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CULTURAL RESOURCES SURVEY OF THE CAERNARVON DIVERSION
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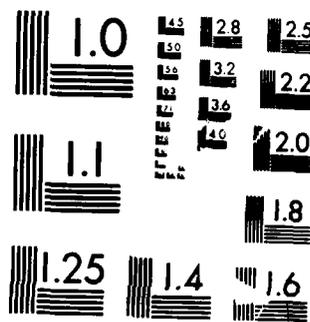
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Report Number: COELMN/PD-87/06

**US Army Corps
of Engineers**
New Orleans District

**CULTURAL RESOURCES SURVEY OF THE
CAERNARVON DIVERSION SITE, MISSISSIPPI DELTA
REGION, LOUISIANA.**

AD-A184 135

FINAL REPORT
July 8, 1987

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R. Christopher Goodwin and Associates, Inc.
5824 Plaque Street
New Orleans, Louisiana 70123

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

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Big Mar	Delacroix Canal	Seasonality
Braithwaite Canal	English Turn	Shell fish
Caernarvon Canal	Natural levee	Shell midden
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) See next page.		

No. 20. Abstract

> This report presents the results of cultural resource investigations in the Caernarvon Diversion Site, Plaquemines Parish, Louisiana. An intensive pedestrian survey of the batture and channel of land between Caernarvon Canal and Braithwaite Golf Course was conducted. The examination of the shoreline of Big Mar and the banks of canals adjacent to this lake supplemented the pedestrian survey efforts. The project area was located within the former Caernarvon Plantation. However, no extant portion of this plantation was identified by the survey within the project area. Three archeological sites were discovered during this investigation. Two prehistoric shell middens, 16 PL 148 and 16 PL 149, were discovered on the edges of Big Mar. One historic site, 16 PL 150, was discovered near LA 39. All of the sites were disturbed. None are considered significant cultural resources.

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 P.O. BOX 60267
 NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
 ATTENTION OF

June 23, 1987

Planning Division
 Environmental Analysis Branch

To The Reader:

This cultural resources effort was designed, funded, and guided by the U.S. Army Corps of Engineers, New Orleans District as part of our Cultural Resources Management Program. The effort documented in this report was a cultural resources survey of the Caernarvon Freshwater Diversion Site, a feature of the Mississippi Delta Region project.

We concur with the Contractor's conclusion that no significant cultural resources will be affected by the proposed project.

Michael E. Stout
 Technical Representative

Caroline H. Albright
 Authorized Representative
 of the Contract Officer

for Cletis R. Wagahoff
 Chief, Planning Division

ACKNOWLEDGEMENTS

R. Christopher Goodwin & Associates, Inc. would like to thank the following individuals for their assistance in the completion of the Caernarvon Diversion Site project. Ms. Caroline Albright and Mr. Michael E. Stout, Environmental Analysis Branch, Planning Division, U.S. Army Corps of Engineers, New Orleans District, provided assistance and guidance throughout the project. Both Ms. Albright and Mr. Stout contributed their time and assistance to the collection of archival materials, including historic maps and aerial photographs of the project area, possessed by the New Orleans District. We also would like to thank Mr. David Fuller, Real Estate Division, U.S. Army Corps of Engineers, New Orleans District, for his efforts in obtaining right of entry from the property owners within the project area. Mr. Samuel Wilson, Jr., noted architectural historian, provided valuable information concerning the verification of the Newberry map, ca. 1726, of French concessions in the area. Mr. Roderick Lincoln also contributed to the gathering of historic information concerning the Orange Grove and Caernarvon Plantations and the origin of Big Mar. Mr. William Oberhelman, former supervisor for Mayflower Moving Company, provided valuable information concerning the displacement of squatters or farmers from the Caernarvon area during the opening of the crevasse in 1927. Finally, we would like to thank the field crew, Kathy Manning, Carol Poplin, Eric Poplin, and Randy Primm, for their efforts in completing the survey and site assessments in an efficient manner, and Mr. David Poynter and Mr. Hobert Creasy for their assistance in the construction of maps and figures included in this report.

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CHAPTER I

CULTURAL RESOURCES SURVEY OF THE CAERNARVON DIVERSION SITE

Introduction

This report presents the results of a cultural resources survey of the Caernarvon Diversion Site, Mississippi Delta Region, on the left descending bank of the Mississippi River, at River Mile 81 above Head of Passes, in Plaquemines Parish, Louisiana. This survey was undertaken pursuant to Contract DACW29-86-D-0093, Delivery Order No. 0003, for the U.S. Army Corps of Engineers, New Orleans District, during March, 1987. The purpose of the survey was to locate, describe, and assess all cultural resources within the planned project area.

The study area consists of the proposed diversion structure, channel, containment dikes, and the southern and western margins of Big Mar (Figure 1). Due to logistical constraints, the survey was divided into a pedestrian and boat-based survey. A pedestrian survey was conducted on the channel of land between Caernarvon Canal and the Braithwaite Golf Course (between Levee Stations 0 + 76.16 and 12 + 88.7), and on the batture approximately between Levee Stations 0 + 76.16 and 12 + 88.7 (Figure 2). These areas will experience impacts related to the construction of various features of the diversion structure. The boat-based bankline survey included the entire shore of Big Mar, the eastern bankline of Braithwaite Canal, the northern bankline of Delacroix Canal, and the bankline of all of the small marsh islands within Big Mar (Figure 2). These areas will experience impacts resulting from construction activities; they also may experience erosion and sedimentation as a result of the operation of the diversion structure.

Archeological investigations consisted of archival research concerning the project area, pedestrian survey of the drier portions of the project area, and a bankline survey of the shoreline of Big Mar and the adjacent canals. Three sites were located during this survey.

Format of This Report

In the sections that follow, the environmental setting with respect to the project area and specific geomorphic features (e.g., natural levees and backswamps) and geological processes (i.e., the 1927 crevasse) are described. Chapter III provides a summary of the prehistory of the region in which the study area is located, with a particular focus on the Tchefuncte period. A



Figure 1. View of the Caernarvon project area showing the location of proposed features of the Caernarvon Freshwater Diversion Structure.

