flatwoods are dominated by loblolly pine (Pinus taeda). With controlled burning in recent years, a herbaceous component is well developed including: broomsedge (Andropogon sp.), three-awn grass (Aristida sp.), panic grass (Panicum), break-rush (Rhynchospora sp.). Understory trees are wax myrtle, blackjack oak (Quercus marilandica), sweetgum (Liquidambar styraciflua) and sweetbay. In the most xeric areas and more dramatically affected by fire, longleaf pine (Pinus palustris) is dominant and turkey oak (Quercus laevis) join the blackjack oak and sweetgum.

Mixed hardwood swamps are also found. These are innundated for most if not all of the year and support a rich floral community. The canopy is dominated by hickory (Carya aquatica), slash pine, sweetbay, ash

(Fraxinus caroliniana) and tupelo gum (Nyssa sylvatica). The understory includes Virginia willow (Itea virginica), red maple (Acer rubrum), gallberry, swamp titi (Cyrilla racemiflora) and vines such as poison ivy (Rhus radicans), greenbriar (Smilax sp.) and Virginia creeper (Parthenocissus quinquefolia). Thick mats of peat (Sphagum) are located in the wetter areas. On roots or hummocks of land are found sensitive fern (Onoclea sensibilis), royal fern (Osmunda regalis), and cinnamon fern (Osmunda cinnamonea).

A small area of bottomland hardwoods is also present. Common within this habitat are ash (Fraxinus americana), water oak (Quercus nigra), spruce pine (Pinus glabra), alder (Alnus serrulata), river birch (Betula nigra), mulberry (Morus rubra), silverbell (Halesia diptera) and red maple. Narrow sloughs near the river are dominated by water tupelo (Nyssa aquatica), but they also support Virginia willow (Itea virginica) and sweetbay. On the verge of these sloughs are found willow (Salix caroliniana) and cattail (Typha latifolia).

In addition to the normal habitats are those which are the results of human intervention. Although prehistoric people did not have the capacity for environmental modification which exists today, they were able to create ruderal and old field environments through burning, land clearing and building activities. Environments generated by human intervention may have been important to prehistoric occupants.

Old fields are found to support dog-fennel (Eupatorium sp.), pokeweed (Phytolacca americana), elderberry (Sambucus canadensis), greenbriar broomsedge and blackberry (Rubus sp.).

Ruderal areas support sweetgum, oak, greenbriar, blackberry, wild grape (Vitis sp.), common sumac (Rhus glabra), broomsedge, panic grass, brake fern (Pteridium aquilinium), and sedges (Cyperus sp., Fuirena squarrosa and Bulbostylis sp.) (Dames & Moore 1981).

Forty-six mammal, 221 bird, 156 reptile and 36 amphibian species have ranges which could include the area around Augusta Bluff. Dames & Moore biologists (1981) identified 12 mammal, 54 bird, 16 reptile and 5 amphibian species as actually occurring; however, many could have been overlooked and others missed due to the season of investigation. The

identified mammals include white-tailed deer (Odocoileus virginianus), swamp rabbit (Sylvilagus aquaticus), armadillo (Dasypus novemcinctus), cottontail (Sylvilagus floridanus), raccoon (Procyon lotor), spotted skunk (Spilogale putorius), gray fox (Urocyon cinereoargentus), red fox (Vulpes fulva), cotton mouse (Peromyscus gossipinus) and cotton rat (Sigmodon hispidus).

Cotton mice and swamp rabbits are commonly found in hardwood swamps while cotton rats and cottontails are found in the pine flatwoods. The other species oppossums, skunks, deer, raccoons and armadillos are found in areas of mixed habitats because they have broad subsistence requirements. Armadillos are recent arrivals to the area and would not have been important for humans of the past. Species such as Florida panther (Felix concolor coryi) and bear (Ursus americanus) were not observed but were certainly present before extensive historic occupation occurred.

A census of bird species was taken in the area. Twenty-seven species were recorded; twelve of these are restricted to swamps, 6 species are found in pine habitats and 9 are generalists which range over all habitats. Additional field observations have brought the total number of species observed to 54. Over 200 bird species could live in the site area of which 111 could be expected in the spring with the remainder found in the winter or as migrants (Dames & Moore 1981). Most important for human utilization would be wild turkey (Meleagris gallopavo), a permanent resident, and the various species of ducks and geese which would be seasonal.

The largest reptile species is the American alligator (Alligator mississippiensis). Yellow-blotched sawback turtle (Graptemys flavimaculata), slider turtle (Pseudomys concinna), and red-eared turtle (Pseudomys scripta) were observed but several others such as the alligator snapping turtle (Macroclemys temmincki) and common snapping turtle (Chelydra serpentina) range i to the area.

Thirty fish species were collected including eight species of the family Centrarchidae (Sunfish), Petromyzontidae (lamprey), Lepisosteidae (gar), Clupeidae (shad), Umbridae (mudminnow), Esocidae (pickerel), Catostomidae (sucker), Ictaluridae (catfish), Aphredoderdiae (pirate perch), Poecilidae (livebearers) and Percidae (perch) (Dames & Moore 1981).

The human activity of the last 100 years has resulted in rather monumental impact on the environment of the Pine Hills of Mississippi. Poor farming practices and clean cutting of the forests have probably been the causes of substantial silting of the drainage system as well as reduction in fertility and productivity of the area due to erosion of topsoil. There is, however, in the modern floral and faunal communities a pale reflection of resources that were available since post Pleistocene environmental stabilization. It is therefore instructive to view what is known about prehistoric exploitation patterns from other sites and compare those with the resources available for exploitation at Augusta Bluff. Unfortunately, no data on local subsistence is available, but some has been recovered from adjacent areas.

The Middle Archaic midden at Denton, Quitman County, Mississippi, contained large quantities of minute burned bone, most of which was too small for identification. The only designation possible was that some of it was mammalian; no bird, reptile or fish species was identified. Floral materials were also excavated although no flotation was attempted. Fragments of hickory nut (Carya sp.), black walnut (Juglans vigra), persimmon (Diospyros virginiana), acorn (Quercus) and butternut (Juglans cinera) were identified. These are sylvan products which are available in the fall of the year but have storage potential. Species such as black walnut and butternut are not found in the vicinity of the site so they were either brought or traded in from areas at least 14 miles east of the site (Connaway, Brookes and McGahey 1977).

The Boyd Site in Tunica County, Mississippi, has returned additional information on past resources exploitation from the Woodland Period (Olsen 1971). Although not from the same culture period as Augusta Bluff, the data is probably instructive for the Late Archaic because southeastern culture history is primarily one where new cultural traits were added to older patterns. Replacement of one pattern by another did not generally occur.

The Boyd Site produced 2,774 bones which could be identified from a total of 20,285 (Olsen 1971). Of these, over 2,017 were fish bones; gar (Lepisosteus sp.), bowfin (Amia calva) and catfish (Icatalurus sp.) were most common. Most of the fishes represented were individuals of

less than one pound, but a few came from fish that could have weighed as much as forty pounds. Fish, therefore, could have played an important part in prehistoric diets at certain sites.

Deer were probably the most important source of animal protein used by the inhabitants of the Boyd Site. The 431 identified deer bones come from a minimum of twelve individuals. Other large animals whose remains were discovered include elk (Cervus canadensis), mountain lion (Felis concolor), bobcat (Lynx rufus), beaver (Castor canadensis) and dog (Canis familiaris); but because they were represented by only one individual, their importance is uncertain. Following deer in number of occurrences were white-footed mouse (Peromyscus sp.), raccoon (Procyon lotor) and oppossum (Didelphis marsupialis). To interpret the importance of these is difficult since the minimum number of individuals in each case was two. Other small mammals included Eastern cottontail (Sylvilagus floridanus), squirrels (Sciurus sp.), Eastern chipmunk (Tamias striatus), striped skunk (Mephitis mephitis), and cotton rat (Sigmodon hispidus). Mammals constituted fourteen percent of the identified bone. Mammals of European origin were included in the collection, suggesting that some of the sample is contaminated.

Birds apparently did not constitute a large food source despite the site's location on the Mississippi flyway. This could be due to the seasons of occupation, cultural rules which excluded them from the diet, or the belief that the return from birds was not worth the effort. Most bones were identified as wing bones or backbones, and Olsen (1971) suggests that this may signal a use of the bird for the feathers rather than as a food source. Wild turkey (Meleagris gallopavo) was also present; this represents a good protein source but only one individual was positively identified.

Reptiles and amphibians were also found including cooter (Pseudomys sp.), the most common; mud turtle (Kinosternon sp.); and musk turtle (Sternotherus sp.). These were probably food sources but only 11 individuals were positively identified. Traces of amphibians and mollusks were found.

Olsen (1971) concludes that fish were the most important food source; however, this conclusion may be based on total number of bones rather than other considerations. Second in importance were the mammals, especially white-tailed deer. There were indications of change through time with fishing encroaching on hunting of mammals.

At Teoc Creek, a Poverty Point site in Carroll County, Mississippi, evidence of plant utilization was found. No identifiable animal bone was recovered; however, fragments of hickory nut, walnut, persimmon and acorn were found (Connaway, McGahey and Webb 1977).

Knowledge of resources utilized by prehistoric occupants elsewhere in Mississippi and the flora and fauna which occur within the region of the site may be useful in understanding past human subsistence strategies as well as suggest a season for the occupation. The cachement areas of Augusta Bluff include many floral and faunal resources that are known to have been used by prehistoric peoples; however, it is likely that the concept of operational environment differs dramatically between those who lived there and those who would reconstruct exploitive patterns.

Hickory nuts and acorns, two of the five nut species reported from Mississippi archaeological sites, are present in some quantities in the vicinity of Augusta Bluff. Also available are species which have obvious food value but have not been reported archaeologically including wild grape, various berries, pokeweed, tupelo gum, silver bell, sumac and perhaps greenbriar (Gibson 1970).

Excavations have produced evidence of use of deer, elk, lion, bobcat, beaver, dog, white-footed mouse, raccoon, oppossum, swamp and cottontail rabbit and skunk. All of these occur or have occurred in the area around Augusta Bluff. All birds which have been identified in archaeological sites occur around the site.

At the Boyd Site, fish have proven to have been an important source of protein. The Leaf River sloughs and tributaries offer a potential resource to those who occupy the region. At Boyd, gar, bowfin and catfish were perhaps the most important resources. Gar, catfish as well as several other species previously mentioned are available in quantities from the Leaf River. These are thought to have been an important food resource to

earlier as well as modern inhabitants of the region. In addition to fish, alligators, frogs and turtles could be captured in or near the riverine environment.

There is a wide range but not a very high density of floral and faunal species available at Augusta Bluff. Most floral species would be readily available in the spring and fall. Except the nuts and acorns which are abundant in the fall, no one species is especially productive at any time. Fish and mammals would be available all seasons but fall is the most productive time for hunting deer.

Fish is expected to be the most productive protein source followed by deer. Hickory nuts and acorns would be important plant resources. Occupation could occur at any time of the year, but fall is the most probable time. Whenever the occupation, strategies would be expected to be rather catholic.

DATA RECOVERY

Site 22Pe543 is on a bluff adjacent to the Leaf River. During the surface survey, stone tools and by-products of their manufacture were found over an area of approximately 9 hectares; their distribution is used to define the site boundaries (Figure 2). The southern boundary of the artifact scatter is the Leaf River, while the eastern boundary is a natural drainage leading to the Leaf River. The northern boundary is defined as a line which runs east-west two hundred meters north of the Leaf River and continues from the eastern boundary to the western edge of the survey zone.

Planned construction which would impact the site consisted of intake and outfall structures on the bank of the Leaf River and pipelines which connect them to the main plant. A survey of the pipeline alignments and intake and outfall structures by Michael Baker, Jr., Incorporated delineated the areas where construction would occur and, therefore, where Archaeological Research Associates, Inc. would excavate to mitigate the impact (Figure 3). The impact zone was considered to be approximately 8 meters on each side of the pipeline and an area approximately 60 meters in diameter from the center of the intake and outfall structures. Full-time excavation of Site 22Pe543 began on May 28, 1982, and terminated on June 29, 1982.

According to the mitigation plan (Wright 1981), goals of this work included the horizontal excavation of areas where tests indicated the possible existence of features and random placement of test units to determine the horizontal extent of the site. During the test excavations made in 1981 (Wright 1981), a post mold was discovered. This feature was within the area to be impacted by the intake structure, and further investigations in its vicinity were considered necessary. The first endeavor of the excavation was to pursue more data in the vicinity of the post mold. This was designated Locality 1.

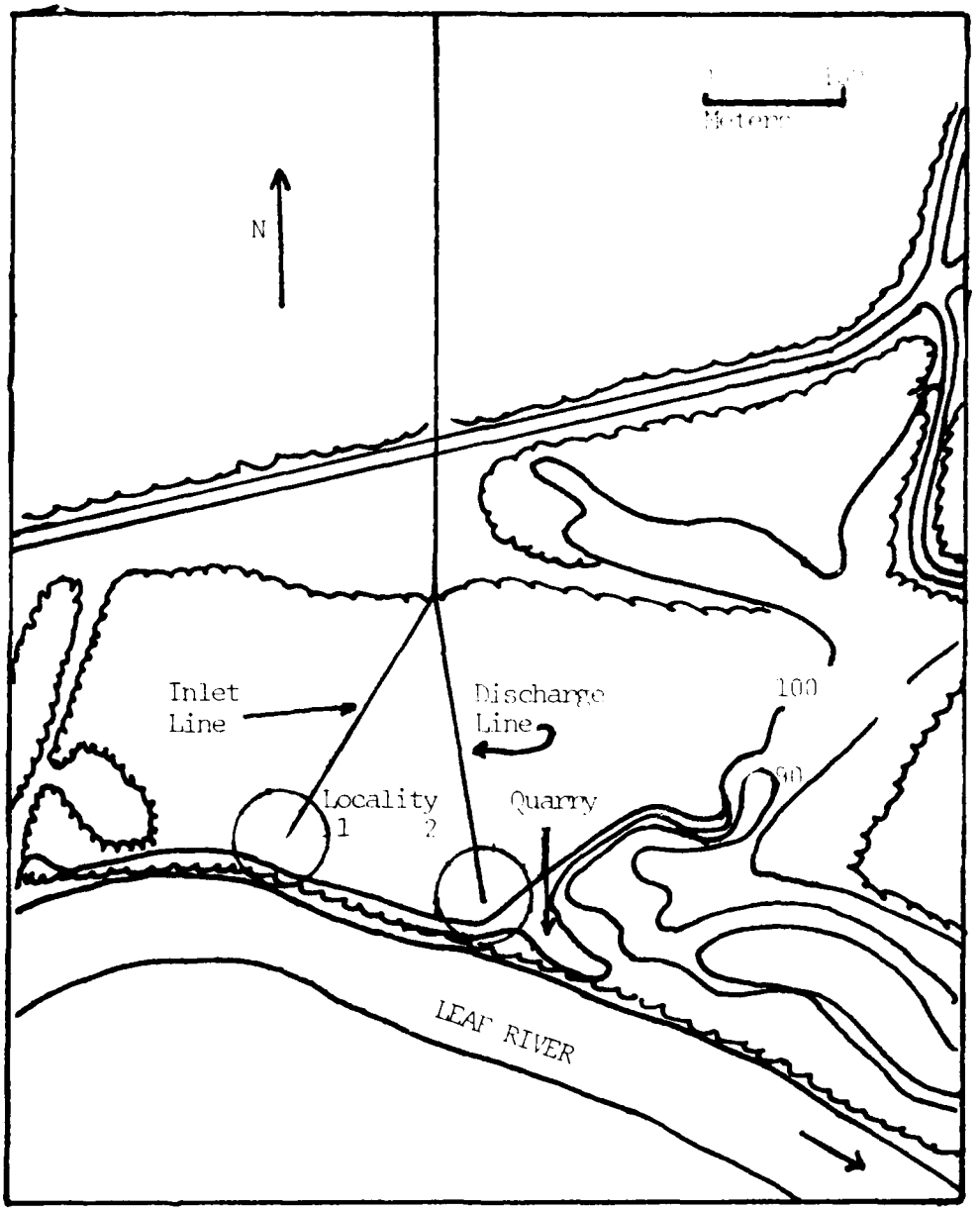

Figure 3. Map of site and impact zone.

A grid system was established utilizing the center point of the intake structure as a control axis and the compass points for orientation. Each grid section was two meters square. These two-meter grid units were the units of excavation. Each excavation unit was designated according to its distance from the datum point. The corner utilized was that which was nearest the datum point. A bench mark, based on elevation determined by the National Geodetic Vertical Datum (NGVD), was also established. The bench mark was 32.90 meters (108') above M.S.L. and the elevation of the site itself was approximately 32 meters (105') above sea level. The elevation of each corner of the square was recorded prior to actual excavation. All excavated material was sifted through one-quarter inch hardware cloth.

During the survey and testing program (Wright 1981), artifacts had been recovered on the surface and to a depth of 70 centimeters. Because some evidence of stratigraphy had been observed, one task of the excavation was to investigate the stratigraphy of the site to determine the relationships of the various components. This attempt was not particularly productive; although care was taken to discover natural stratigraphic units that would be significant for interpretation of the prehistoric occupation of the site, none were found. Considering the extremely sandy soil and consequent leaching, this lack of significant discernible culturally-induced soil change is not surprising. Typical of the entire site was a profile that reflects natural soil horizons and events primarily from the Historic Period. A plow zone extended to a depth of approximately 30 centimeters from the surface. This disturbed soil was rather mottled in appearance, reflecting a mixture of humic and nonhumic layers. The upper 10 or less centimeters of the profile had a light stain that represents newly developing humic deposits. A typical profile is shown in Plate 1.