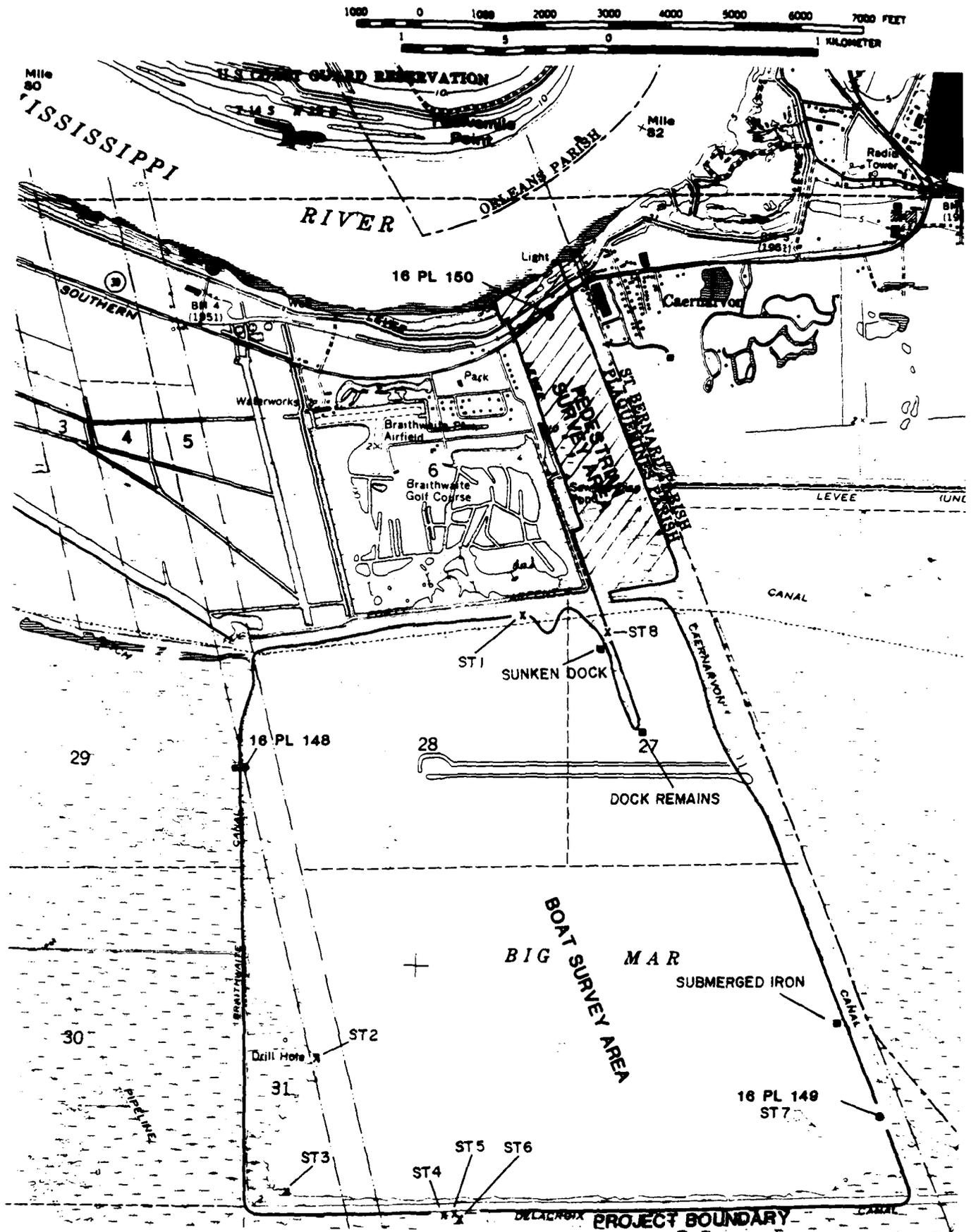
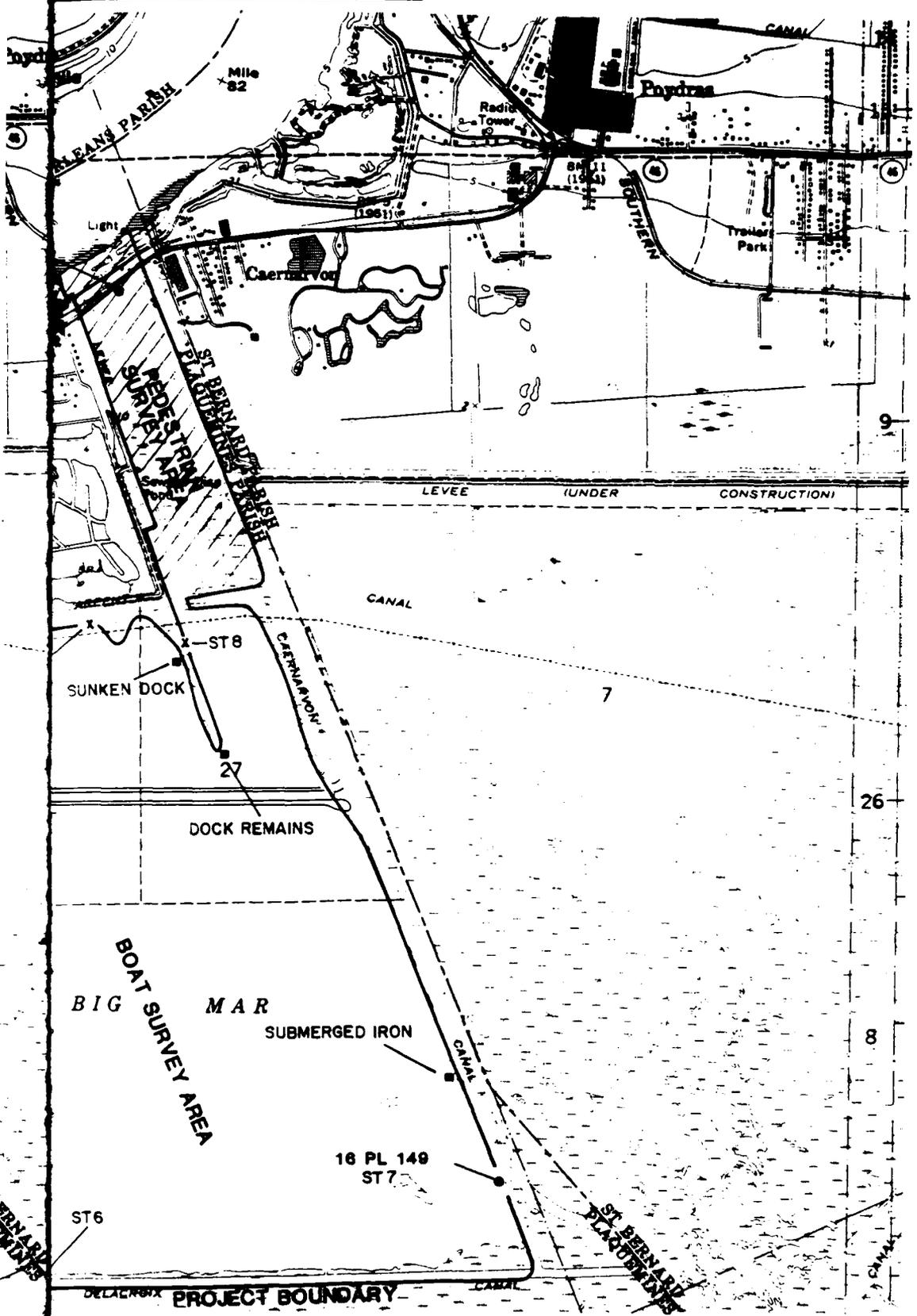
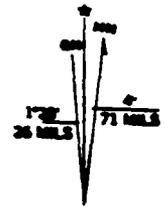


Figure 2. Excerpt from the Belle Chasse 7.5' quadrangle showing the location of the project area and identified sites.

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se 7.5' quadrangle project area and

summary of the documents, maps, and manuscripts examined during archival research is presented in Chapter IV. Included in this chapter is an overview of the historic development of the area along the Mississippi River between English Turn and Poydras with emphasis on Caernarvon and Orange Grove Plantations. A description of survey and testing methodologies is presented in Chapter V. The survey results and site descriptions are presented in Chapter VI. Chapter VII presents the recommendations and conclusions of this study with respect to the eligibility of the three located sites for nomination to the National Register of Historic Places, and the necessity for future work in the project area.

CHAPTER II

ENVIRONMENTAL SETTING

Project Area Description

The project area was divided into three survey sections including the batture, the channel of land between Braithwaite Golf Course and Caernarvon Canal, and the shores of Big Mar. The batture, located between levee stations 0 + 76.16 and 12 + 88.7 (Figure 2), is presently wooded primarily with willow. It was flooded at all times during the present study. The channel of land to the south of the batture, across LA Highway 39 (Figure 2), consists of natural levee and crevasse deposits. This area is covered by an open forest containing elm, hackberry, willow, maple, and occasional cypress and gum. At the southernmost end of this portion of the study area, more swamp-like conditions exist (i.e., marshgrass, cypress trees, and scrub oak). Immediately to the south of the pedestrian survey area is Big Mar (Figure 2). Banklines examined during the survey consist primarily of backswamp deposits. Scrub oak and small undergrowth cover these banklines. Small islands of marsh exist within the boundaries of Big Mar; these are also backswamp deposits. Vegetation on the islands is almost exclusively marsh grasses (common reed).

The Regional Setting

The regional setting of the project area is the deltaic plain of the Mississippi River. This is a zone of intensive interaction between fluvial and marine processes. The deltaic plain is composed of at least five discernible delta complexes, each of which has a number of delta lobes or distributary networks. Each delta complex represents a predictable cycle of sedimentation and landscape development. Deposition, subsidence, and erosion cause shore lines to advance and retreat alternately in response to the development of new delta lobes or the abandonment of old lobes, respectively. On the coastal plain, where plant and animal communities are highly sensitive to changes in elevation and salinity, changing shorelines and stream patterns can produce changes in the ecology and environment of an area. All of these factors may have had major influences on the lifeways of prehistoric and historic populations living in a delta ecosystem.

The Mississippi River has experienced at least seven episodes of lobe building (Figure 3). The earliest of these, the Sale - Cypremort or Maringouin lobe, began building approximately 8000 B.P. (Smith, Britsch, and Dunbar 1986:38). The main river course flowed through the central portion of the present alluvial valley