The absence of significant variation in the stratigraphy resulted in an excavation which depended on arbitrary levels. The arbitrary excavation units were 10 centimeters; however, when any evidence of soil change within a single level existed, artifacts were bagged separately.

Plate I. Typical Profile. Note burned tree root in northern half.

Although a natural stratigraphic separation of cultural events was absent, the approximate level of a prehistoric living floor could be determined. One definite and several possible hearths were found between 20 and 30 centimeters below the modern surface; their presence at this depth suggests that at least one living floor was at this level. The possible hearth or hearths represented by fire-hardened clay fragments which were in the upper portion of this level had been damaged by plows and perhaps had been brought to a higher level by plow action. The soil which covers this ancient living floor was almost certainly deposited during flooding of the Leaf River. The land on which the site is located is well under the fifty-year flood level at 33.53 meters (110.2') above M.S.L. (Dames & Moore 1981). Such flooding is adequate explanation for these minor overlaying deposits.

Vertical variation in prehistoric artifact types seems nonexistent. The same type of projectile points was found from the ground's surface to the deepest levels of the excavation. This distribution and the concentration of one type, the Pontchartrain, have led to the conviction that occupation at 22Pe543 was relatively restricted in time. Earlier in the site's history, artifacts probably had a much more restricted vertical distribution. The present distribution has several explanations. Plows have in the past churned the upper 30 centimeters of the site, displacing prehistoric material and bringing historic material downward. Tree roots exceeding one meter in depth have opened paths through which artifacts could move (Plate I). Even earthworm activity could have opened channels through which small artifacts could be displaced downward. A live turtle was found in its burrow at a depth of 35 centimeters, which further suggests another possible avenue of migration.

Interesting to note is that while most historic artifacts were recovered from the upper 30 centimeters, some were as low as 50 centimeters below the surface. This ambulation of items to a depth of one-half meter has occurred within the last 175 years. If one extrapolates from known migration in 175 years to what could be expected in a period of 3,000 to 4,000 years, the downward movement of artifacts to the depths seen is not at all surprising.

The lower limit of the excavation units was determined by artifact recovery, time and perceived importance. When a pit became unproductive, it was abandoned. Toward the end of the digging season, some areas containing features such as hearths were found. This discovery led to abandonment of some other pits prior to total excavation in an attempt to learn more about hearths.

Excavation was performed in an area adjacent to Locality 1 in an attempt to increase our knowledge of Site 22Pe543. The second excavation area, Locality 2, was opened at the location of the outfall structure approximately 151 meters (496') due east of Locality 1 (Figure 3). Locality 2 proved to be much less productive than Locality 1. Only 326 artifacts were recovered from the excavation there, although a total of 16 square meters were opened. A different soil type was characteristic of Locality 2, and the ground was much harder. So few artifacts were recovered that excavation was not carried below 30 centimeters. In one case, however, a deep sounding was made to determine if older occupations underlay the upper one. No earlier culture-bearing layers were found.

In an effort to discover the areal extent of the site, 12 square meters were opened along the pipeline alignments. According to the research design, these excavation units were randomly chosen (Addendum I). These proved unproductive; consultation with the Corps of Engineers led to the decision to abandon that search strategy and concentrate on the horizontal excavation in Locality 1.

As implied above, Locality 1 received the most attention during excavation. A total of 148 square meters were excavated (Figure 4). In conjunction with excavation, there are other data recovery techniques that can enhance knowledge of the past. Pollen analysis, flotation and water screening with 297 microns screen mesh were attempted to aid in gathering information on the site.

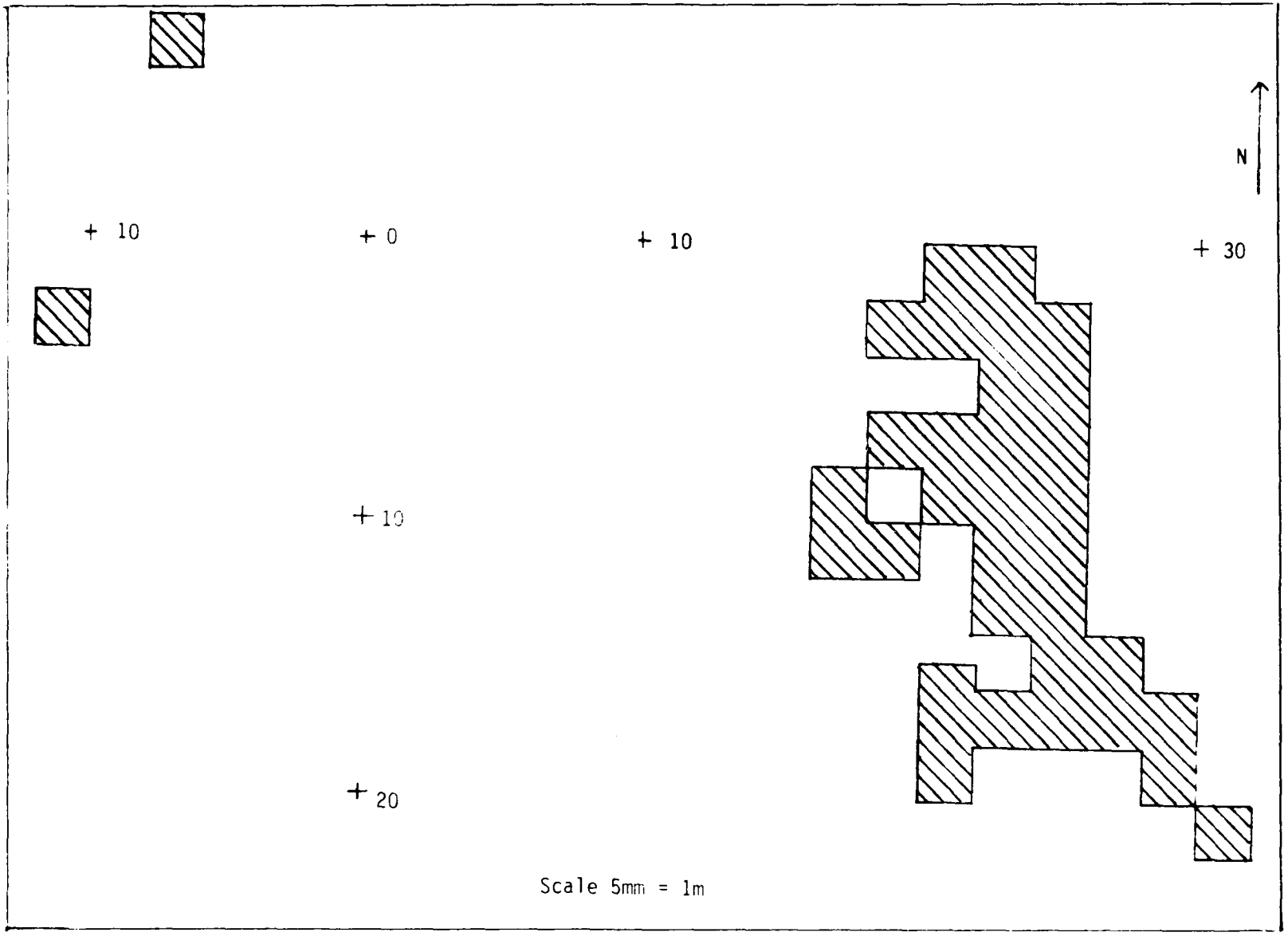

Figure 4. Map showing contiguous excavation in Locality 1.

PREHISTORY

The prehistory of the region has been covered by Wright (1981) and this discussion is repeated here. Few archaeological investigations have been performed in the Pine Hills; therefore, any reconstruction of culture history must rely on extrapolations based on data obtained from surrounding areas. At a high level of abstraction such extrapolations are relatively safe because throughout the prehistoric periods, the southeastern United States appears to have supported cultures which share underlying traits. However, the application of general knowledge to specific areas is somewhat more tenuous since tremendous variations in the recombination of underlying traits are readily apparent when local data is available.

Generally, Southeastern culture history is divided into Paleo-Indian, Archaic, Woodland, and Mississippi Periods. The possibility of a pre-projectile point period preceding the Paleo-Indian remains controversial. Tools which typologically could represent a pre-projectile point stage are known in the Southeast; however, their temporal placement is uncertain. The culture periods and their local manifestations are represented in Table I.

The Paleo-Indian Period is commonly recognized by the occurrence of a readily-identifiable tool kit. This tool kit is interpreted as one which reflects an interest in exploiting now extinct Pleistocene megafauna. The most typical of these tools are points which generally are fluted on one or both sides. In the Southeast, these tools are usually found out of cultural context; and, therefore, little firm data on this period exists. However, in 1846 near Natchez, a fragmented human pelvis was discovered in association with Pleistocene fauna (Marshall 1973); and fluted points have been found in several areas of Mississippi (Penman 1980, Padgett and Heisler 1979).

The Paleo-Indian Period is succeeded by the Archaic. The Archaic Period is generally interpreted as one during which a dependence on large

TABLE I

A SOUTHEASTERN CULTURE SEQUENCE WITH REGIONAL VARIATION

SOUTHEAST			LOWER MISSISSIPPI VALLEY	SUBSISTENCE BASE
Historic	Present to European Contact	1800	Natchez-Bayou Goula	Industrialization European agriculture
		1400	Plaquemine	
Mississippian	European Contact to 900 A.D.	1000		Horticulture supplemented by hunting and gathering
		800	Coles Creek	
		600		
		400	Baytown	
Woodland	900 A.D. to 1000 B.C.	200	Marksville	Hunting and gathering, perhaps supplemented by horticulture
		0		
		200	Tchula	
		400		
		600	Poverty Point	
Archaic	1000 B.C. to 8000 B.C.	800		Hunting and gathering of wild plants and animals
		1000		
Paleo-Indian	8000 B.C. to ?			Hunting now extinct mammalian fauna

herd animals changed to the pursuit of small, relatively solitary game. Accompanying the interest in small game is an orientation toward the collection of wild plant foods. The beginning of this adaptation is related to the disappearance of the Paleo-Indian one; but not until sites are found in dateable contexts can temporal placement be precise. Based on evidence from other areas, the transition must have occurred between 8,000 B.C. and 6,000 B.C.

According to Padgett and Heisler (1979), Early, Middle, and Late Archaic sites are known from the Leaf River. These sites have not received professional attention and, for now, we only know of their existence.

The adaptive strategies of the Archaic provided a base which was to be retained until European contact. Even the Mississippian only added domesticates to the hunting and gathering way of life; it did not completely replace it.

The potential of the Archaic is seen in the Poverty Point cultural development which includes ceremonial centers, mound building on a large scale, and stratified societies. The Poverty Point culture reached its peak development on Bayou Macon in northeastern Louisiana; however, it spread thoughout the Lower Valley (Webb 1977, Gibson 1974 a & b). No Poverty Point sites are known from the middle Leaf River (Padgett and Heisler 1979).

In much of the Southeast, the first appearance of pottery in the archaeological record is used as the transitional marker from Archaic to Formative or Woodland culture. In some parts of southeast Georgia and South Carolina, a fiber-tempered ceramic is included within the Archaic complex. In general, research into Early Woodland sites has revealed that the appearance of pottery did not reflect changes in other aspects of cultural systems.

The earliest Woodland culture is known as Tchula in the Lower Valley. Sand-tempered ceramics representative of this period have been reported from the middle Leaf River (Padgett and Heisler 1979). The cultures succeeding Tchula, such as Marksville, reflect Hopewellian influences in artifact types. Marksville ceramics have been found in the area of the middle Leaf River.

During the ninth century A.D., new cultural traits were developing which would in some areas displace indigenous developments and in others have strong influences on subsistence and social structure. Intensive maize agriculture was present, and this new food resource was reflected in more complex social structure, mound building and palisaded villages. Little is known about local Mississippian occupation except that sherds typical of the period occur.

HISTORY

The Coastal Plain of Mississippi, where the site is located, has flown the flags of five nations and was often a source of contention betweeen the different claimants. In 1512 Spain claimed the land, although it was already occupied by indigenous peoples of various cultural and political groups. The Spanish title was little more than a declaration and after DeSoto's 1540 expedition, few Europeans passed through Mississippi until the last part of the seventeenth century. The French dominion and the first major European interaction in the area began in 1699 when Robert Cavelier, Sieur de LaSalle established Fort Maurepas near Ocean Springs. By the early 1700's, the French had established settlements at Mobile, Pascagoula, New Orleans and Natchez. From 1763 to 1799, parts of Mississippi were incorporated into the British colony of West Florida. A second but short-lived period of Spanish dominion of Mississippi began in 1797 when they occupied Natchez. The occupation ended in 1798 when the obligations of the 1795 Treaty of San Lorenzo were realized (Gonzales 1974).

Mississippi had a large diverse Indian population which, by the eighteenth century, was dominated by the Chickasaws, Choctaws and Natchez. In 1731 the French, with help from their Indian allies, virtually eliminated the Natchez. For the next century, the Chickasaws and Choctaws controlled the region (Gonzales 1974).

By 1798, land disputes between Spain, France, England and the United States had been largely reconciled and on April 7, 1798, the United States Congress created the Mississippi Territory (Wacaster 1972). Settlement of the ownership conflicts was made with the Louisiana Purchase and concommitantly opened the way for further development. A land boom ensued and the first Europeans probably began to settle in the area of interest or at least in its periphery by way of the Ohio and Mississippi Rivers, the Natchez Trace and Gulf of Mexico. In 1805 the

Choctaws signed the Treaty of Mount Dexter which gave a large area of land, including where the site is located, to the United States. As early as 1806, settlers following the Pascagoula and Leaf Rivers probably entered the new territory; but it was not officially opened for settlement until 1809. In 1812 a Government Land Office was opened in "Old" Augusta and it is reported that three houses had already been built on the north bank of the Leaf River, which served as the nucleus of Augusta. This cluster of houses was called "Three Smokes" by the Choctaws. Apparently these early houses were made of hand-hewn split logs, which were often covered with boards rived by hand. Architecturally described as dog-trot houses, these dwellings included two single pens separated by a covered passageway. Kitchens were often separate buildings and cooking was done in a fireplace. The fireplaces were made of sticks and clay (Wacaster 1972, Newton 1971).

Perry County was formed in 1820; and by that time, 2,034 people were already living in the area: 1,539 whites, 491 Negro slaves and 7 Negro freedmen (Wacaster 1972).

The period from 1809 until the mid-1820's was a high point in Perry County history. The South, in general, was experiencing a cotton boom. The need for additional land brought settlers to Augusta, where the Land Office was located. Unfortunately, the land in Perry County was not as productive as it was in some other areas and plantations were difficult to establish in the piney woods; therefore, the local planters did not reach their expectations.

The Treaties of Doaks Stand in 1820 and Dancing Rabbit Creek in 1830 brought additional territorial concessions from the Choctaws; more productive lands beyond the pine belt were open for white settlement (Heisler and Wells 1980). This new land offered better opportunities for farmers and plantation owners during the 1830's and this fact is reflected in a drop of the population in Perry County from 2,300 (1,465 whites, 820 slaves and 15 freedmen) to 1,889 in 1840 (1,425 whites, 454 slaves and 10 freedmen) (Wacaster 1972).

By 1850 the new land was heavily populated and settlers who arrived late or were forced away began to resettle in Perry County. Population growth continued until 1860, when the number reached 2,606 inhabitants (1,858 whites, 738 slaves and 10 freedmen) (Wacaster 1972).

The Civil War took its toll in materials and men from Perry County. Brigadier General John Davidson of the U. S. Army led an expedition from Baton Rouge to destroy the Mobile and Ohio Railroads. Although little actual battle occurred, the main body of this force passed through Augusta. The Union soldiers took whatever they wanted, which brought relatively hard times to the area (Wacaster 1972).

Because Perry County and Augusta had not been heavily committed to slavery and cotton production, the Civil War did not have the same dramatic effect here as elsewhere in the South. Reconstruction was also less strenuous and the inhabitants of Perry County merely reverted to their frontier strategy, self sufficient and living on small farms.

As the effects of war and reconstruction waned, the Perry County economy emerged from its subsistence level. Cotton became the dominant crop and sharecropping became an important aspect of its production.

In 1881 the Southern Railroad was built from New Orleans into Mississippi. As it passed through virgin pine forests, saw mills followed to exploit this natural resource. The lumber industry brought a new population boom to the area and such towns as Hattiesburg in what was then Perry County and Laurel in Jones County were founded (Wacaster 1972).

The building of the railroad brought economic difficulties to the town of Augusta since the track was located two miles south of it. In 1904, the town and county offices moved from the north bank of the Leaf River to the present location of New Augusta (Wacaster 1972). Since this time, "Old" Augusta has not been a population center. Only farmers, hunters or persons involved in recreational activities along the river and its banks have passed through the area that was once a town.

Interpretative Model

The prehistoric component of Site 22Pe543 is limited almost exclusively to lithic material. The exceptions to this are the amorphous burned or baked clay objects found in several squares, one piece of aboriginal ceramic and the carbon samples which were taken for dating purposes. The analysis of the lithic material was designed to achieve several objectives. A major objective was to place the site within a temporal cultural context that would explain to some extent the relationship of these materials to the physical and cultural environment in which they were created. Underlying and contributing to this objective were several subsidiary ones. These goals include explanations of the functional, spatial and structural relationships of these materials (Goodyear et al. 1979).

Prior to the discussion of the above objectives, a brief explanation of each is necessary. A functional interpretation attempts to determine what tasks the various items from the site were designed to perform. An example of this type of interpretation can be offered for the tools typed as projectile points. Projectile points are generally assumed to be for arming projectiles such as arrows and dart or spear shafts; therefore, the presence of projectile points at a site leads to the functional assumption that among the tasks performed were their manufacture, repair or use.