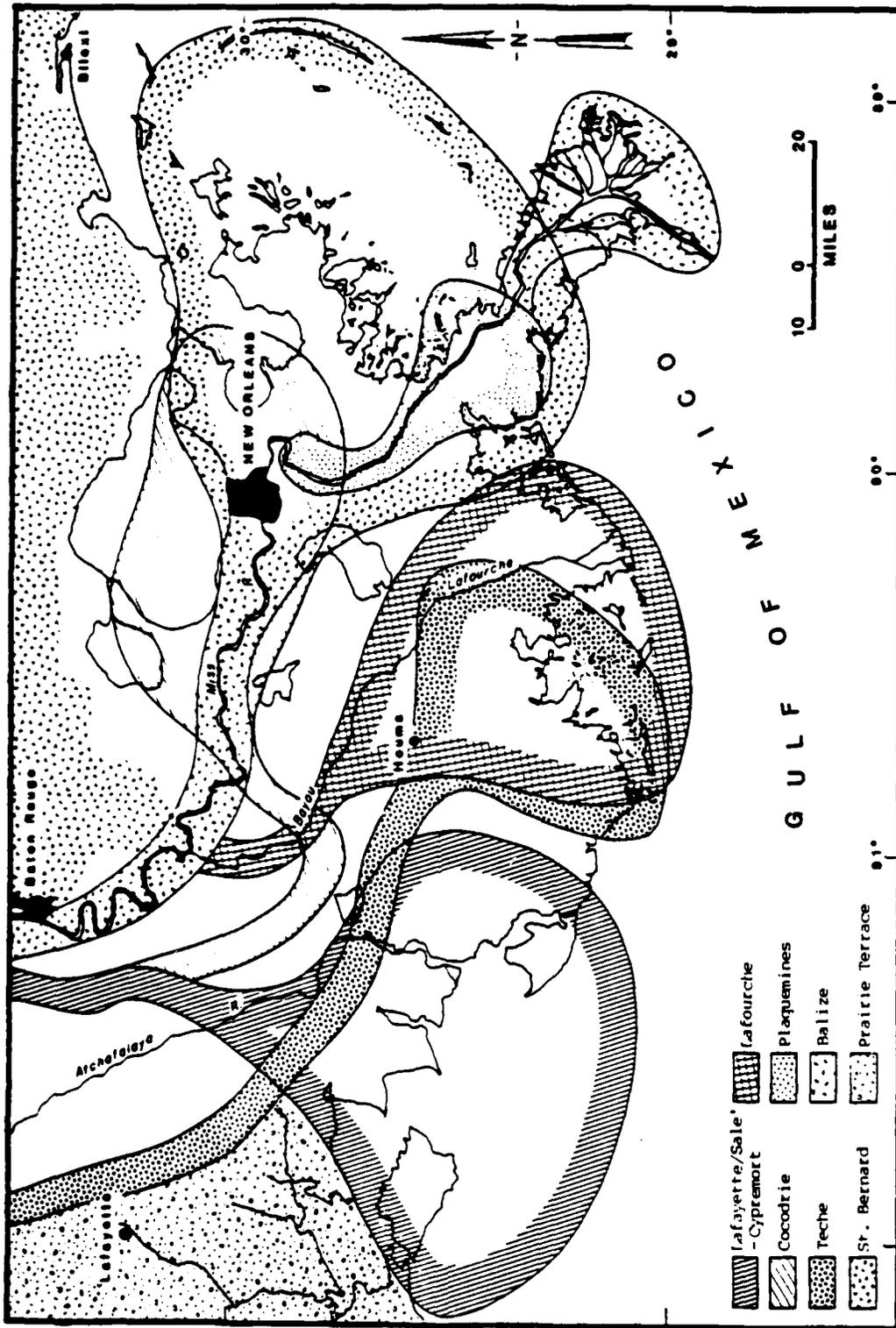


Figure 3. Major delta lobes of the Mississippi River (modified from Kolb and Van Lopik 1966).

during the active phase of this early delta (Saucier 1974). The next lobe to form, the Cocodrie, was active between approximately 5000 and 3500 B.P. (Gagliano et al. 1975:41). The trunk stream shifted to the west side of the alluvial valley. However, an eastward trend of the trunk resulted in the deposition of deltaic sediments in the Pontchartrain Basin (Saucier 1962:62). A western trunk of the Mississippi River developed the Teche delta in the Terrebonne Bay region between 5800 and 3500 B.P. (Smith, Britsch, and Dunbar 1986:38).

At approximately 3500 B.P., a fourth sequence of delta formation began. This sequence, the St. Bernard delta complex, was comprised of a series of delta lobes that formed within the Pontchartrain Basin and over the modern eastern shoreline of Louisiana. During this period, the trunk stream occupied the eastern portion of the alluvial valley, reoccupying the older Cocodrie course of the Mississippi River. The trunk channel and its distributaries apparently deposited their natural levees on top of the older Cocodrie levees that subsided prior to the development of the St. Bernard complex (Saucier 1962:70). Deposition continued through the St. Bernard complex until approximately 2000 B.P. (Smith, Britsch, and Dunbar 1986:38-40). At that time, the trunk channel turned southward near the present city of Donaldsonville, Louisiana, and began forming the LaFourche delta complex. Approximately 1000-1200 B.P., the trunk stream shifted eastward again and the river occupied a course near its present location (Smith, Britsch, and Dunbar 1986:44-45). The Plaquemines delta lobe formed as a result of this shift in the trunk stream of the river. This delta remained active until approximately 500 B.P., when the Modern or Balize delta began to form. The most recent delta complex extends southeastward from the preceding Plaquemines delta.

Of primary interest to this study is the Bayou La Loutre lobe of the St. Bernard delta complex. This lobe represents the most recent outlet of the St. Bernard delta. Maximum flow through the Bayou La Loutre lobe is estimated to have occurred circa 2200 B.P. (Saucier 1962:72). While earlier distributaries of the St. Bernard complex deposited materials into the Pontchartrain Basin northeastward of New Orleans, the Bayou La Loutre distributaries carried materials southeastward across the area occupied by the modern river course near English Turn and the Caernarvon project area (Saucier 1962:67). These alluvial deposits undoubtedly experienced subsidence prior to the deposition of natural levees within the project area during the occupation of the more recent Plaquemines and Balize deltas.

This suggests that the earliest alluvial deposits present within the Caernarvon project area may derive from the St. Bernard delta. The earliest archeological sites associated with the

natural levees of the St. Bernard complex represent Marksville period occupations. However, Tchefuncte period sites have been discovered in Orleans and St. Tammany parishes, in interdistributary portions of the St. Bernard delta. Saucier (1962:75) suggests that Tchefuncte period occupants of the region may have selected such marginal areas rather than the more riparian ones. Therefore, the earliest archeological sites within the project area may be associated with the Tchefuncte period.

Delta Environment

The deltaic plain is composed of former stream courses, swamps, marshlands, and near-sea level lakes. These sub-environments can be classified as follows: natural levee system, fresh water swamp, fresh/brackish water marsh, and interdistributary bays and lakes. Each subenvironment supports a distinctive biota.

Natural Levee

Natural levees and levee backslopes form along distributary channels. They are composed primarily of silts deposited by overbank flooding. Levees and their adjacent backslopes represent the highest areas of land available to flora and fauna for colonization in a delta system. Levees reach their maximum elevations adjacent to the distributary channels, gradually grading down into fresh water swamp. Ruptures can occur in natural levees as a river changes course or during river flood periods. Major ruptures result in the formation of new distributary channels while minor ruptures become crevasse channels. Crevasse channels are usually associated with flood episodes (Smith, Britsch and Dunbar 1986). Crevasse features, and deposits associated with them, are discussed in more detail below.