Spatial analysis attempts to discover significant horizontal variation in artifact types. Spatial analysis may include data derived from a functional analysis, or it may rely on variation in form alone. At most archaeological sites more than one task was performed. Even at a site that is devoted to a single major activity, there will generally be evidence of subsets of activities which contributes to the successful completion of the overall task. The variation in tasks or subsets of

tasks can be determined through an analysis of the distribution and variation of artifacts through space. An example would be the presence of drills in one area of a site and scrapers in another. Even without knowing which tasks are represented, one could determine that different activities occurred. Another aspect of spatial analysis is seen in the relationship between site location and variables such as environment and culture.

Finally, any knowledge gained from functional and spatial analyses is helpful in the interpretation of structure. Structure refers to the covariance of artifact classes or sites and environmental features. In the area of interest, more site investigation will be required before covariation between sites within the region can be interpreted.

One aspect of the operational means of obtaining these goals was to perform a typological analysis of artifacts recovered. This typological analysis was not limited to identification of specific artifact types; rather, it was an analysis of the process of stone tool manufacture. In most typological analyses, one is concentrating on the end-product of a manufacturing process; but here, the objective is to confront the full range of stone tool production as well as the relationship of the production process and end-product to human behavior.

Several schemes which handle artifacts in a processual way have been developed. The one used here is a modification of that designed by Wright (1976 and 1980). Tool manufacture is treated as an ongoing process, but as if it was composed of discrete stages. Each stage has identifiable byproducts and sometimes discernible behavioral correlates. A schematic representation is seen in Figure 5 and is explained below.

The selection and procurement of raw materials, unlike the other stages, cannot be identified from byproducts. Recognition of this stage is based on analysis of the physical properties of the raw materials. These materials can be traced to their sources by survey and comparison and by trace element analysis. Sources and methods of procurement are important to the archaeologist because they can provide information on trade routes, seasonal movements, and the general availability of raw materials within the vicinity of the site.

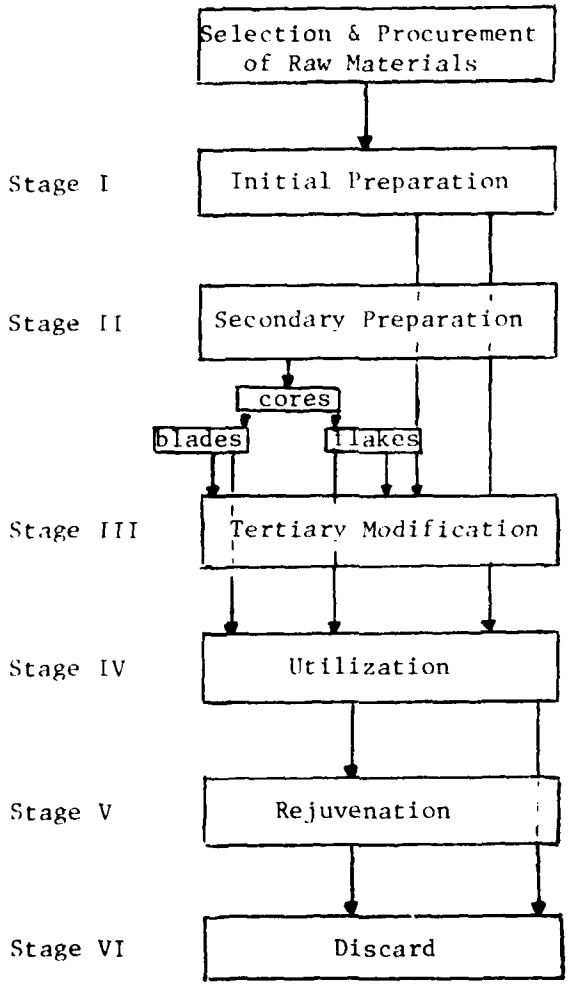

Figure 5. Generalized model for the production of chipped stone tools.

Initial preparation, Stage I, is identified in the archaeological record by the presence of relatively large flakes and a substantial number of cortical or primary flakes. Both large and primary flakes are the results of attempts to reduce cumbersome pieces to manageable sizes and to establish platforms for further work. Products of initial preparation are not independent of the desired output of later stages; therefore, an understanding of byproducts reveals information regarding stages of the production process. Since the edge of any cryptocrystalline material can be sharp, some of the products of this stage can be utilized directly without further modification.

Stage II, secondary preparation, involves the removal of flakes to produce either preforms or cores capable of delivering a flake or blade possessing specific qualities. Byproducts of this stage are sometimes difficult to differentiate from the earlier stage, but usually can be identified by smaller size and fewer pieces with cortex or smaller areas of each flake exhibiting cortex.

Tertiary modification may be divided into two categories. In one category, the products of earlier stages of production are modified into their final forms as usable tools. Finished products of this manufacturing stage may be poorly represented at a particular site, since they may have been used, resharpened, and then discarded at another site devoted to specialized activity. A second category of tertiary modification includes flakes which are altered to establish a working edge; and at Augusta Bluff, it was generally without changing the general shape of the parent flake. Flakes produced in this stage are smaller than those from earlier stages. Broken or poorly formed, incomplete tools that reflect human error or structural flaws are also representative of this level of preparation.

The utilization stage, Stage IV, is not part of the manufacturing process, but is the objective of all earlier stages. The archaeological evidence for utilization appears on the tools themselves in the form of wear patterns. Utilization will be discussed in conjunction with each category of utilized object.

Stage V, rejuvenation, occurs when tools become dull through use and are resharpened. Only tools which retain suitable edges can be rejuvenated.

This stage is reflected in the archaeological record by flakes which were previously parts of working edges of tools, and are identifiable by the evidence of wear on their surfaces.

All tools eventually become lost, worn out, or broken, and thus enter the archaeological record. Specific discard areas, such as trash pits, may exist, or discard may occur in the immediate vicinity of manufacture or utilization. The horizontal distribution of the discard class may give information about activity areas within a site. In addition, the co-occurrence of particular tool types may give evidence of the site function.

Typological Categories

In order to utilize the interpretive model, the processual typology developed by Wright (1977) was slightly modified to more accurately reflect 22Pe543. Tools include bifaces, projectile points, drills, worked flakes and utilized flakes. Pebbles, the primary source of raw material, are categorized according to the degrees of modification, including unmodified, shattered, fire-fractured and tested pebbles as well as cores. The flake category includes primary, secondary and bifacial thinning flakes, shatter, rejuvenation and fire-fractured pieces.

No interpretative variation in vertical distribution of artifacts was discovered. As discussed above, cultural and noncultural activities have resulted in the vertical movement of artifacts throughout the site, thus obscuring any variation in quantities or types of cultural materials. The vertical provenance is therefore not presented although it was recorded during laboratory analysis. Horizontal disturbance is believed to be less severe than vertical disturbance. The horizontal provenance and quantities of artifacts by excavation unit are shown for comparative purposes in Table II. A brief explanation of each category follows.

Biface. This group of objects is characterized by bifacial working on one or more, but usually on all, margins. Several possible explanations for bifaces exist. In some instances bifaces may be finished tools such as axes and adzes; in other cases, they may occur in early stages of the manufacturing process of projectile points or hafted bifaces.

EXCAVATION UNIT	Biface	Projectile Point	Drill	Worked Flake	Utilized Flake	Core	Unmodified Pebble	Shattered Pebble	Fire-fractured Pebble	Tested Pebble	Flake Preparatory	Primary	Secondary	Bifacial Thinning	Shatter	Rejuvenation	Fire-fractured	Tallahata Quartzite Bifacial Thinning	Petrified Wood	Unidentified Bone	Aboriginal Ceramic	TOTAL
16E 8S	5	1		1	3	1		25	3	7	9	112	107	205	39	1	19					538
16E 10S	3	1		1	3	3		14	2	8	2	61	49	124	29		11					311
18E 2S	1			3	2			3	2	1		24	47	105	3		4					195
18E 6S	7	1			4	4		17	6	3	4	79	57	189	30		15	1				417
18E 10S												9	4	20	2		2					37
20E 0S		3		1	2			1	1			17	12	73	13		4	1				128
20E 2S	6			4	4	2	1			1	1	50	41	119	31		5					265
20E 6S	6	2		2	3	7	1	14	6	3	4	87	74	180	57		46					492
20E 8S	6	1	1		1	1	1	9	4	4		80	97	307	20		18	3				553
20E 15S					1		7	2	1	4		8	12	24	5		1	3				68
20E 16S	1	2			4	3	7	3				59	91	222	28		21	2				443
20E 18S	7	1			4	3	4	2	3			54	61	197	11		17	1				365
22E 0S	2	1			4	2		2				22	33	75	11		5	1				158
22E 2S	5	2		3	1	3		2	2		2	52	58	191	11		4	7				343
22E 4S	7	7	1	6	3	3	1	3	3	3		92	85	193	116	1	12	23				559
22E 6S	5	2		2	4	2		4		1		89	65	231	40		14					289
22E 8S	4	2		2	7	9	1	10	2	8	6	100	140	305	47	1	9	7				663
22E 10S	4	1		1	2	7		7	3	14	2	56	40	178	16	1	13					345
22E 12S	7			2	3	10		7	5	9	4	88	71	235	74	2						51
22E 16S	13	3		2	17	1		10	5	11		151	188	340	100			3				843
24E 2S	6		1			2		22	2	1	2	35	61	204	15	1	10	4	1			367
24E 4S	9	3		3		6	3	6		9	2	77	67	186	40		20			1		432
24E 6S	4	1			6	1		2	2			40	66	170	9		7	7				315
24E 8S	5	1		3	4	1	1	4	1	3		76	95	250	26		15	2	1			488

(Continued on next page)

TABLE 11. PREHISTORIC ARTIFACTS BY PROVENANCE

EXCAVATION UNIT	Biface	Projectile Point	Drill	Worked Flake	Utilized Flake	Core	Unmodified Pebble	Shattered Pebble	Fire-fractured Pebble	Tested Pebble	Flake	Preparatory	Primary	Secondary	Bifacial Thinning	Shatter	Rejuvenation	Fire-fractured	Tallahata Quartzite Bifacial Thinning	Petrified Wood	Unidentified Bone	Aboriginal Ceramic	TOTAL
24E 10S	4	5			2	1	1	2	1	13			64	69	219	10		15	4				410
24E 12S	3	2			1			2	2	1		1	58	69	165	21		20					345
24E 14S	8	1	1	5	3			13	9	5		1	120	146	294	72	2	28					708
24E 16S	10	4		1	13	2		12	6	1		6	183	167	603	39		43	1			1	1,092
26E 14S	1	1			6	1		13	5	5			57	43	160	15	1	6					314
26E 16S	8	5		4	10	1		17	11	11		8	223	240	647	169		94	2	4			1,454
28E 16S	5				3			2	2	4		1	47	73	161	12		24	2	1			337
28E 18S	3	2			1			2	3	2		1	58	50	161	18		6					307
6N 6W							1						1		1			2					5
14N 10E													3	2	9			4		1			19
18N 10W										1			2	3	2								8
10W 2S	1									1			3	5	12	1		1					24
30E 20S	1				2			1		2			10	13	41	2		6					78
Locality 2																							
4S 0W						1		1					9	8	27	2		7					55
4N 0E	3												7	6	16			1					33
12W 0N	1			2					3	2			10	9	15			12					54
16W 4S	1	1		1	1			1	1				6	7	34	19	8	5		1			86
TOTAL	162	56	4	49	124	77	29	235	96	138	56		2,379	2,561	6,890	1,153	18	546	74	9	1	1	14,658

TABLE II cont'd.

Projectile point. Projectile points are one of the largest categories of tools recovered at 22Pe543. Having received more attention during manufacture than other tool types, projectile points are bifacially worked with hafts and exhibit well-formed edges, general symmetry and regular thickness. These tools may have functioned as armatures for missles, although this has not been determined except in the case of various small points (Goodyear et al. 1979). Some certainly were used as missile tips but others could have functioned as knives or other tools.

Drills. Drills are bifacially worked pieces that have a long, narrow and relatively thick bit. Assumed to have been used for production of holes in other objects, they are tools utilized in the manufacture of other tools.

Worked flake. Worked flakes are tools which have been unifacially modified along one or more margins to produce a working edge. Generally, no attempt has been made to modify the shape of the flake.

Utilized flake. These flakes exhibit edge damage or modification resulting from usage. Utilized flakes have no evidence of intentional edge alteration.

Core. Cores are pebbles which have been utilized for the production of flakes or blades. These are not tools within themselves but are residual materials left after a desired product has been removed.

Gravels deposited during the Pleistocene provided the raw material on which the Archaic peoples at Site 22Pe543 depended for tool production. The degree of modification reflects the type and amount of attention they were given and is important in interpretation of the site. Therefore, categories of pebble modification are recognized.

Unmodified pebble. These are pebbles brought to or occurring naturally on the site which did not receive any attention by the knapper. If workable pebbles occurred naturally, this absence of attention could be due to the abundance of raw material. If brought to the site, the lack of modification may reflect a storage surplus or a flaw which was unnoticed at the time the pebbles were collected.

Shattered pebble. These are pieces which shattered either because the stone had internal flaws or the worker made an error. Shattered pieces are angular and lack normal conchoidal fracture scars.

Fire-fractured pebble. These are pebbles which have been subjected to high temperature and have shattered as a result. The differences between this category and other fire-fractured categories is that pebble morphology is still visible here.

Tested pebble. These are pieces that have received one or several blows from the artificers. These preliminary flake removals are either attempts to test the flaking qualities of the material or the initial stages of the production process.

Flakes are relatively flat pieces of stone which have been purposefully removed from a parent product. Within this category are several subcategories.

Primary flake. Primary flakes are those which retain more than fifty percent of the parent stone's cortex on the dorsal surface. A definition which relies solely on retention of cortex is rather arbitrary, but production of stone tools under laboratory conditions have demonstrated that flakes with substantial cortex are generally a byproduct of initial manipulation of raw material.

Secondary flake. Secondary flakes are here defined as those whose dorsal surfaces retain less than fifty percent cortex. Since the degree of cortification is less than that in primary flakes, secondary flakes represent a step beyond initial preparation.

Bifacial thinning flake. Bifacial thinning flakes have a relatively thin longitudinal profile and scars on the dorsal surface from previous flake removal. Bifacial thinning flakes represent an advance stage in the tool manufacturing process; they are associated with the final developmental form of the tool.

Shatter. This category includes pieces which lack flake morphology. They result when raw material or flakes shatter under the impact of percussion. They can be a product of any of the stages of manufacture.

Rejuvenation. When a core becomes battered during flake production or because of technical error, it may become necessary to reestablish a proper striking platform. The byproduct of this stage is called a rejuvenation flake.

Fire-fractured pieces. These are pieces of stone which show evidence of having been exposed to heat but lack normal flake morphology. Exposure to heat can result in change in structural properties, color, "pot lidding," or shattering of a microcrystalline stone. If unsuccessful, heat treating, an attempt to improve the working quality of stone, can result in unstructured fracturing. Thermal alteration, other than fire-fractured pieces, was not, however, noted at this level of analysis; it will be dealt with later in the report. At this stage, it is not possible to determine whether the fire-fractured category is the result of unsuccessful intentional thermal alteration or merely representative of an accidental association with fire.

In the analysis of artifacts from 22Pe543, all were placed within the above categories. A discussion of this typological exercise follows and attention has been given to behavioral implications.

Selection of Raw Material

An analysis of the modified as well as unmodified stones recovered from 22Pe543 leads to the conclusion that the Late Archaic occupants of Augusta Bluff had rigorous criteria which they used in selecting their raw material. Although they were quite skilled in the technique of lithic reduction and could produce usable tools from the most intractable cherts, they sought certain characteristics in stone. Sharp and durable edges and forms which most closely resembled the desired product were selected traits. They had some access to Tallahata quartzite, a non-local stone; but for most of their tools, the inhabitants relied on nearby resources.

During the survey, several outcrops of chert nodules or gravels were discovered within a mile of the site. Many of these deposits contained flakes and tools, evidence of utilization by prehistoric peoples. One such source is very near the excavation and within the confines of the artifact scatter as originally described. The deposit is 160 meters east of the center of Locality 1 and on the basis of proximity and stone type, it is considered the source of raw material for the artifacts recovered (Figure 3). The deposit is exposed in a natural drainage and only minor excavation would have been necessary to obtain abundant quantities of stone

nodules (Plate II). The deposit contained small nodules up to [illegible] meters in diameter and 12 centimeters in length. The cortex of these stones was primarily light tan but can vary to grey and [illegible]. The interiors of the nodules have approximately the same range of [illegible]. Banding and mottling occasionally occur. The stones contain [illegible] fine microcrystalline structures; however, granular areas and [illegible] are common.

Although test units were placed adjacent to the chert source, they were not productive. This lead to the conclusion that the quarry was not the center of the lithic industry. The heaviest scatter of debris, reflecting the center of tool production within the area, was at Level 1. Perhaps the presence of relatively high well-drained ground and a spring were important determinants of the manufacturing location.

The availability of the majority of lithic resources within an easily accessible distance to the inhabitants does not allow for speculation on methods by which raw material might have been transferred from one region to another. However, the number of unfinished preforms and complete bifaces suggest, but nothing more, that these artificers could have been producing preforms and finished tools for use elsewhere and, perhaps, for redistribution through various culturally defined means.

The only definitely foreign material is Tallahata quartzite. This can be found in a wide area east and north of the site; the closest outcropping is located in Jasper and Clarke Counties (Padgett and Heisler 1979). The methods by which this material was brought to the site are uncertain. Various possibilities exist including trade networks and resource gathering missions. What can be determined, however, is that the artifacts made of Tallahata quartzite were manufactured prior to their appearance at Augusta Bluff. Only finished artifacts and bifacial thinning flakes of Tallahata quartzite occur here.

Initial Preparation - Stage I

Any lithic modification requires the use of a percussor such as hammerstones; therefore, it is best to discuss them at the beginning of the review of production techniques.

Plate II. Gravel deposit and probable source of raw material for 22Pe543. Locality 2 is seen in background. View is to north.

No objects which could be considered hammerstones or percussors were recovered during the excavations. Several explanations for their absence are possible:

(1) Material that did not survive the vagaries of time was used.

(2) Activities were spatially specific and an area of primary knapping was not sampled.

(3) Hammerstones were a highly curated item and therefore none were left at this particular site.

(4) A distinction cannot be made between normal gravel cobbles and those used for hammerstones.

The first explanation is likely, but with the data available, one cannot be certain. Deer antlers or even hardwood batons were commonly used in the stone tool manufacturing process. Antler tines or some comparable material was certainly utilized for the pressure retouch which some projectile points exhibited. The base of antlers could have been the percussor for all or most flake removals. The signature of the soft hammer technique is not negated by the evidence. Unfortunately, the site did not deliver any perishable material that would solve this particular problem.

Explanation two is possible but considered unlikely. Much of the area excavated seems to have been the locus of lithic tool production. Were hammerstones present, they almost certainly would have been found.

The third explanation is probable. The vicinity of the site produces little stone except the chert gravel from which the tools were made. Working one stone with another of the same type is not very productive, or at least it has not proven so in field experiments. The property of conchoidal fracturing is necessary for good quality knapping material while toughness and resiliency are required for hammerstones. Because of their rarity, hammerstones would have been considered valuable items if they had been used; therefore, they would have been closely curated. The only hammerstones which would be found would most probably be broken or exhausted ones; but none were recovered.

Explanation four is considered unlikely because the particular use which a hammerstone receives leaves a signature. Hammerstones usually have battered edges resulting from repeated percussion. Also, percussors often exhibit scratches which they received from the sharp edges of the object they struck. No such evidence was found at 22Pe543.

Of the several options discussed, the one that states percussors were made of perishable material is considered most likely. Number three may also be a partial explanation. Because of the poor quality stone in the Coastal Plain, hammerstones were very difficult to replace and were, therefore, carefully curated.

At Augusta Bluff, Stage I of the manufacturing process is represented by various types of relatively large primary flakes. Tested pebbles are also characteristic of Stage I (Plate III). These are stones which have had one or more flakes removed so that the interior could be inspected. This inside view revealed to the knapper the quality of the stone and whether or not it deserved further attention. A tested pebble is usually a reject, discarded either because it lacked quality or because it broke at this stage due to insufficient support or hidden weaknesses. If it passed the testing phase, the pebble received more modification and the testing stage would not be evident in the archaeological record.

The interpretation of the stages of manufacture present at Augusta Bluff is somewhat obscured because of the nature of the raw material and production techniques. With the exception of a small amount of Tallahata quartzite, small chert pebbles were the only stones used in tool production. The artificer often chose extremely thin pebbles that were similar in shape to the finished tool. Because of the thin pebble, the knapper began immediately to remove relatively long, broad, thin flakes similar to bifacial thinning flakes. A result of this technique is that flakes defined as characteristic of Stage I and Stage II are the same because they are not only thinning flakes, but at the same time decortication flakes. Although the flake categories overlapped, they were separated in the analysis so that a ratio of flake types could be developed which would serve as a basis for comparison between technologies.

Plate III. Tested pebbles.

Secondary Preparation - Stage II

The products of Stage II are more specific than those of Stage I. One goal of this stage is to shape a core to produce a flake or blade with specific characteristics. At some sites one finds cores that are very regularly shaped because they are results of attempts to produce standardized flakes or blades. An example of this technology is seen in the Mesoamerican blade core. At other sites, cores are the results of removals which have been restricted only by the mechanics of knapping (Wright 1980). At 22Pe543, falling between these two extremes, two different types of cores were produced. To produce particular types of flakes, one had removals from a prepared striking platform. The second type core was randomly flaked. Seventy-seven cores were recovered during the excavation at Site 22Pe543, a representative sample of which is seen in Plate IV.

Technique of Core Production

The first stage in flake production is the preparation of the core. This preparation occurred in two ways. One, a relatively large preparatory flake was removed from the chosen pebble to produce a striking platform. The flake scar of the preparatory flake was then used as a platform for decortification flakes and use flakes. Sometimes a natural surface of the stone could be used as a striking platform; therefore, a preparatory flake was not necessary. Often platforms were created on more than one end of the stone producing a core with multiple striking platforms. The range of striking platform angles is 46 to 88 degrees, but there is a tendency toward striking platforms of 71 degrees. These and other metric characteristics of cores are presented in Tables III and IV.

TABLE III

DISTRIBUTION OF CORE STRIKING PLATFORM ANGLES

Angle	46^{o}	48^{o}	55^{o}	56^{o}	57^{o}	58^{o}	60^{o}	62^{o}	63^{o}	64^{o}
Occurrence	1	1	1	1	1	2	3	1	1	1
Angle	65^{o}	66^{o}	67^{o}	68^{o}	69^{o}	70^{o}	71^{o}	72^{o}	73^{o}	74^{o}
Occurrence	2	3	1	3	2	4	7	2	6	4
Angle	76^{o}	77^{o}	78^{o}	79^{o}	80^{o}	81^{o}	82^{o}	84^{o}	86^{o}	88^{o}
Occurrence	1	2	3	1	1	1	1	1	1	1

N=60; Median=71; Mode=71; s=8.4; $\bar{X}$=69.7.
Range - 46^{o} to 88^{o}

Plate IV. Cores. a-d, g & h have one or more striking platforms. e, f & j have flakes removed bifacially.

TABLE IV

SIZE CATEGORIES OF CORES ALONG LONGEST AXIS

Length (cm)	2-2.9	3-3.9	4-4.9	5-5.9	6-6.9	7-7.9
Occurrence	6	18	20	10	1	1

N=55

The second technique used in flake production involved working a pebble bifacially. Again an initial flake was detached; but rather than utilize the resulting flake scar for successive removals, flakes were alternatively removed from each side of the pebble. Each successive flake scar was used as the striking platform for the next flake. This technique produces a core that is characterized by random flake scars over its surface. Quite possibly, some of the objects identified as this type of core could be early stages of biface manufacture. Production of flakes and production of bifaces share some techniques.

No true blade cores were found at the site; however, many blade-like flakes were found. Some flakes actually meet the classic definition of blades, but these apparently were more the result of accident than design.

Rejuvenation of cores was hardly a discernible practice at the site. Once a striking platform had collapsed or had become battered, little effort was made to restore it. The small size of pebbles which became cores would have made rejuvenation unproductive. Also, rejuvenation was unnecessary at 22Pe543 because abundant raw material was readily available. When an error was made, a new piece of raw material was selected rather than attempt to deal with a problematical one. Only 18 rejuvenation flakes were recovered and these could certainly have been accidentally produced.

Utilized Flakes

All artifacts recovered at Augusta Bluff were analyzed and placed into typological categories. Most of the material was best classified as unmodified flakes. These flakes were either the byproducts of tool manufacture, products deemed unsuitable for use, or implements utilized

for tasks which left no macroscopic record. Only 124 flakes had evidence recognized as signifying utilization (Plate V; Table II). However, some problems exist in the analyses of artifacts which can cause misclassification.

Laboratory experiments have shown that some tasks do not leave macroscopic evidence on stone tools. Although lack of time and equipment prevented microscopic analysis similar to that reported by Keeley (1974), which would have rectified this problem, many flakes were examined with binocular microscope with power to 20X. This examination confirmed or denied suppositions made during visual examination. Microscopic wear, patterns and striations created by utilization were not revealed. Further, at Augusta Bluff and many other sites, recent glass, a microcrystalline material with flaking qualities similar to chert, exhibited edge damage and striations similar to that which is interpreted as evidence of use on prehistoric stone tools. These removals and modifications, however, are not intentional and are certainly results of action which occurred after their deposit. Activities which are capable of producing such changes in flake morphology are thought to be plowing, use of heavy equipment, passage of vehicles and pedestrian traffic.

Glass fragment modification and chert modification differ in two ways. First, glass has a much lower tensile strength; therefore, flakes and other edge modification occur at a lower pressure. Secondly, due to the site's proximity to populous areas and heavy machinery, a great number of activities which could have resulted in accidental edge damage have probably occurred around the site within the last 175 years. Also, the chert was buried deeper in the ground and thus was less exposed to modifying agencies.

Because the potential for past environmentally induced modification exists, rather strict criteria were established to define evidence of prehistoric human attention. Edge damage which consisted of only a single or irregularly spaced flakes was considered accidental. However, Gould et al. (1971) demonstrated that this wear is the type seen on tools utilized for woodworking by Australian Aborigenes. Nevertheless, in order to designate a flake as utilized, a series of contiguous flake scars had

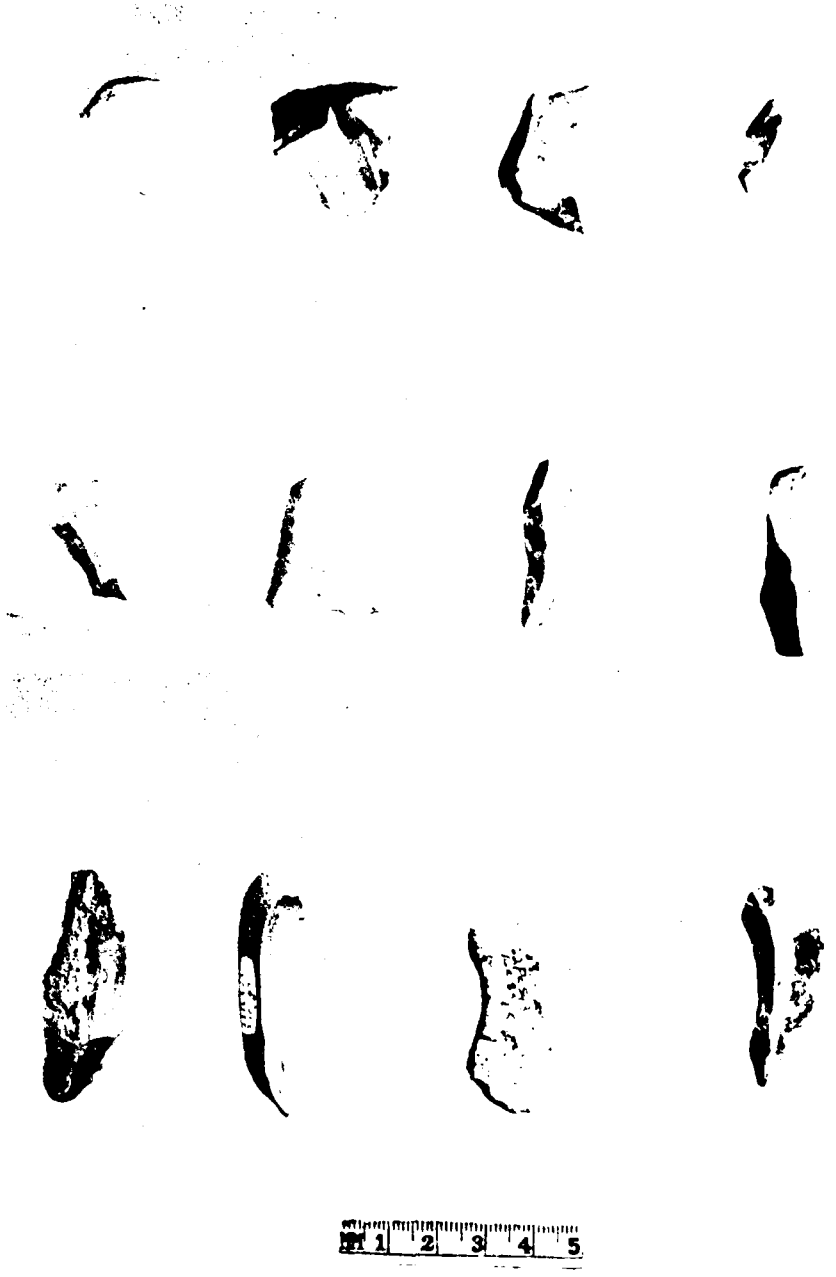

Plate V. Utilized flakes.

to be present along one or more of the lateral margins. This criterion was established in an attempt to eliminate inclusion of nonuse induced edge damage into the category. Although a microscope was often used to make a final determination, the flake scars had to be visible to the naked eye.

Both flakes which retained cortex on a portion of their dorsal surface and those without cortex were utilized without further modification. Flakes with cortex on one of the lateral edges seem to have been preferred because the cortex provided a natural backing which was protection for the hand and fingers of the user. Eighty-three percent of the utilized flakes had natural backing.

The production of such flakes requires a specific technique. A stone which either had a natural angle from which flakes can be struck or one that has had a platform prepared is selected. A decortification flake is removed perpendicular to the striking platform. Following the decortification flake, a point of percussion is selected that will produce another flake, one which has one lateral edge that retains cortex while the other is the result of the intersection of the flake scar from a previous removal and the ventral surface of the produced flake. The resulting naturally-backed flake was utilized without further preparation.

Little evidence was found that revealed what tasks were performed with the flakes at Augusta Bluff. In spite of this, an edge angle analysis was performed in an attempt to determine what tasks were possible with those edges showing evidence of use.

Criteria determining stone tool use that have proven significant in experiments include angle of working edge, size of flake, form, and presence of protection for hand (White and Thomas 1972). For the utilized flakes found at Augusta Bluff, some of these qualities were observed and are shown in Table V.

TABLE V

DISTRIBUTION OF EDGE ANGLES OF UTILIZED FLAKES

Angle	10^{o}	11^{o}	15^{o}	16^{o}	17^{o}	18^{o}	19^{o}	20^{o}	21^{o}	22^{o}
Occurrence	2	2	5	1	2	1	3	3	5	6
Angle	23^{o}	24^{o}	25^{o}	26^{o}	27^{o}	28^{o}	29^{o}	30^{o}	31^{o}	32^{o}
Occurrence	2	7	5	9	5	2	5	5	5	3
Angle	33^{o}	34^{o}	35^{o}	36^{o}	37^{o}	38^{o}	39^{o}	40^{o}	41^{o}	42^{o}
Occurrence	4	7	6	5	5	4	5	3	3	1
Angle	44^{o}	45^{o}	46^{o}	47^{o}	49^{o}	50^{o}	51^{o}	56^{o}	62^{o}	
Occurrence	3	1	3	2	1	3	3	1	1	

N=139; $\bar{X}$=30.97; s=5.56.
Range - 10^{o} to 62^{o}

SIZE CATEGORIES OF UTILIZED FLAKES

Length (cm)	1-1.9	2-2.9	3-3.9	4-4.9	5-5.9
Occurrence	9	68	38	5	4

N=124

According to Thomas (1974), edge angles less than 45 degrees between ventral and dorsal surfaces are usable for whittling or cutting meats and hides. Angles between 45 degrees and 60 degrees are suited for skinning large animals, cleaning hides, cutting wood and shredding fibrous plants. Angles greater than 60 degrees are attributed to heavy work such as chopping wood or extremely fibrous material.

At Augusta Bluff the range of utilized edge angles was from 10 degrees to 62 degrees. The mean was 30.97 with a standard deviation of 5.56. This suggests that the primary task performed with these flakes was light cutting. Carving meat would have been possible, as well as cutting hides or perhaps preparing lighter wood objects, such as projectile shafts. The few flakes found which had working angles between 45 and 60 degrees suggest that at least some heavier work was performed in the site area, but it apparently lacked the importance which lighter work had.

Tertiary Modification - Stage III

The major products of tertiary modification were projectile points and bifaces. Note has been made elsewhere (Goodyear et al. 1979) that no overwhelming evidence exists to indicate that so-called projectile points actually functioned within that context. A likely possibility is that they were multi-purpose tools. In one context they could have functioned as tips for projectiles and in another as knives for skinning and butchering animals. Certainly they were intended to be hafted. Possibly, they could have been attached to a short foreshaft which could fit on a projectile shaft in one instance and could be removed and used as a cutting tool with the foreshaft functioning as a handle in another. Although hafted biface might be a more accurate description, the term projectile point is used here because of convention.

Techniques of Biface Manufacture

There is a rather broad range of forms and, therefore, archaeological types among the projectile points found at Augusta Bluff. Although variable, where it is possible to determine, they share some basic manufacturing techniques. With the possible exception of those made of Tallahata quartzite, all projectile points were manufactured from small pebbles, not flakes. The size and form of the raw material imposed some limitations on the manner in which it was worked; however, the specific technical response reflects culturally transmitted behavior.

Two different techniques of coping with the necessity of working with small gravels have been reconstructed. However, there is probably a continuum whereby one technique blends into the other. One end of the technical spectrum is seen when projectile points were manufactured from relatively thick pebbles, as shown in Plate VI g, d, a. Because of their diameter, these pebbles presented the immediate problem of thinning. Flakes were removed from all sides to thin the pebble, and an oblong shaped preform was created. Concomitant with thinning, decortification occurred, although this seems to be a secondary consideration since cortex is often found on the finished product. Only after thinning had occurred were there attempts to create a proper shape. Artifacts manufactured from thicker pebbles seem to have greater thickness to width ratios than those which utilized thin pebbles as the raw material.

Plate VI. Sequence of projectile point manufacture. g, h & j - early stages of pebble preparation. d, e & f - middle stages. a, b & c are final forms.

At the other end of the spectrum, the production process began with a thin pebble. Artifacts made from thin pebbles often retained cortex on both surfaces of the blade. With a thin pebble, the artificer began immediately to work toward the form of the end product (Plate VI h, e, j, and f).