The levee and levee backslope support a diverse variety of flora and fauna. Mammals such as the white-tailed deer (Odocoileus virginianus), the Eastern cottontail (Sylvilagus floridanus), and the American black bear (Euractos americanus) inhabit these areas. The floral overstory supports many varieties of hardwood trees including live oak (Quercus virginiana), American elm (Ulmus americana), pecan (Carya illinoensis), and hackberry (Celtis laevigata). Some common varieties found in the understory are water locust (Gleditsia aquatica), palmetto (Sabal minor), greenbriar (Smilax rotundifolia), and Spanish moss (Tillandsia usneoides) (Beavers et al. 1982:Appendix B).

It is generally accepted that natural levees were one of the

preferred locations for site establishment by prehistoric peoples. The reasons for this apparent attraction to these features include: the presence of optimum soil drainage, the availability of faunal, floral, and natural resources, the proximity to transportation routes, and the protection from natural hazards, i.e., floods, hurricanes, etc. (Smith, Britsch, and Dunbar 1986). Most of the Caernarvon project area lies on the natural levee of the Mississippi River. In the New Orleans area, these deposits extend approximately 1.5 miles inland from the edge of the river. These deposits may be 10-12 feet thick (Saucier 1962:18-19). Due to subsidence in and around Big Mar and the lack of extensive overbank flooding in the recent past, however, extant natural levee deposits are confined to the batture in front of the modern levee and the area of the pedestrian survey, i.e., the channel of land between Braithwaite Golf Course and Caernarvon Canal.

Fresh Water Swamp

Fresh water swamps form in the interstitial areas of distributaries, as well as in areas flanking the backslope portions of the natural levees. Fine silts and clays along with organic debris are the aggrading materials in this sub-environment. These low-lying areas retain standing water for at least a portion of the year, with most areas remaining inundated year-round (Smith, Britsch and Dunbar 1986:25). Limited portions of the project area (i.e., 10 per cent of the area examined by pedestrian survey) fall within this subenvironment.

This ecotone is diverse in its floral and faunal components. The floral overstory is dominated by bald cypress (Taxodium distichum) and tupelo gum (Nyssa aquatica), with Virginia willow (Itea virginica) and buttonbush (Cephalanthus occidentalis) also represented. The understory is much more varied and contains alligatorweed (Alternanthera philoxeroides), swamp lily (Crinum americanum), water hyssop (Bacopa monnieri), lizard's tail (Saururus cernuus), fanwort (Cabomba caroliniana), and whorled pennywort (Hydrocotyle verticillata) (Beavers et al. 1982:Appendix B).

Mammalian representatives of the faunal community include white-tailed marsh deer (O. virginianus mcilhennyi), common muskrat (Ondatra zibethicus), American beaver (Castor canadensis), river otter (Lutra canadensis), and the Virginia opossum (Didelphis virginiana). Reptiles and amphibians also are well represented, with the American alligator (Alligator mississippiensis), the bullfrog (Rana catesbeiana), the common snapping turtle (Chelydra serpentina), and the cottonmouth (Agkistrodon piscivorus) being common examples. Large populations of birds also can be found inhabiting areas of fresh

water swamp. These include the great blue heron (Ardea herodias), wood duck (Aix sponsa), red-tailed hawk (Buteo jamaicensis), white ibis (Eugocimus albus), and osprey (Randion haliactus) (Beavers et al. 1982:Appendix B).

Marsh

Beyond the fringes of the fresh water swamps, areas of marsh develop. Marshes can be sub-divided into fresh, brackish, and saline varieties. Each supports different floral and faunal communities. Marshes are characterized as areas of reeds and grasses that perennially retain standing water. The primary materials of sedimentation consist of clays and large amounts of organic materials. The large volume of organic debris produced by a marsh environment results in thick layers of peat being deposited (Smith, Britsch and Dunbar 1986:25-26).

All three varieties of marsh are productive areas in terms of their biota. Fresh water marsh fauna include white-tailed deer (Odocoileus virginianus), mink (Mustela vison), red wolf (Canis rufus), mallard (Anas platyrhynchos), killdeer (Charadrius vociferus), alligator snapping turtle (Macroclemys temmincki), green anole (Anolis carolinensis), banded water snake (Natrix fasciata), alligator (Alligator mississippiensis), and the red swamp crawfish (Procambarus clarkii). Floral species common to the fresh water marsh environment are represented by sea myrtle (Baccharis halimifolia), marsh elder (Iva frutescens), black willow (Salix nigra), rushes (Juncus sp.), switchgrass (P. virgatum), southern cattail (Typha domingensis), and giant cutgrass (Zizaniopsis miliacea) (Beavers et al. 1982:Appendix B).

On the seaward side of the fresh water marsh is the brackish marsh. This is where the fresh water from inland areas meets the inflow of intrusive water from the sea. A state of relative equilibrium between salt and fresh water is maintained, creating large areas of brackish marsh. The brackish marsh is one of the most productive areas of the delta system (Bahr et al. 1983). It is in this type of marsh that the brackish water clam (Rangia cuneata) thrives. This mollusc provided an economic base for numerous aboriginal groups in the southeast. Other members of the biotic community include the double crested cormorant (Phalacrocorax auritus), mottled duck (A. fulvigula), American avocet (Recurvirostra americana), muskrat (Ondatra zibethicus), pig frog (Rana grulio), diamond-backed water snake (N. rhombifera), blue crab (Callinectes sapidus), oyster (Crassostrea virginica), stinkpot (Sternothaerus odoratus), rattlebox (Sesbania texana), sea oxeye (Baorrichia frutescens), saltwort (Batis maritima), spikerush (Eleocharis sp.), black rush (Juncus roemerianus), and pink hibiscus (Kasteletzkya virginica) (Beavers et al. 1982:Appendix B).

The salt water marsh is found on the seaward edges of the prograding delta, where marine influences dominate. Members of the salt marsh biotic community include white-tailed deer, river otter, mink, raccoon, frigate (Fregata magnificens), snow goose (Chen caerulescens), pintail (A. acuta), diamond-backed terrapin (Malaclemys terrapin), river cooter (Chrysemys concinna), blue crab, oyster, black mangrove (Avicennia germinans), sea myrtle, saltgrass (Distichlis spicata), saltmarsh fimbriatilis (fimbriatilis castanea), sea-purslane (Sesuvium sp.), and sea blite (Suaeda tinearis) (Beavers et al. 1982:Appendix B).

Approximately 80 per cent of the present study area, including Big Mar, falls in the brackish marsh subenvironment. All areas examined during the boat-based bankline survey contained clays or silty clays overlain with dredged borrow sediments (probably from the construction of the four canals surrounding Big Mar). These materials probably represent natural levee deposits that have subsided, permitting the development of the modern marsh. It is unclear how Big Mar actually formed, but it is possible it did not develop until after the construction of the canals. Recent borings in Big Mar conducted for the State of Louisiana suggested that Big Mar represented an abandoned rice field (R. Lincoln, personal communication, 1987). The extremely shallow depth of the lake supports this hypothesis. In addition, the U.S.G.S. 7.5 minute St. Bernard quadrangle, dated 1890 with revisions in 1910, does not show the lake. The lake first appears on the 1938 edition of the St. Bernard quadrangle. During this period, the Caernarvon project area was used as agricultural fields. These pursuits included attempts to grow rice (see Chapter IV). However, the inundation of the area may not have occurred until after the opening of the Caernarvon crevasse in 1927 (see below).

Interdistributary Lakes and Bays

The shores of interdistributary lakes and bays have produced a significant clustering of prehistoric sites in the delta system (Smith, Britsch and Dunbar 1986:72). These ecotones were important locations for various prehistoric populations, providing abundant resources and easy access to the interdistributary waterway system. The lakes and bays supported a variety of edible plants and animals including wood duck, mallard, snapping turtle, blue catfish (Ictalurus furcatus), channel catfish (I. punctatus), yellow bass (Morone mississippiensis), freshwater drum (Aplodinotus grunniens), blue crab, river crawfish (Procambarus blandingii), Rangia cuneata, oyster, southern flounder (Paralichthys lethostigma), sheepshead (Archosargus probatocephalus), and pecan trees (Beavers et al. 1982:Appendix B). While Big Mar may be an example of such lakes,

the nature of bottom sediments and the extremely shallow depth, as discussed above, suggest that it may be a cultural feature rather than a natural one.

Crevasse Channels and Splays

Associated with the natural levee system are crevasse channels and splays. Crevasse channels are ruptures or breaks in the natural levees of active river courses during periods of high flow (Gagliano et al. 1979). These ruptures allow flood waters and sediments to be discharged into the backswamp areas. Crevasse channels generally extend away from the main course and are characterized by broad natural levees (Smith, Britsch, and Dunbar 1986). They are usually shortlived features and receive flow only during flood episodes.

Depositionally, crevasse channels are represented by crevasse splays. Splays are coarse-grained sediments laid down at the distal end of the crevasse channel. Splay deposits are characterized by a triangular or semi-elliptical shape and by numerous interconnecting smaller channels that radiate outwards in all directions. Sediments in the splays are deposited as the rate of flow decreases with the lateral spreading of flood water away from the channel (Smith, Britsch, and Dunbar 1986).

In 1927, an artificial crevasse, the Caernarvon Crevasse, was created at the location of the present study area to reduce the flood height at New Orleans during the great flood of that year. A number of explosions were required to produce a gap in the levee wide enough to alleviate the threat to New Orleans. After the seventh dynamiting, the crevasse measured two thousand feet across (Saxon 1927). Splays similar to those associated with naturally occurring crevasses were formed by the flood waters. Subsurface testing conducted during pedestrian survey of the study area revealed a number of sandy drumlin-like features that represent splay deposits associated with the 1927 crevasse.

CHAPTER III

THE PREHISTORIC SETTING

Previous Investigations

Archeological activity within the project area has been minimal (i.e., Shenkel 1977), although more substantial studies have been conducted within the greater region (e.g., Kniffen 1936; Gagliano, Weinstein, and Burden 1978; Wiseman, Weinstein, and McCloskey 1979). In the following discussion, archeological investigations pertinent to the study area are reviewed.

One of the first comprehensive studies of the region, done in 1936 by Fred Kniffen, is a survey of Indian mounds and middens in St. Bernard and Plaquemines Parishes. He visited and mapped fifty sites, all of which fall into the categories (as defined by Kniffen 1936) of earth mound, shell mound, shell midden, and beach deposit. Kniffen noted site locations with regard to geomorphological features and water courses. None of the sites located by Kniffen fall within the present study area.

Two sites located by Kniffen (1936) are the Magnolia Mound site and the Shotgun Shell midden. Both are located in St. Bernard Parish, approximately twenty-five miles northeast of the study area between the eastern shore of Lake Borgne and Bayou La Loutre.

Magnolia Mound (16 SB 49) consists of a group of eleven earth and shell mounds. The mounds occupy an area 1.1 kilometers long and approximately 300 meters wide. The highest of these mounds is approximately 3.4 meters above mean ground level (Gagliano et al. 1982; Gagliano, Weinstein, and Burden 1978). Geomorphologically, the site is associated with a large distributary crevasse of Bayou La Loutre. Approximately 1 meter of known midden deposits lie below ground surface.

Ceramic remains indicate that the site's initial occupation was during the Marksville Period. The conical mound at the site probably was constructed during this cultural period. Following a cultural hiatus, the site was reoccupied during the Plaquemine period. During this later period, pyramidal mounds at the site were constructed (Gagliano et al. 1982; Gagliano, Weinstein, and Burden 1978).

Approximately seven kilometers to the north of Magnolia Mound is Shotgun Shell (16 SB 52). The site consists of a small Rangia shell midden atop a subsided natural levee. Site size is approximately 15 by 20 meters with a maximum elevation of 0.4 meters above ground surface. Cultural components at the site are

not well know, although a single burial has been identified. Based on the close proximity of the site to Magnolia Mound, a Marksville occupation has been hypothesized by Gagliano et al. (1982). Several shell-tempered ceramic fragments recovered from the site would indicate a Mississippian occupation as well.