Projectile point preforms are shown in Plates VII and VIII. Whether the process of raw material selection is related to the shape of the finished project in a culturally defined manner can not be determined. The length of the finished point was certainly related to the length of the raw material; however, the variation seen in projectile point lengths indicates that the measurement may not have been particularly important.

Many of the objects which are called projectile points appear assymmetrical in plan as shown in Plate IX a, b, c, e, and f. Assymmetry is reflected not only in shape but in the haft; one shoulder is higher than the other. The assymmetric profile may reflect resharpening or they may be related to hafting with one shoulder abutting the haft in a manner that would allow more pressure to be exerted on the opposite edge during use. An additional possibility is that they are knives.

Projectile Points

Fifty-six items were classified in the category projectile point (Table II). Thirty-four of these were whole or retained enough of the original form to be treated as if they were. The various identified types with their primary reference are described below.

What should be realized is that although attempts were made to place the projectile points into typological categories, the variation in morphology is not so great that a single knapper could not have produced the entire population. The small, often imperfect nodules sometimes placed physical constraints on the knapper that made achievement of a particular form difficult to impossible.

Pontchartrain (Ford and Webb 1956). The Pontchartrain points are the largest category (N=13) found at Augusta Bluff and are among the most carefully made as well. The measurements of those from Augusta Bluff vary from 42 to 66 mm in length, 16 to 27 mm in width and 09 to 12 mm in thickness. These differ from those at Poverty Point in that

Plate VII. Preforms.

Plate VIII. Preforms.

Plate IX. Projectile points from Augusta Bluff. a through l are Pontchartrain, and m through q are Kent.

the length to width ratio has a greater range. Many of the points from Augusta Bluff are broader than those at Poverty Point; and in that aspect, they are somewhat more like those from Teoc Creek (Connaway, McGahey and Webb 1977). The variation may reflect the size of the pebble on which the point was made. Attention is called to one particular variant of Pontchartrain points in Plate IX 1. The variation, a distal end that is rounded rather than pointed, may have a temporal or functional significance not now discernible. Plate XI a through e shows other points which could possibly be classified as Pontchartrain and also have the same treatment on the distal end. The variation is not common at Augusta Bluff but reached 100 percent at some other sites which were investigated during the survey (Wright 1981). The consistency of the variation indicates that the form is not fortuitous.

Kent (Suhm, Krieger and Jelks 1954; Bell 1960). Six points were recovered which were placed within this category. As noted before (Connaway, McGahey and Webb 1977), the Kent points vary from the Pontchartrain only in that their flaking is less skillfully controlled and they lack pressure retouch. The same source discusses the possibility that Kent points are unfinished Pontchartrain points or a general type of which Pontchartrain points are a subtype. None of these problems can be solved from the collection at Augusta Bluff except to say that the data remains equivocal. Also, many Kent points range into what might sometimes be classified as a spike (Plate IX p). Measurements for the Kent points vary from 43 to 71 mm in length, 15 to 26 mm in width and 09 to 12 mm in thickness.

Gary (Suhm, Krieger and Jelks 1954; Bell 1958). Four points were placed within the Gary classification. This assessment was made primarily on the basis that the points possessed constricted to rounded stems, moderately flaring shoulders and absences of pressure retouches. Measurements for the points are: length - 43 to 48 mm, width - 20 to 23 mm and thickness - 08 to 09 mm (Plate X e, f, g, and h).

The combination of points recovered are instructive for the temporal and cultural placement of Augusta Bluff. The co-occurrence of Pontchartrain, Kent and Gary is what one could expect for a Late Archaic site and there is nothing to speak against this assignment. The unidentified points in Plates IX, X and XI are technologically Late Archaic.

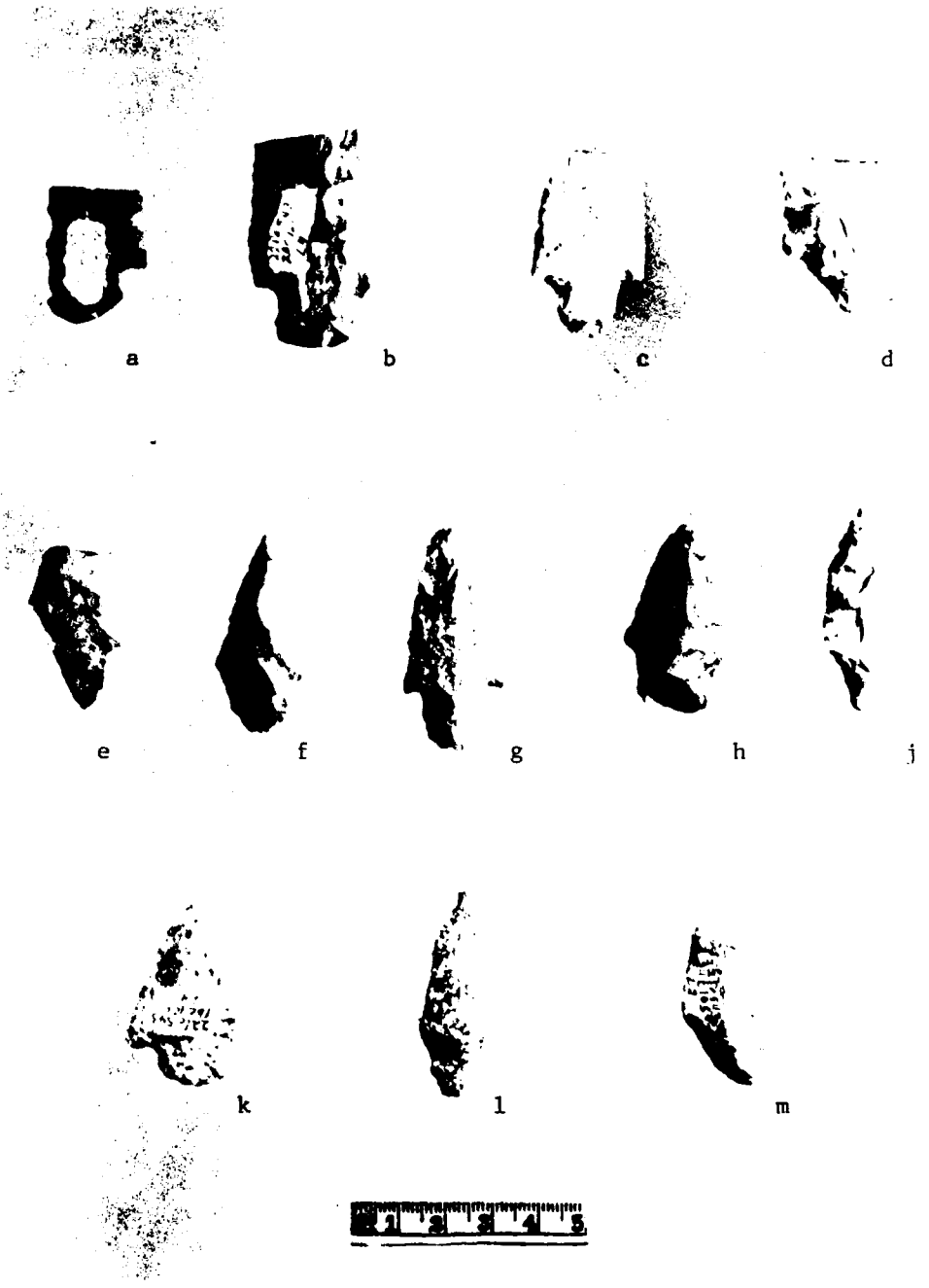

Plate X. Projectile points from Augusta Bluff. a, b & c are Pontchartrain; e through h are Gary; d, j, k, l & m are unidentified; k & l are made of Tallahala quartzite.

Plate XI. Projectile points from Augusta Bluff. a through e are unidentified; f & g are surface finds, f is a Middle Archaic Tallahata quartzite; g is an Early Archaic Cache River point.

In addition to those projectile points recovered in the excavation, other types were found in the areal survey which indicate the total range of human occupation (Wright 1981). Evidence of Early Archaic human presence in the vicinity of Augusta Bluff is a Cache River point, an isolated find recovered approximately one mile from the site (Plate XI g). Middle Archaic occupation is shown by the Tallahata quartzite point found about 200 meters from Locality 1 (Plate XI f). A remarkable aspect of the areal collection is the relative paucity of artifacts which are not from the Late Archaic. Evidence suggests that major human occupation occurred in the Late Archaic and very little before or after.

In addition to the points which fit within standard typological categories, some broken ones could not be so placed (Plates X and XI). Although most are not typologically useful, they may be valuable in other aspects of site interpretation. A predominance of projectile bases could indicate a loci where returning hunters repaired their broken weapons. Projectile points, broken in the hunt, would be removed from the shaft and replaced. Evidence for this behavior could be a preponderance of projectile bases over tips since the latter would have been lost in the field. A large number of tips relative to bases could be indicative of different behavior. An animal shot with a projectile would have not likely died instantly and would have been trailed until death occurred from trauma and loss of blood. If the projectile struck and broke on a bone when shot, the possibility is that while the animal is fleeing the projectile shaft and base would work its way out of the wound and be lost. In such a case at a butchering site, a larger number of tips than bases might be found since the tips would be brought back in animal carcasses.

Due to inadequate knapping control, points were often broken in the manufacturing process; but commonly the piece was not abandoned if enough material to recreate a tip existed. Therefore, a predominance of tips could be found at a manufacturing site. While it is certain that Augusta Bluff was the site of biface manufacture, there appear to be other hints of behavior in the artifactual record. Approximately the same number of bases and points were recovered; however, none of them appeared to have come from the same projectile point (Plate XII). Further, the stage of

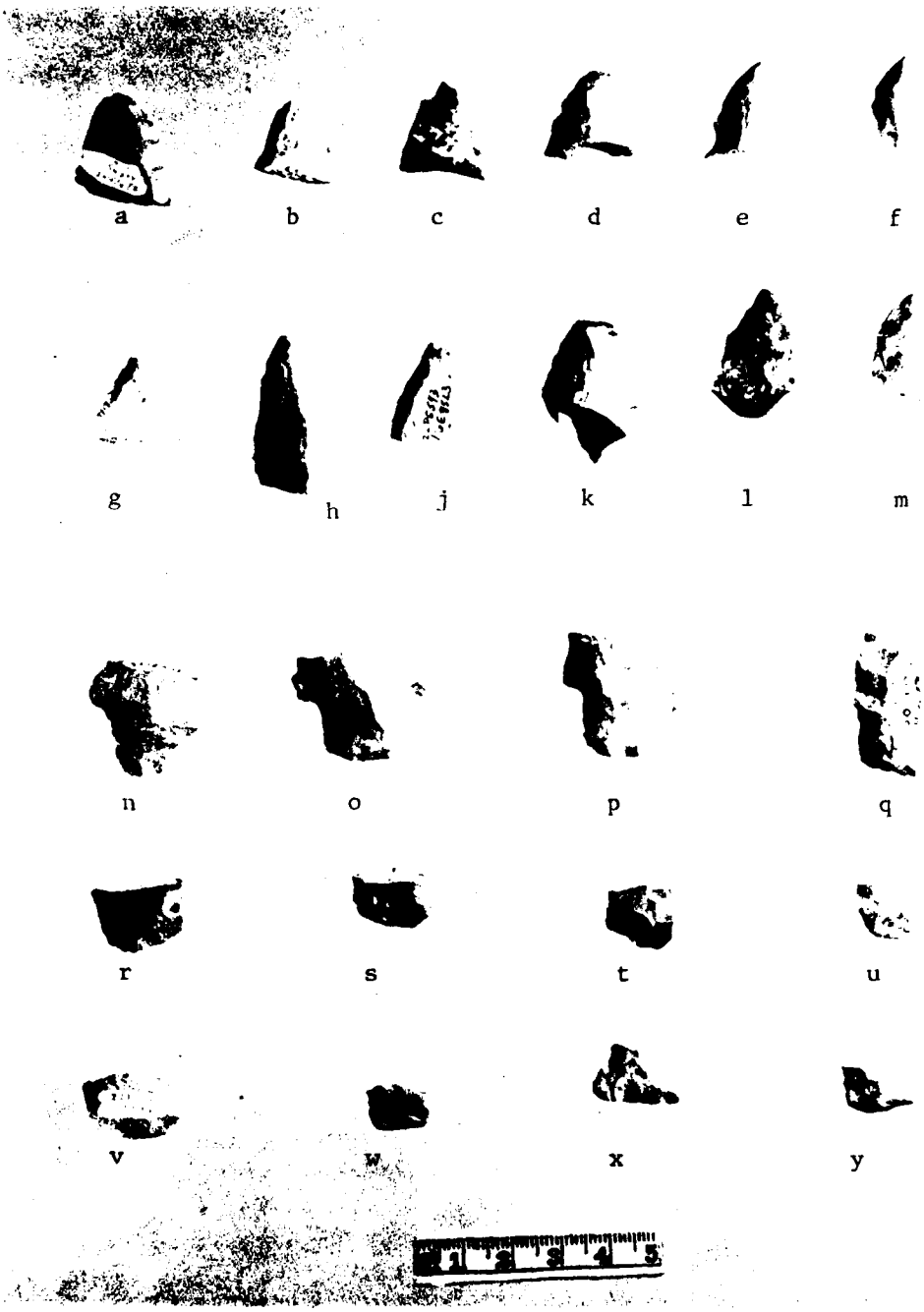

Plate XII. Projectile point fragments. a through m are points; n through y are bases; x is the base of a small triangular point.

production represented by the broken tips suggest that most are from tools which have received final attention. This leads to the assumption that two different behaviors might be represented. The manufacture of tools of various types, but particularly projectile points, was important at Augusta Bluff. Additionally, some time seems to have been spent repairing weapon systems, as represented by the number of bases. Butchering of animals seems to have also occurred; this is signaled by the presence of finished, yet broken, projectile tips.

Drills. The identification of drills is based on the slender bifacially worked forms of the pieces and the presence of wear patterns typically associated with drills. Four drills were found during the excavation (Table II; Plate XIII). Unfortunately, all of these are broken. Three (Plate XIII a, b and c) are fragments of the bit while one (Plate XIII d) is missing only the tip and retains the hafting area. The four came from different areas of the site, so it is not possible to define an activity area from their distribution or identify a specific function other than drilling. Specimen c in Plate XIII exhibits a reddened tip. This color change has been produced in laboratory experiments when a drill becomes heated through use (Connaway, Brookes and McGahey 1977). The other drill which retains the tip (Plate XIII a) has been exposed to heat subsequent to use and any color change which may have been present is now obscured. The most complete example (Plate XIII d) shows that some drills were made specifically for that purpose and do not represent a modified projectile point.

Other tools. Many bifacially worked pieces were recovered during the excavation; however, only 56 of these could be considered projectile points (Table II). The remainder must be either preforms or some finished bifacially worked tool such as an axe.

Plate XIV shows an assortment of tools from Augusta Bluff. Specimen a is a pebble whose measurements are: length - 7.8 cm, width - 2.3 cm and thickness - 1.5 cm. It has had one end chipped to form a chisel-like edge. The modification is primarily unifacial, although one flake approxmately 1.5 cm long has been removed from the opposite face. This latter removal may be due to pressures exerted during use. The edge is rather smooth, indicating extensive wear, and exhibits a bit of 47^{o}. The end

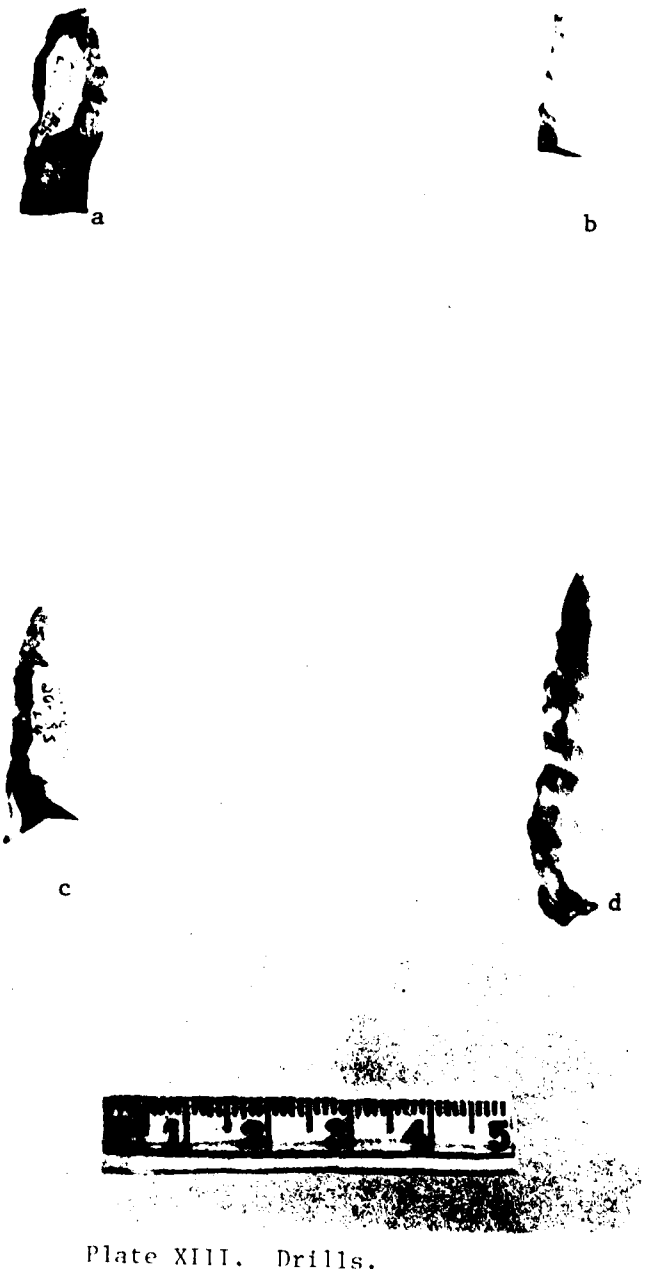

Plate XIII. Drills.