Only one previous study has been conducted within the present project area. In 1977, Richard Shenkel conducted an intensive pedestrian survey of the batture on the left descending bank of the Mississippi River between river mile 82.0 and 80.0. No cultural resources were located during the investigations.

Aboriginal Culture History

Tchefuncte Period

The earliest documented prehistoric period in the region is the Tchefuncte period (Smith et al. 1983), which dates approximately from ca. 500 B.C. to A.D. 200 (Neuman 1984:113-136; cf., Shenkel 1984:44). During the Tchefuncte period, pottery became important in prehistoric Louisiana, and increasing amounts of pottery with rocker stamped decoration, and with tetrapodal supports were made. The soft Tchefuncte pottery had poorly compacted paste, and common vessel forms included bowls and cylindrical and shouldered jars. Decoration included fingernail and tool punctation, incision, simple stamping, drag and jab, parallel and zoned banding, and stippled triangles.

The Tchefuncte artifact assemblage includes boatstones, grooved plummets, mortars, sandstone saws, barweights, scrapers, and chipped celts. Socketed antler points, bone awls and fish hooks, and bone ornaments also have been found. Projectile point types found in Tchefuncte contexts are Gary, Ellis, Delhi, Motley, Pontchartrain, Macon, and Epps.

The population of the Tchefuncte period appears to have been a melange of long-headed Archaic peoples with a new subpopulation of broad-headed people who practiced cranial deformation, and who are thought to have entered the Southeast from Mexico. The presence of rocker stamped pottery, zone and panel decorations, and of some other individual traits (viz. Shenkel 1984:64-65), also shows similarities to the Hopewellian development (500 B.C. to A.D. 300).

Tchefuncte subsistence strategies appear to have two orientations (Shenkel 1984:44-45). First, inland groups focused on the river terrace and floodplain habitats of the lower Mississippi alluvial valley. The second strategy involved the utilization of the Louisiana coastal plain and Mississippi River

delta. Shenkel (1984:65) suggests that this shift to coastal resources represents a new adaptation by prehistoric peoples. The paucity of sites in these coastal zones may be a result of site loss (through coastal subsidence, reworking of coastal deposits, and/or fluctuating sea levels), rather than an orientation toward a previously unexploited resource. Despite the lack of earlier sites in similar settings, the following generalizations concerning utilization of the coastal environment during the Tchefuncte period are possible.

Shenkel (1984:66-67) notes the association of all Tchefuncte sites in the coastal plain of Louisiana with shell middens, comprised primarily of Rangia cuneata. While adjacent habitats were exploited (*viz.* Byrd 1974, 1976), emphasis is placed on locations adjacent to habitats favorable to the growth of Rangia (i.e. brackish marsh with occasional fluctuations in salinity). The majority of the other exploited species recovered from Tchefuncte sites are accessible in these same habitats (e.g., fish, turtles, etc.). Byrd (1976:28-30) notes this emphasis may be a reflection of a selection of settlement locations near a constant predictable resource (Rangia), rather than a primary subsistence focus on molluscan fauna. Byrd (1976:30) suggests that other resources, e.g., fish, deer, and plants, formed the staples of Tchefuncte diet, with Rangia providing a stable, but minor, component.

More recent assessments of shellfish utilization by Goodwin (1986) and Claassen (1986) suggest that the exploitation of brackish water species on the Gulf coast is limited seasonally to Spring to Fall occupations. This seasonality is reflected in sites dating from the Middle Archaic through the Mississippian periods. Claassen's (1986) estimates of seasonality are based on estimated seasons of death among samples of shellfish from 94 sites throughout nine southeastern states; Rangia cuneata were used for the sites from Florida and Texas. Claassen (1986:33) concluded that shellfish represent a seasonal staple in the diet of most horticulturalists, as opposed to a supplement as suggested by earlier researchers or a year-round component as observed among many modern hunter-gatherers. This assessment is not contradictory to Byrd's (1976) assessment of Rangia utilization in coastal Louisiana.

Marksville Period

The subsequent Marksville period (100 B.C. - 300 A.D.) to a large degree was a localized hybrid manifestation of the Hopewellian culture climax that preceded it in the Midwest. The type site is located at Marksville, in Avoyelles Parish, Louisiana. Elsewhere in the state, smaller sites occur which display both Marksville pottery types and a modified form of the

Marksville mortuary complex. Marksville houses appear to have been circular, fairly permanent, and possibly earth-covered. A fairly high level of social organization is indicated by the construction of geometric earthworks and of burial mounds for the elite, as well as by a unique mortuary ritual system. Although large quantities of burial furniture are not recovered from Marksville sites, some items, such as elaborately decorated ceramics, were manufactured especially for inclusion in burials.

Marksville ceramics were well-made, with decorations that included u-stamped incised lines, zoned dentate stamping, zoned rocker stamping (both plain and dentate), the raptorial bird motif, and flower-like designs (Toth 1977; Phillips 1970; Ford and Willey 1940). The cross-hatched rim is particularly characteristic of Marksville pottery, and may relate this complex to other early cultural climaxes in the Circum-Caribbean area. Plain utilitarian wares also were produced. Perforated pearl beads, bracelets, and celts have been recovered from Marksville contexts.

While only one site has been recorded in St. Bernard Parish, sites with occupations from this period are present in other deltaic areas. In these areas, Marksville period sites are associated with the natural levees of active distributaries within the earlier Teche and St. Bernard deltas (Gagliano et al. 1975:41-42).