Plate XIV. Assorted tools from Augusta Bluff.
a - chisel, b through f - axes,
g - scraper, h - denticulate.

opposite the working one has no evidence of wear or pitting which might be expected if the object had been used with a wooden or stone hammer. This piece must have been utilized hafted or held in the hand. Plate XIV b shows a pebble that has been bifacially worked on one end and battered on the other. The working edge has a cutting angle of 65° and is heavily worn.

Plate XIV b through f are all bifacially worked pieces with cutting edges of 55°, 64°, 62°, 40° and 63° respectively. All exhibit heavy wear and, except d, are broken. These were probably hafted and functioned as axes for woodworking. Seventeen other bifacial tools were recovered; a representative sample is shown in Plate XV. They ranged in size from 4 to 10 cm. The angle of their working edge is shown in Table VI.

TABLE VI

DISTRIBUTION OF EDGE ANGLES OF BIFACES

Angle	37°	45°	61°	62°	65°	66°	67°	68°	69°	70°
Occurrence	1	1	2	1	3	2	2	2	2	1

N=17

Worked Flakes. Worked flakes are also products of tertiary modification. Forty-nine pieces are classified as worked flakes (Table II). To be included within this category, a tool must exhibit a line of flake scars which were created by intentional removals from a single direction. The flake scars are longer and more regular than those categorized as utilized flakes. The only objective in creating worked flakes appears to have been the production of a working edge. Only a few worked flakes were found which reflect an attempt to modify the general morphology of the flake (Plate XVI). Some instances of minor modification of the working edge were seen and are exampled by notched pieces (Plate XVI e-g). The worked flakes shown in Plate XVI are those which reflect the most obvious modification of form.

Plate XV. Utilized Bifaces.

Plate XVI. Worked Flakes.

Since production of a regular edge on flakes seems to have not been important, perhaps the angle of working edge may be instructive in determining the function of the site. Specimens a through c range from .5 cm to 1.5 cm thick and are steeply flaked up to 85°. The edge angle suggests that these could have been utilized for heavy cutting, such as working wood, antler or bone. The removals are similar to those described by Ford and Webb (1956) for Jaketown perforators and b is not dissimilar in form. Specimen d is a flake less than 5 mm thick with very abrupt retouch. The retouch is 1 to 2 mm long and the entire piece is not unlike objects called raclettes in the Old World. The retouched edge shows a great deal of wear. There is also a small perforator which can be seen on the bottom left of specimen d in Plate XVI. The wear and abrupt flaking also suggest that this item may have been used for heavy work.

Specimens e through g exhibit intentional notching similar to spokeshaves. These have steep working edges 74°, 68° and 71° respectively and could have been used for scraping and shaping wood, antler or bone. The notches are formed by retouch, but the edges have hinge fractures received from pressure applied during use. Items h and j could be placed within the traditional scraper category. Specimen j could be considered a blade, but its morphology is probably fortuitous rather than intentional. Both have steep working edges between 75° and 80°. The working edge of j is the distal end of a cortical flake while h appears to be worked on the proximal end of a flake, but the original morphology is partially obscured. More characteristic of the category of worked flakes is k. Its edges have been modified through flaking; however, there is no apparent attempt to change flake morphology. Tables VII and VIII represent metric characteristics of items which were placed within the worked flake category.

TABLE VII

DISTRIBUTION OF EDGE ANGLES OF WORKED FLAKES

Angle	48°	49°	51°	55°	56°	57°	61°	62°	64°	66°	67°
Occurrence	1	2	3	1	3	-	2	1	2	4	3
Angle	68°	69°	70°	71°	72°	74°	75°	77°	78°	80°	81°
Occurrence	3	3	4	2	4	2	3	1	2	2	1

N=50; $\bar{X}$=66.48; s=8.85.
Range - 48° to 81°

TABLE VIII

SIZE CATEGORIES OF WORKED FLAKES

Length (cm)	1-1.9	2-2.9	3-3.9	4-4.9
Occurrence	3	28	11	2

N=44

Lumps of clay. Hard amorphous lumps of clay were often encountered at random. Representative examples of these are seen in Plate XVII. These clay lumps showed evidence of having been exposed to heat, and many are semi-fired. All were cleaned and inspected for finger prints, mat impressions or other evidence of their origin; but there was no success.

A possible explanation for these fragments of clay is that they are the results of woodworking in which fire was used. In the ethnohistoric record are references to controlled burning of large pieces of wood to facilitate the production of such items as canoes and mortars (Hulton 1972). Wet clay could have been used to control the fire and would have then become semi-fired.

These clay fragments could also be puddled hearths, a type suggested for the Teoc Creek site, which have been disturbed and scattered by plows and tree roots (Connaway, McGahey and Webb 1977). One relatively undisturbed context was found in squares 22e10s and 24e10s; and here, there is no doubt that the clay pieces are associated with a hearth. Approximately 30 cm below the modern surface, a dark stain 60 cm in diameter was encountered (Plate XVIII). Within this stain were hard lumps of clay which varied in color from white to ash grey to black. The total depth of the hearth was approximately 30 cm, but thinning occurred toward the edges. The clay fragments were restricted to the upper portion of the stained area (Plate XIX). As seen in the profile (Plate XIX), the clay tends to conform to a bowl-shaped depression. This was confirmed by excavation (Plate XX). Perhaps a shallow pit was prepared, lined with clay and then a fire built. The function of the clay is not certain; but it could have been used to concentrate the heat or, in a manner similar to that proposed for the Poverty Point objects, as cooking stones (Ford and Webb 1956).

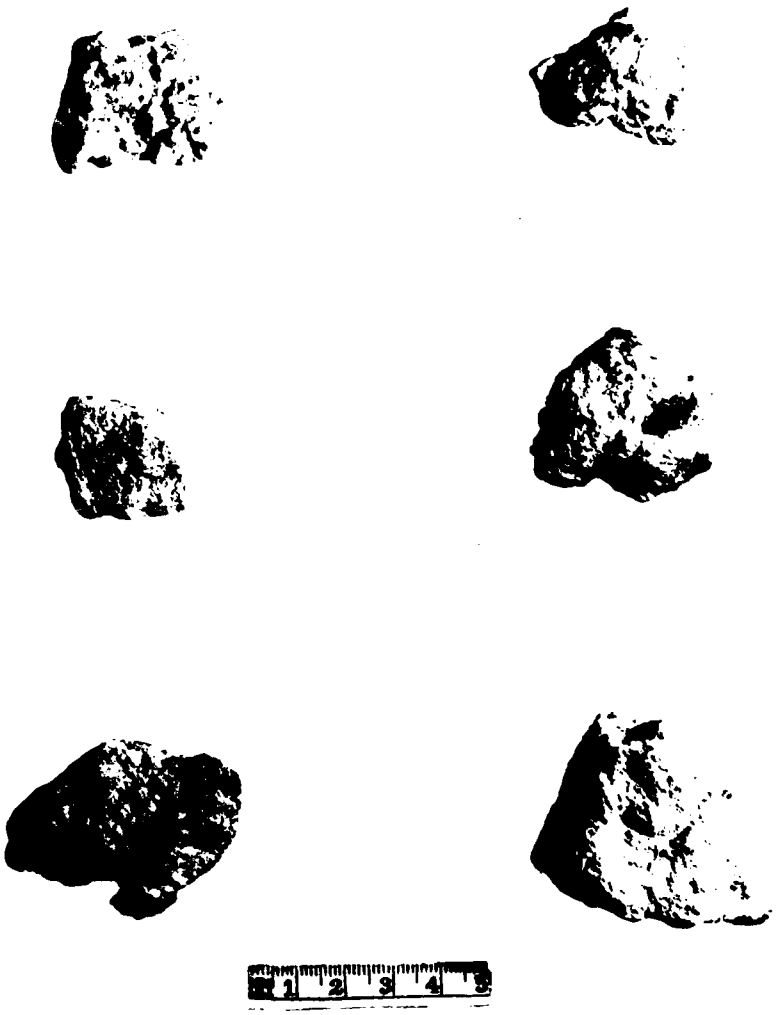

Plate XVII. Lumps of fire-hardened clay.

Plate XVIII. Hearth showing concentration of clay lumps.

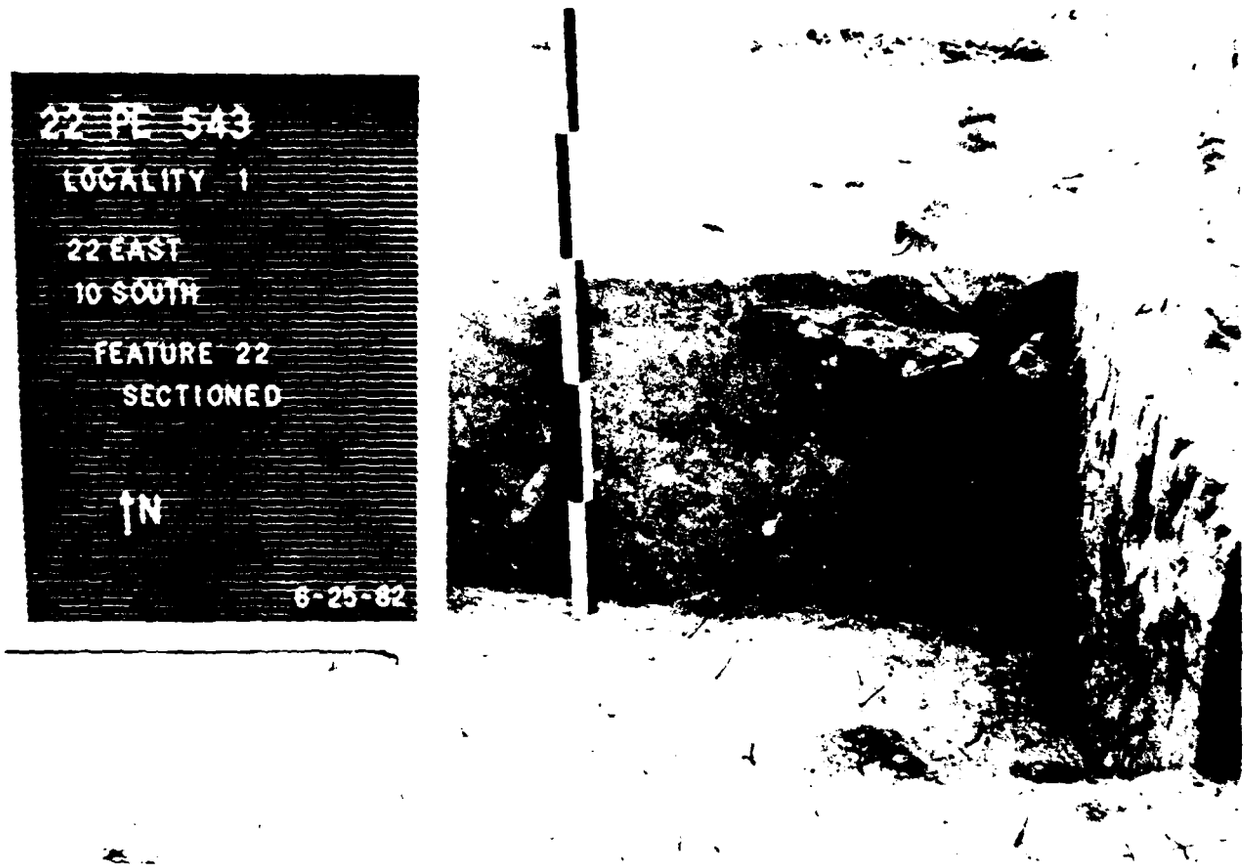

Plate XIX. Hearth sectioned. Hardened clay in profile.

Plate XX. Excavated hearth.

Dating

Minute flakes of charcoal were encountered throughout the excavation. In most cases, determination of whether or not their origins were cultural was not possible. Many stump burns from forest fires were encountered and with root and animal activity, the potential for non-cultural charcoal migration within the occupation exists (Plate I).

During excavation of Feature 22 (Plates XVIII, XIX and XX), the hearth discussed above, six separate samples were collected and submitted to Isotopes Incorporated for radiocarbon analysis. The goal was to obtain a series of dates. Dr. James Buckley of Isotopes Incorporated collapsed these samples into one because of their small size.

The single sample returned a radiocarbon age of 3,620 B.P.$\pm$ 170 (I-12, 775). This places the occupation at Augusta Bluff more or less contemporary with the occupation of the Poverty Point Site at Teoc Creek in Carroll County, Mississippi.

ANALYSIS OF HISTORIC ARTIFACTS

The importance of the historical component at Site 22Pe543 lies in the potential to elaborate events which have occurred within the region. Historical records specify events and/or general trends of economic, political or social developments; but they reflect the specific interest of the writer. Archaeological data have the potential to contribute to an understanding of all these areas. Further, since artifacts are often the remains of items used everyday by inhabitants, they have the potential to reveal data on behavior that was too mundane to have been worth recording at the time but which is considered important in our attempt to understand cultural change and stability.

The first objective in dealing with the historical collection at Site 22Pe543 was the designation of a time-frame. Unfortunately, no dated objects were found and no ceramic items were recovered with dateable makers' marks. Although no specific dates for the site could be established based upon the artifacts found, an analysis of the various types of artifacts may be instructive in learning about their activities.

Artifacts were found that represent the entire nineteenth and twentieth centuries, but varying quantities and types of artifacts enable us to infer different activities at different times. Nothing pre-dating the early nineteenth century was recovered; therefore, no knowledge of the early exploration and settlement of the area was obtained (Table IX).

The most common metal artifacts found during the excavation were cut nails. Cut nails first appeared around 1790. They were sliced by machine from sheet iron, but the head was created by hand. By 1815 an improvement to nail cutting machinery produced a headed nail which had slight waisting on the shaft of the nail below the head. Waisting had disappeared by 1830. Further hints indicating the time of production can be found in the direction from which the cut was made during the removal of the nail from the parent metal. From 1790 to 1820, the diagonal

TYPE	EXCAVATION UNIT																																								TOTAL
	16E 8S	16E 10S	18E 2S	18E 6S	18E 10S	20E 0S	20E 2S	20E 6S	20E 8S	20E 15S	20E 16S	20E 18S	22E 0S	22E 2S	22E 4S	22E 6S	22E 8S	22E 10S	22E 12S	22E 16S	24E 2S	24E 4S	24E 6S	24E 8S	24E 10S	24E 12S	24E 14S	24E 16S	26E 14S	26E 16S	28E 16S	28E 18S	6N 6W	14N 10E	18N 10W	10W 2S	30E 20S	4S 0W 2*	4N 0E 2*	12W 0N 2*	16W 4S 2*	
Creamware			13				1		2			6	1	9	3	1		6	10	1	3	9	5	1	7	12	1	11	1	2	/	10	2	6	3	11	8		11		1	164
Pearlware																																										
Mocha						1		2								2							1		1				1										1			9
Transfer Print Blue	6	9	19	7	2	10	3	4	5		4	3	6	7	3	8	8	7	8	1	3	7	5	4	2	3	3	8	1	11	8	5	2	8		1	6		11			208
Annular Ware		1	1					2	2		1				1			1		2		1									1			1					3			17
Blue Edge		1	1				1		1		1			1			5			2			1	2		1				2				1		1	1		1			23
Green Edge		1				1			1		1							1									1	1														7
Transfer Print Red											1									1														1								3
Polychrome		1	4	3	1		1		1		2	3		2	2		2			1	2		3	1	1		1					1		5		1	1		6			45
Plain	4	15	9	5	2	3	4	8	14		3		14	10	12	4	7	8	3	3	5	2	5	2	5	1	3	10	2	14	6	1				3	1		4			192
White Ware	25	5		9	10	23		1	10	2	19		2	3	17	12	17	3	3	2	1	1	2	3	2	3	6	14	2	5	3	1	6	1	1		3		9	1	1	228
Porcelain																																										
Overglaze			1	1	1	4			2				2	1					1	1					2		2	1		1	2	1		1								24
Underglaze																																					2					2
Undecorated	1	1		1		3					1	5	1	2						1	1					1	1	1		2	5	2		2			7		3			41
Stoneware																																										
Brown							1	2			1		1		1	2							1	1												1						11
White				1					1				1					1		1		3				1	1									1					1	12
Salt Glaze																										1			1													2
Black		2								1			2												1																	6
Earthenware		4	2	3		2		3	1		1			2		3	1	2	2	1			1	1		1			1					1					1			33
Pipe Fragments	4	1	4			3		2	2		1		4	2	1	3	2		4		2	1	1	1	13	5		3	1	3	1	1										65

(continued on next page)

TABLE IX. HISTORIC ARTIFACTS BY PROVENANCE

*Locality 2

TYPE	EXCAVATION UNIT																																								TOTAL
	16E 8S	16E 10S	18E 2S	18E 6S	18E 10S	20E 0S	20E 2S	20E 6S	20E 8S	20E 15S	20E 16S	20E 18S	22E 0S	22E 2S	22E 4S	22E 6S	22E 8S	22E 10S	22E 12S	22E 16S	24E 2S	24E 4S	24E 6S	24E 8S	24E 10S	24E 12S	24E 14S	24E 16S	26E 14S	26E 16S	28E 16S	28E 18S	6N 6W	14N 10E	18N 10W	10W 2S	30E 20S	4S 0W 2*	4N 0E 2*	12W 0N 2*	16W 4S 2*	
Glass																																										
Black	3		2	2		3	2	2	4		8	6	7	6	6	1	6	5	11	3	4	6	11	8	21	13	8	16	5	21	25	13	1	5		1	5		8		1	249
Blue												1															2															3
Purple				1		1		1								1	3		1		1	1			1	1				1												13
Milk																					1																					1
Green	2	1				2						1					4	1	1		3			1	5											1				1		23
Clear	5	2	6	1		15		3	7		4		7	4	6	5	4	1	3	4	9	4	7	1			6	3	1	4	18				4	1	2	1	4	1		143
Amber												1																														1
Window	1	1	6	10		3	3	3	10	1	6		13	6	2	9	17	18	12	10	8	14	16	20	35	23	18	32	13	44	47	24				1	4		1			431
Brown																	1	3			2					1																7
Nails																																										
Cut	4	8	5	2		19	3	7	7	1	10	5	7	3	1	4	12	6	13	9	10		3	9	9	7	8	12	2	11	4	2	1	5	5	11	1		3	1	8	238
Wire								1								1		1								2		1														6
Wrought									1									1												1												3
Slate			1										1											2		1																5
Lead	1					1			1		1									1			2					3		2												12
22 Cartridge				3												1				1							1															6
Nuts and Bolts					1																										1											2
Brass Buttons and Snaps					1	1																														1					1	4
Unidentified Brass								1	1							2	1		1	1					1																	8
Belt Parts																		1		2																						3
Knife Parts													1													1																2
Fish Hook																			1																							1
Glass Bead																							1																			1
Iron Spoon																									1																	1
Metal Leg																											1															1
Hinge																																									1	1
Harmonica Part																																	1									1

TABLE IX cont'd.

*Locality 2 N=2,258

corners were cut from opposite directions, but by 1830 cutting was performed from the same direction on both ends of one side. Another factor which can be used in dating is the direction of the fiber within the nail itself. Prior to 1830, the fiber ran across the nail; after that date, they ran the length of the nail. Cut nails are still made today but have rather specialized uses. They became secondary to wire nails in the latter quarter of the nineteenth century when sufficient quantities of wire nails were produced to make them competitive (Hume 1976, Nelson 1963).

Wrought, cut and wire nails were all found at 22Pe543; but 238 of the 247 total nails were the cut type (Table IX, Plate XXI). Of these, the vast majority had features indicating post-1830 manufacture. During the survey and field work phase of this project, local buildings dating from the turn of the century were investigated and found to contain only wire nails, an indication that cut nails were at least rare by 1900. This compiled with the general information that wire nails were successfully competing with cut nails by the latter quarter of the nineteenth century suggests that the building activity represented at the site actually occurred between 1830 and 1875.

Also useful in establishing the date of the site's occupation are the various ceramic sherds which were found (Plate XXII). Creamware, pearlware and whiteware are all represented in the artifactual material. Each of these wares has a lengthy history and all are still manufactured today. Even though these wares co-occur, each has its own peak popularity period and therefore may be instructive of age. Further, any decorative features are useful in narrowing the search for the periods during which the site was occupied.

Creamware is the oldest of the three ceramic types. It is the result of experiments probably culminated by Josiah Wedgewood in the 1760's and establishes a date before which the material could not have been deposited. Pearlware first appeared in the 1770's and enjoyed widespread use in the late eighteenth and early nineteenth centuries. It began to decline in popularity in the second quarter of the nineteenth century when it was replaced by various forms of hard white wares, which are very difficult to date (Hume 1976).

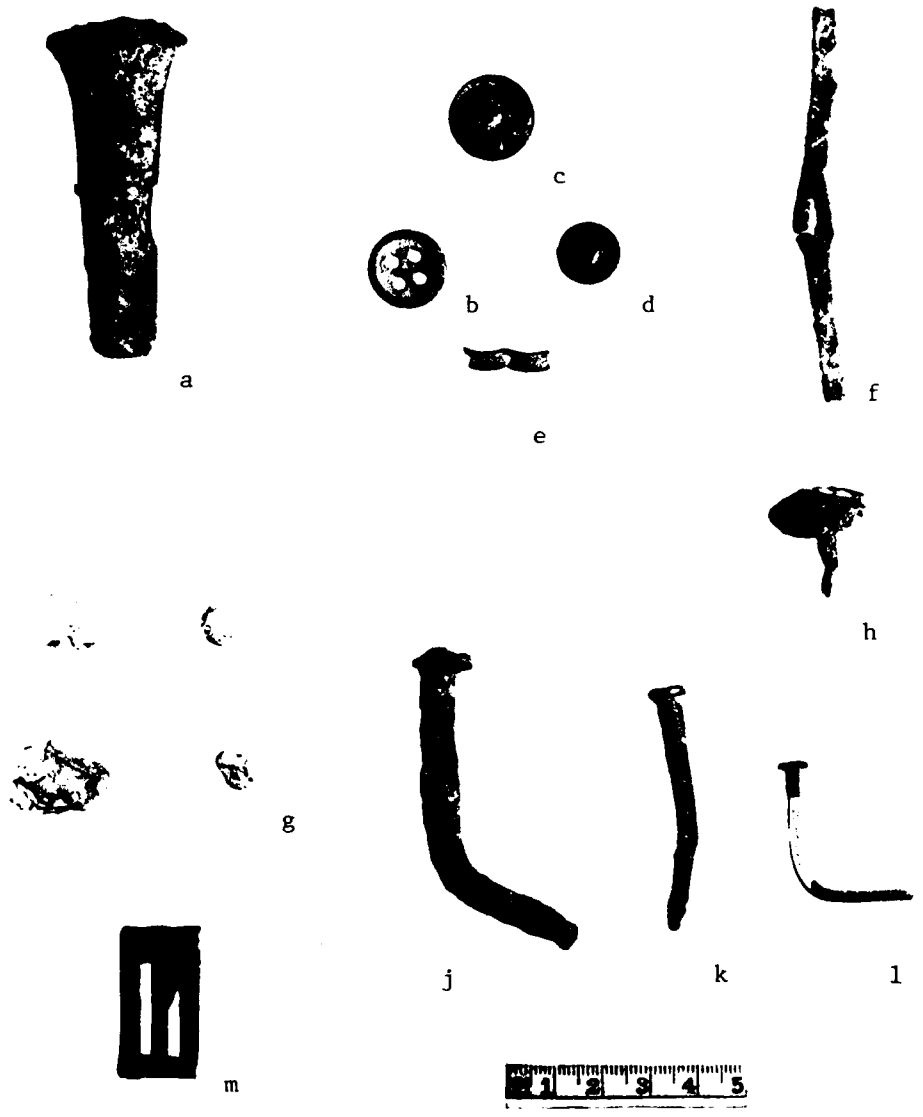

Plate XXI. Historic artifacts from Augusta Bluff.
(a) cast iron leg for cooking pot; (b, c, d) buttons;
(e) unidentified copper object; (f) unidentified metal;
(g) group of lead shot; (h) wrought nail; (j, k, l)
cut nails; (m) part of harmonica.

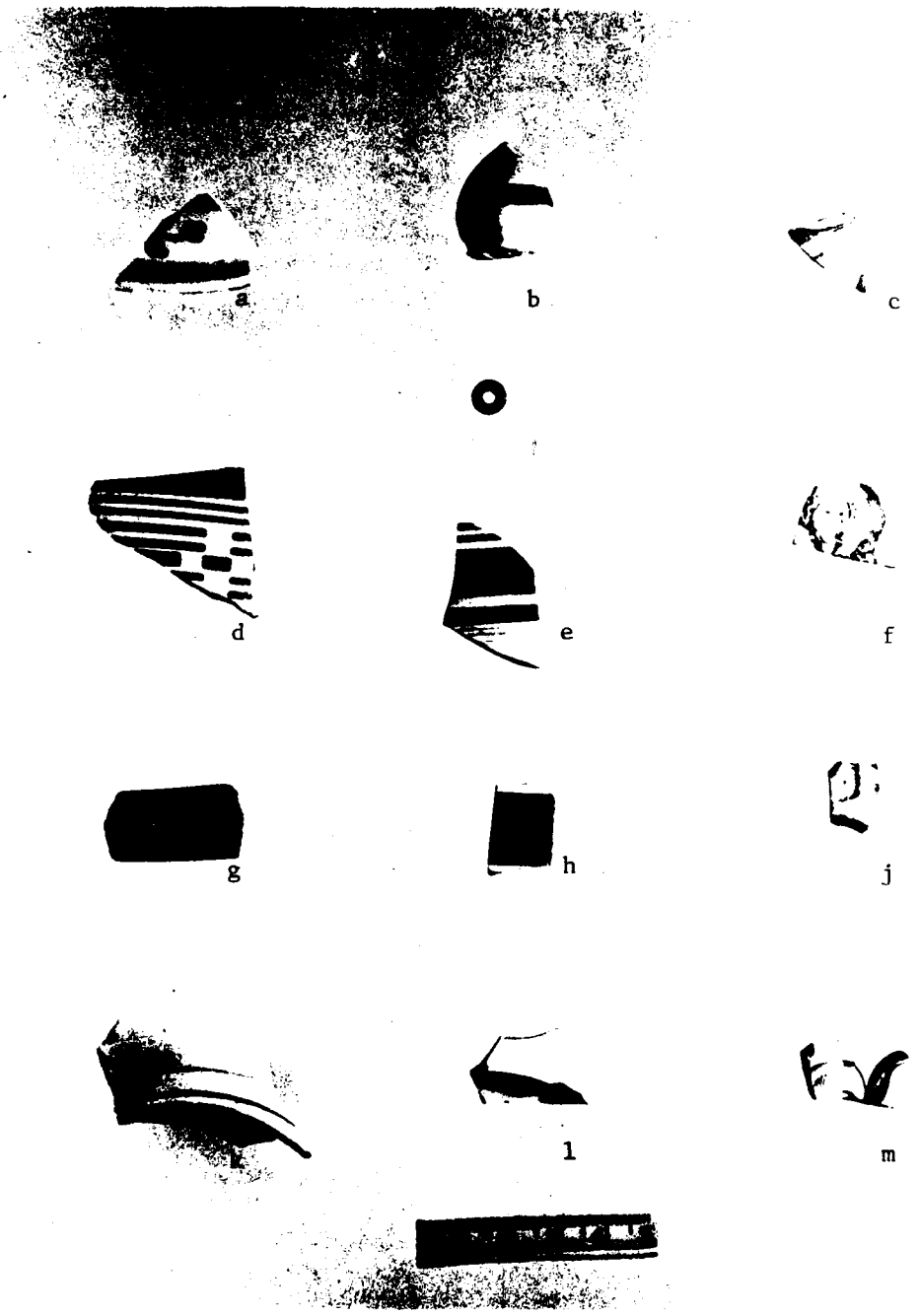

Plate XXII. Historic ceramics from Augusta Bluff. All are pearlware except (h) saltglaze stoneware and (d) glass bead. Pearlware are (a) polychrome lid; (b) finial from lid; (c) "marbled" ware; (e,f) annular ware; (g,k) blue transfer print; (l,m) bowl bases; (n) polychrome.

The entire collection of creamware was plain and therefore not susceptible to precise temporal placement. Several decorated types of pearlware were identified including mocha, annular ware, blue and green edged, transfer print, both blue and red, and polychrome. Stanley South (1972) and Noel Hume (1976) have presented a range and a median date for these as follows: mocha 1795-1890, 1843; annular ware 1790-1820, 1805; blue and green edged 1780-1830, 1805; transfer print 1795-1840, 1818; and polychrome 1820-1840, 1830. The median dates for these types suggest an occupational date for 22pe543 to be within the first quarter of the nineteenth century.

Brown and white stoneware were also found. These types of stoneware are characteristic of the nineteenth century; however, they are not as easily dated as pearlware. South (1972) assigns a median date of 1860 for brown stoneware, but no date is given for white stoneware. Salt-glaze stoneware is characteristic of the eighteenth century, but in some areas it is found throughout the nineteenth century (Brackner 1981). The two pieces of saltglaze stoneware found at Augusta Bluff do not appear to be eighteenth century types.

The largest category of glass found at Site 22Pe543 is window glass; unfortunately, techniques for dating window glass are not well developed but air bubbles in the metal and wavy surfaces indicate an age prior to the twentieth century (Cotter 1968). A total of 248 fragments of black glass were recovered (Table IX). Black glass is characteristic of much of the nineteenth century, but there are significant temporal differences. At the onset of the century most glass was free blown, but mold-made bottles became dominant very early. The black glass from Augusta Bluff is free blown and again lends support to an early nineteenth century occupational date. The forms of the applied lip indicate a first-quarter nineteenth century manufacture (Plate XXIII).

Some lead shot, much of it deformed, was recovered (Plate XXI). One piece retained the sprue from casting. It is impossible to ascertain the caliber of the deformed shot but the unused pieces are apparently buckshot for use in a shotgun. No gun flints or percussion caps were discovered, so it cannot be determined which ignition system was used. Percussion caps began to

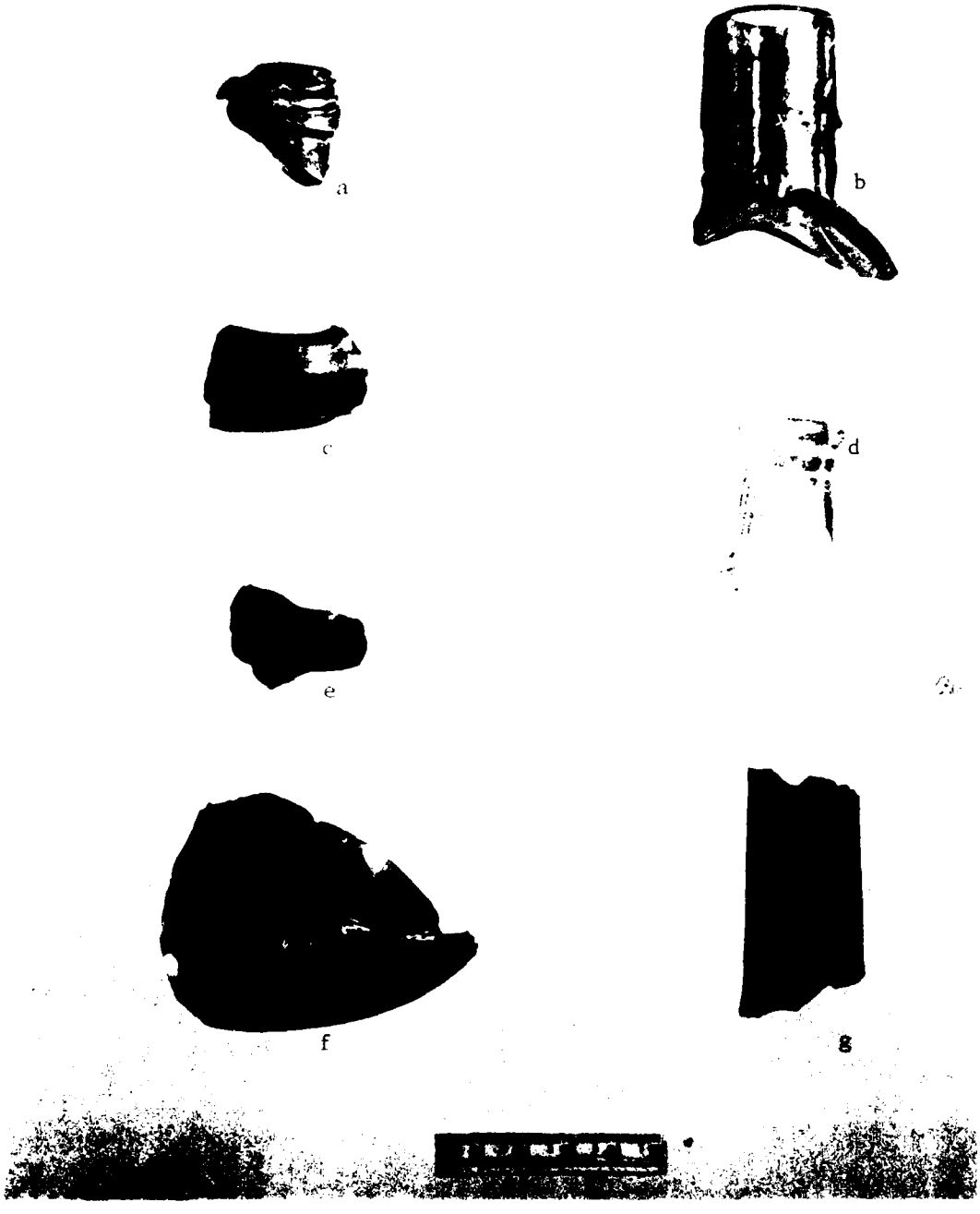

Plate XXIII. Historic glass from Augusta Bluff. (a, c, e) applied lips from free blown bottles; (f) a kicker from a free blown bottle; (b) mold-made applied lip bottle (possibly whiskey); (d) mold-made applied lip bottle; (g) neck of beer bottle.

replace flint in the second quarter of the nineteenth century. One complete round and several spent cases of 22 rimfire ammunition were discovered. This type of shell could be expected after the middle of the nineteenth century.

These several categories of artifacts suggest a nineteenth century occupation at Augusta Bluff. The absence of historical records supporting a pre-nineteenth century settlement is reinforced by the absence of any certain pre-nineteenth century artifacts. The ceramic and glass artifacts lend credence to a first-quarter nineteenth century assignment; however, most of the nails are almost certainly post-1830. Ceramics are items that can have a long life; for this reason and particularly on a frontier, they might not have been replaced for stylistic reasons. Also, glass bottles had many uses and could have been recycled many times.

The conflict between the probable occupational date indicated by the ceramics and glass and that suggested by the nails can be explained. Nails are generally used once. They are not recycled so any new phase of building would have incorporated nails recently produced. The ceramic and glass items could be curated and used for many years past the point when they were introduced into a cultural system. However, considering the fragility of ceramic and glass items, they eventually enter the archaeological record as discards and must be replaced. The absence of items from the third quarter nineteenth century suggests that any replacements were made prior to this time and that the major historical events at 22Pe543 occurred between 1830 and 1850.

The artifacts from the Historic Period at Augusta Bluff represent a broad behavioral spectrum associated with households. Although no actual remains were found, the large number of nails and window glass fragments found seem to indicate that some type of structure was present. Artifacts associated with food preparation and service were the most abundant. Some artifacts relative to clothing were also found (Table IX, Plate XXI). More durable artifacts and those affiliated with furniture were absent and probably indicate how the household came to an end. If a house had burned, a more complete artifactual record would have been left; however, the particular distribution of artifact types seen at 22Pe543 indicates that

the residents relocated and took most portable objects with them. That which remains are those items which, through wear or breakage, entered the archaeological record during the occupation of the site. The nails entered the record with the deterioration of the structure. The total absence of farm tools suggests that the livelihood of the individual or individuals was in Augusta. Portions of the town were less than two hundred meters to the west of the area which was excavated.

Some data relative to the status of the residents were encountered. Little evidence of luxury items was present; this is not unusual if one considers the economic history of Perry County as well as the fact that Augusta Bluff was occupied when the area was still a frontier. The only fragments which might be considered representative of luxury or status were porcelain (Table IX). Even these may represent a single item and certainly no more than two pieces.

The most recent artifacts which littered the surface prior to excavation were not collected. They consisted of glass from soda, beer and whiskey bottles as well as cloth and paper. Most of the surface artifacts and those from the first level of excavation date from the twentieth century and represent a change in the significance of the site. In the first half of the nineteenth century, people must have resided either in or near the area of excavation. Since that occupational event, the use of the area has changed to something less intense in activity. This probably reflects the fall in importance of Augusta, Mississippi, after the Civil War.

The artifacts which date from the post-1850's seem to indicate recreational use of the area. Probably the most common activities are associated with hunting, fishing and social parties. Additionally, the area has been utilized for the occasional dump of household refuse.

AD-A130 064 AGUSTA BLUFF A LATE SITE ON THE LEAF RIVER PERRY COUNTY MISSISSIPPI(U) ARCHAEOLOGICAL RESEARCH ASSOCIATES INC VALDOSTA GA N O WRIGHT 1982 1/2

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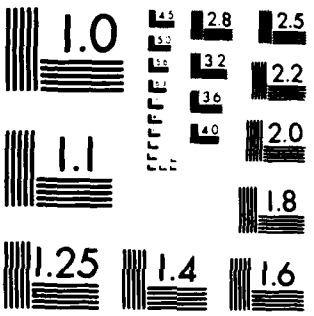


DISCUSSIONS AND CONCLUSION

At the onset of the investigation, little was known of the prehistory of the Pine Hills region of Mississippi. The research conducted at Augusta Bluff has yielded valuable information on several aspects of Late Archaic culture that is beginning to fill the lacuna in our understanding of the past. The work at Augusta Bluff was basically exploratory and the results primarily descriptive. However, there were some specific problems whose solutions were sought.

One of the first objectives pursued was to determine the size of the site. The original surface scatter of lithic artifacts was traced over nine hectares. This distribution of artifacts is indisputable; however, we have learned that the area of the most intensive activity is much more restricted. The occupation as now indicated follows along the bank of the Leaf River for approximately 100 meters and does not extend more than 50 meters from the water's edge. A more precise determination could not be made because much of the area where deposits lie, indicated by an earlier testing program, is outside the impact zone and therefore not available for inspection under the stipulations of this contract. Much of the site remains for other investigators; Leaf River Corporation has fenced the unexcavated portion to prevent damage during construction and to ensure the future protection of these cultural resources.

Another goal of the research was to place the site temporally. The date of occupation which was determined by radiocarbon analysis of charcoal from a hearth is 3,620 B.P. $\pm$ 170.

No interpretable evidence of structural remains was present. One posthole was discovered, but others that would allow reconstruction of types of structures were not found. Knowledge of house sizes might have proven valuable for reconstruction of some aspects of social organization. No evidence of the size of the social group which occupied Augusta Bluff was recovered.

Recovery of information on resource utilization at 22Pe543 was not particularly successful. Flotation revealed none of the expected seeds, nuts or bone fragments. Further, microscreening, through a screen to a size of 297 microns, of selected samples from the excavation, particularly the hearth, did not add to the environmental data base. Preliminary pollen analysis in the biology laboratory at Valdosta State College, Valdosta, Georgia, was attempted as an aid to environmental reconstruction, but it proved unsuccessful. The combination of sandy soil and soil pH destroyed pollen; therefore, the only available evidence of resource utilization was through a generalized reconstruction of environmental zones and extrapolation from that which was likely present to that which was probably used.

As discussed in the environmental section, the inhabitants of Augusta Bluff were probably catholic in their exploitive patterns. The site's proximity to the Leaf River accompanied by the exploitive patterns known from the Boyd Site (Connaway and McGahey 1971) lead to the belief that riverine resources, especially fishes, may have been important to the occupants. Additionally, small animals and deer were certainly valuable resources. Although not in great quantity, a wide range of floral species must have existed. The availability of nuts such as acorns and hickory suggest an autumn occupation; however, other floral species would have been available in the spring.

There is a broad range of activities indicated by the artifacts at Augusta Bluff. The processual interpretation of the stone tool industry revealed that all stages of lithic reduction and use were present from the gathering of raw material to the discard of the exhausted product. No positive evidence of the function of the tool industry was recovered but some inferences are possible. Indications are that manufacture and repair of bifacial tools such as armatures were important. However, other types of maintenance activities are suggested by the presence of drills, worked flakes and some bifaces which could have served for working wood, bone or antler. Preparation of animals is reflected in the relatively large number of pointed ends of projectile points and tools which could have served as butchering instruments. These and others could also have served in the preparation of vegetable material.

Site 22Pe543 did not occur in isolation but was part of a larger cultural system that would have had several manifestations. During the survey in which Augusta Bluff was discovered, several smaller lithic sites were also located. Typologically, tools from Augusta Bluff and the small lithic scatters were similar. The similarities indicate that all of the sites and their contents are probably the products of the same cultural system, if not the same people. The large size and variety of artifacts at Augusta Bluff suggest that it may have been a base camp where people performed a wide variety of maintenance tasks, while the small sites may reflect specialized activity loci that revolved around the main site. The small lithic scatters probably reflect areas where kills and butchering as well as gathering of vegetable material occurred. The products of this activity then would have been carried to the main site for preparation and consumption.

Previously noted, the region surrounding Augusta Bluff seems to have received little human attention except during the Late Archaic Period. This sudden interest in the Leaf River may have been a reflection of changes which occurred in human adaptation outside the immediate area. At approximately the same time that occupation at Augusta Bluff occurred, large Poverty Point sites appeared in the lower Mississippi Valley. The Poverty Point cultures are characterized by monumental earthworks, long distance trade, large aggregates of people and a more complex social structure that is concomitant with these traits (Gibson 1974). The large populations in the Poverty Point centers may partially explain why marginal areas such as Augusta Bluff showed evidence of relatively more intense usage. As Poverty Point populations began to expand, people on the periphery came under pressure to develop new subsistence strategies or move into less favorable environmental zones. At Augusta Bluff no evidence of change from typical Archaic technology was found; therefore, we may be seeing the results of population pressure. Environmental zones previously ignored became important. Although these ideas could not be tested with the data at hand, the relationship between minor river drainages and pressures from Poverty Point cultures seems to offer a profitable area for future research.

Yet another goal of the research was to test the hypotheses which have been offered to explain prehistoric settlement in the Pine Hills region of Mississippi. The proposed Tallahala Creek Reservoir was surveyed by Tesar (1974). He proposed, based upon this survey, a riverine settlement with sites likely to occur "near the extremity of a relatively level, flat topped ridge located adjacent to a swamp with branching streams flanking on one or both sides...." Subsequent to Tesar, additional work was performed in the reservoir by Atkinson and Blakeman (1975). They reported that Tesar's (1974) riverine determinants were too narrow and that sites are widely distributed according to other environmental factors.

Also working in the Pine Hills region were Padgett and Heisler (1979) who reported that sites most commonly occur in two areas. One is on elevations between 150 and 190 feet above M.S.L. and 230 to 250 feet above M.S.L. with intermediate and higher areas avoided. They also found sites occurring at low elevations on flood plains and first terraces near water.

Of the ten prehistoric sites investigated in the course of the survey preceding this excavation, most were near water. The farthest from water were 700 feet and 500 feet; the remainder were adjacent to water sources. This distribution suggests that water was a rather strong determinant for the placement of any site, regardless of function. The area of investigation was 100 to 120 feet above M.S.L.; therefore, the Padgett and Heisler (1979) ideas regarding significant elevation could not be tested.

BIBLIOGRAPHY

Atkinson, James R. and Crawford Blakeman
1975 Archaeological site survey in the Tallahala Reservoir Area, Jasper County, Mississippi. Manuscript submitted to the National Park Service, Tallahassee, by the Department of Anthropology, Mississippi State University, Starkville.

Bell, Robert E.
1958 Guide to the identification of certain American Indian projectile points. Oklahoma Anthropological Society, Special Bulletin 1.

1960 Guide to the identification of certain American Indian projectile points. Oklahoma Anthropological Society, Special Bulletin 2.

Brackner, Elmer Joe
1981 The Wilson potteries. M.A. thesis. University of Texas at Austin.

Burt, William H. and Richard P. Grossenheider
1976 A Field Guide to the Mammals. Third Edition, Houghton Mifflin Company, Boston.

Connaway, John M. and Samuel O. McGahey
1971 Archaeological excavations at the Boyd Site, Tunica County, Mississippi. Mississippi Department of Archives and History, Technical Report 1.

Connaway, John M., Samuel O. McGahey and Clarence H. Webb
1977 Teoc Creek: A Poverty Point site in Carroll County, Mississippi. Mississippi Department of Archives and History, Archaeological Report 3.

Connaway, John M.
1977 The Denton Site: a Middle Archaic occupation in the northern Yazoo Basin, Mississippi. With contributions by Samuel O. Brookes and Samuel O. McGahey. Mississippi Department of Archives and History, Archaeological Report 4.

Cotter, John L.
1968 Handbook for Historical Archaeology. John L. Cotter, Publisher. Wyncote, Pennsylvania.

Cross, Ralph D. and Robert W. Wales, Editors
1974 Atlas of Mississippi. University Press of Mississippi, Jackson.

Dames & Moore
1981 Environmental assessment proposed kraft pulp mill, railroad spur line, and Leaf River bridge, Perry County, Mississippi, for Leaf River Corporation. Manuscript prepared by Dames & Moore, Atlanta.

Davis, Rex E. and Kenneth H. Byers
1979 Soil survey of Forrest County, Mississippi. United States Department of Agriculture, Soil Conservation Service and Forest Service, in cooperation with Mississippi Agricultural and Forestry Experiment Station.

Ford, James A. and Clarence H. Webb
1956 Poverty Point, a Late Archaic site in Louisiana. American Museum of Natural History, Anthropological Papers 46(1).

Gibson, Jon L.
1970 Archaeological checklist of edible flora in the Lower Mississippi Valley. Southeastern Archaeological Conference, Bulletin No. 12 edited by Bettye J. Broyles and Clarence H. Webb. Morganton, West Virginia.

1974a Poverty Point: the first American chiefdom. Archaeology 27(2): 97-105.

1974b The rise and decline of Poverty Point. Louisiana Archaeology 1: 8-36.

Gonzales, John Edmond
1974 History. In Atlas of Mississippi edited by Ralph D. Cross and Robert W. Wales. University Press of Mississippi, Jackson.

Goodyear, Albert C., John H. House and Neal W. Ackerly
1979 Laurens - Anderson: an archaeological study of the South Carolina Piedmont. Institute of Archeology and Anthropology, University of South Carolina, Anthropological Studies 4.

Gould, Richard A., Dorothy A. Koster and Ann H. L. Sontz
1971 The lithic assemblage of the Western Desert Aborigines of Australia. American Antiquity 36(2): 149-169.

Heisler, David M. and Sam Wells
1980 Old Augusta archival search. Manuscript prepared for Pat Harrison Waterway District in completion of Purchase Order No. 6383.

Hulton, Paul (assembler)
1972 Thomas Harriot, A Briefe and True Report of the New Found Land of Virginia. Dover Publications, New York.

Jochim, M. A.
1976 Hunter-Gatherer Subsistence and Settlement: A Prehistoric Model. Academic Press, New York.

Johnson, Kenneth and Serge Gonzales
1978 Salt deposits in the United States and regional geologic characteristics important for storage of radioactive waste. Manuscript prepared for the Office of Waste Isolation, Union Carbide; Nuclear Division United States Department of Energy by Earth Resource Associates, Inc., Athens, Georgia.

Keeley, L. H.
1977 The functions of paleolithic flint tools. Scientific American November 1977: 108-126.

Marshall, Richard A.
1973 The prehistory of Mississippi. In A History of Mississippi, Vol. 1 edited by R. A. McLemore. University and College Press of Mississippi, Jackson.

Nelson, Lee H.
1963 Nail chronology as an aid to dating old buildings. History News 19(2).

Newton, Milton B. Jr.
1971 Louisiana house types: a field guide. Melanges No. 2. Louisiana State University Museum of Geoscience, Baton Rouge.

Olsen, S. J.
1971 Boyd Site: report of faunal analysis. In archaeological excavation at the Boyd Site, Tunica County, Mississippi by John M. Connaway and Samuel O. McGahey. Mississippi Department of Archives and History, Technical Report 1.

Padgett, Thomas J. and David M. Heisler
1979 A predictive model of archaeological site location in the central Leaf River Basin Mississippi. Report prepared by the University of Southern Mississippi for the Mississippi Department of Archives and History.

Penman, John T.
1980 Archaeological survey in Mississippi, 1974-1975. Mississippi Department of Archives and History, Archaeological Report No. 2.

Rowland, Dunbar
1925 History of Mississippi The Heart of the South, Volume II. S. J. Clarke Publishing Co., Chicago - Jackson.

South, Stanley
1972 Evolution and horizon as revealed in ceramic analysis in historical archaeology. In The Conference on Historic Site Archaeology Papers 6 (2).

Sterntzke, Herbert S.
1974 Forest resources. In Atlas of Mississippi edited by Ralph D. Cross and Robert W. Wales. University Press of Mississippi, Jackson.

Suhm, Dee Ann, Alex D. Krieger, and Edward B. Jelks
1954 An introductory handbook of Texas archaeology. Texas Archaeological Society, Bulletin 25.

1962 Handbook of Texas archaeology: type descriptions. Texas Archaeological Society, Special Publication 1 and Texas Memorial Museum, Bulletin 4.

Swanson, Mark T., Jeffrey H. Altschul and L. Janice Campbell
n.d. Archaeological survey of the Mississippi Sandhill Crane National Wildlife Refuge. New World Research Report of Investigations 13.

Tesar, Louis
1974 Archaeological assessment survey of the Tallahala Reservoir area, Jasper County, Mississippi. Manuscript submitted to the National Park Service, Tallahassee, by Mississippi State University, Starkville.

Thomas, David Hurst
1974 Predicting the Past. Holt, Rinehart and Winston, Inc., New York.

Wacaster, C. Thompson
1972 A social and educational history of Perry County, Mississippi. In Rural America A Social and Educational History of Ten Communities edited by Stephen J. Fitzsimmons, Wolff and Abby J. Freedman. Cambridge, Massachusetts.

Watts, W. A.
1971 Post-glacial and interglacial vegetation history of southern Georgia and central Florida. Ecology 52: 676-690.

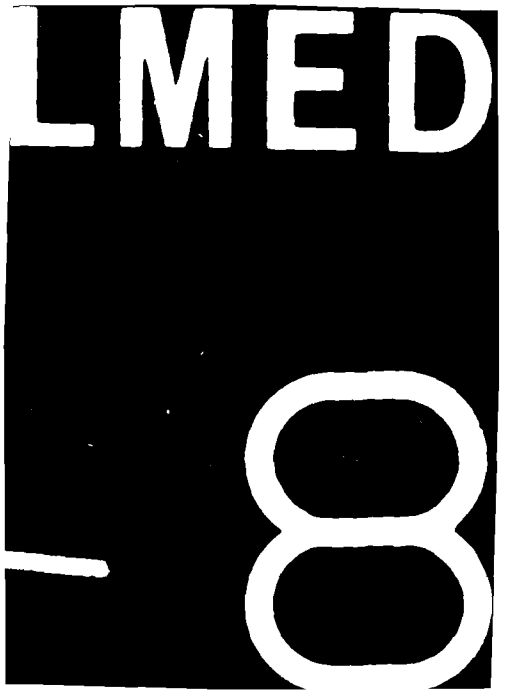
Webb, Clarence H.
1970 Settlement patterns in the Poverty Point cultural complex. In Southeastern Archaeological Conference Bulletin 12 edited by Bettye J. Broyles and Clarence H. Webb.

1977 The Poverty Point culture. Geoscience and Man 17. School of Geoscience, Louisiana State University, Baton Rouge.

White, J. Peter and David Hurst Thomas
1972 Ethno-taxonomic models and archaeological interpretations in the New Guinea Highlands: what mean these stones?. In Models in Archaeology edited by David L. Clarke. Methuen and Co., Ltd., London.

Wright, Newell O. Jr.
1980 Lithics. In The Hanna Site an Alto village in Red River Parrish edited by Prentice Marquet Thomas, L. Janice Campbell and Steven R. Ahler. Louisiana Archaeology No. 5.

1981 Cultural resources investigations at the proposed site of Leaf River Corporation Plant, Perry County, Mississippi. Archaeological Research Associates, Report of Investigations No. 11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