Troyville-Baytown Period

The next cultural period identified for South Louisiana is Troyville or Baytown (A.D. 300 - 700). This transitional period followed the decline of the Hopewellian Marksville culture, and it is poorly understood. In his recent book on Louisiana archeology, Neuman (1984) combines the Troyville period and culture with the better understood Coles Creek period; similarly, Davis (1984) contains chapters on early Woodland period prehistory and on late (Coles Creek period) prehistory, while failing to address substantively the transitional Troyville-Baytown period. Knowledge of the Troyville culture is based on the type site at Jonesville, Louisiana, and on the discovery of Troyville ceramics in other sites. Among the pottery types clustering in the Troyville period are: Mulberry Creek Cord Marked, Marksville Incised (Yokena), Churupa Punctated, Troyville Stamped, Larto Red Filmed, Landon Red-on-Buff, and Woodville Red Filmed. However, these pottery types and most other traits are not confined solely to this period. Troyville is thought to represent the period when maize agriculture and the bow and arrow were adopted. Evidence for agriculture includes shell hoes and grinding stones.

Given the reduced emphasis placed on the Troyville period,

little can be said about site locations. Although a number of sites exist in St. Bernard Parish, no known sites exist within the present study area.

Coles Creek Period

The subsequent Coles Creek period (A.D. 700 - 1200) developed out of Troyville. Coles Creek was a dynamic and widespread manifestation throughout the Lower Mississippi Valley. Coles Creek may be viewed as the local early or pre-classic variant of the Mississippian tradition, and its emphasis on temple mound and plaza construction suggests Mesoamerican influences. Population growth and areal expansion were made possible by increasing reliance on productive maize agriculture. The seasonal exploitation of coastal areas supplemented the maize economy of large inland sites, and small non-mound farmsteads were present. A stratified social organization with a dominant priestly social class continued.

The construction of platform mounds became important during this period. These were intended primarily as bases for temples or other buildings, but they also contained burials. Smaller circular mounds were still present. A common motif of Coles Creek ceramics is a series of incised lines parallel to the rim. Pottery types include: Coles Creek Incised, Pontchartrain Check Stamped, and Mazique Incised.

Coles Creek settlement and subsistence patterns have received much attention in most portions of the Lower Mississippi Valley. However, little emphasis has been placed on this aspect of the Coles Creek cultural adaptation within the delta region of Louisiana. Brown (1984:100-101) suggests that the majority of Coles Creek period sites in the Petite Anse region lie along small bayous and minor distributaries within the coastal marshes. Most are small middens containing shell from Rangia cuneata. As with earlier periods, the importance of molluscs within the diet may be exaggerated by their greater visibility in archeological deposits (Raymond 1981:807). Fish and mammals represent larger portions of the subsistence base from those sites where extensive faunal analyses have been conducted (Brown 1984:106-107). Larger sites, often containing mounds and associated with major distributaries (Gagliano et al. 1975:43) may represent more permanent settlements, possibly oriented towards agricultural production. The degree of dependence on domesticated food resources is unknown at present. Brown et al. (1979) have argued strongly against extensive utilization of cultivated resources in the coastal areas of Louisiana until the Plaquemine period. One shell midden site from the Coles Creek period is located near the study area. It is situated on the shores of Lake Lery, and it consists of Rangia cuneata shells, ceramic artifacts, and faunal remains. This site

probably represents a base camp occupied during the exploitation of various resources within this area (e.g., shellfish, mammals, reptiles, fish, etc.).

Plaquemine Period

In the southern part of the Lower Mississippi Valley, the Plaquemine culture developed out of a Coles Creek background. Ceremonial sites of this period consisted of several mounds arranged about a plaza area. Associated small sites were dispersed about such centers. Social organization and maize agriculture were highly developed. The most widespread decorated ceramic type of the Plaquemine period was Plaquemine Brushed. Other types include Harrison Bayou Incised, Hardy Incised, L'Eau Noir Incised, Manchac Incised, Mazique Incised, Leland Incised, and Evansville Punctate. Both decorated types and plainwares, such as Anna Burnished Plain and Addis Plain, were well made. Diagnostic Plaquemine projectile points are small and stemmed with incurved sides.

Mississippian Period

Late in the prehistoric period, the indigenous Plaquemine culture came under the influence of Mississippian cultures from the Middle Mississippi River Valley. Mississippian culture was characterized by large mound groups, a widespread distribution of sites, and by shell tempered pottery. A distinctive mortuary cult or complex, referred to as the "Southern Cult," that made use of copper, stone, shell, and mica was introduced, and elaborate ceremonialism reflected in animal motifs and deities pervaded Mississippian culture. Trade networks were well established during this period, and raw materials and specialty objects were traded across large areas of the central and southern United States.

Manifestations of Mississippian culture in Louisiana are not well documented or understood. Kniffen (1936) and McIntire (1958) have reported surface collections of shell-tempered sherds at sites in the coastal region. Brown and Lambert-Brown (1978) have excavated two late Mississippian middens on Avery Island. Other investigations include work being done by Dave Davis of Tulane University at the Sims site in Saint Charles Parish.

Four artifacts associated with the ceremonial complex known as the Southern Cult also have been collected in southern Louisiana. Unfortunately, none of the artifacts have any contextual integrity. One of them, a clay and grit-tempered rim sherd with the classic hand-and-eye motif, was found along a bank of Grand Bayou in Plaquemines Parish (Neuman 1984).

Settlement and subsistence patterns during this late period appear similar to those noted for the Coles Creek and Plaquemine periods. Small, seasonally occupied sites representing resource extraction within the marsh are found along and at the end of the distributaries which dissect the deltas (Gagliano et al. 1975:43).

Plaquemine and Mississippian culture connections have been postulated for a number of historically known native groups in Louisiana. Although the Plaquemine culture predates the historic era, it is most likely the forerunner of the Natchezan and Taensa Indians (Neuman 1984). The Tunica and Chitimacha tribes may have been descendents of the Mississippian peoples. Hypothesized connections are based on general similarities in material traits and settlement locations documented in early European records and from archeological investigations. Further evidence has been drawn from associations of ceramic artifacts and styles with European trade items.

Indians of the Contact Period

European contact brought about significant changes in, and the eventual disintegration of native cultures in southern Louisiana and all of North America. At the time of early French exploration, several Indian groups lived in southeastern Louisiana. Records, maps, and travel logs dating from this period document their lifeways, settlement locations, and seasonal movements. They also support the archeologically based belief that coastal societies tended toward small units that infrequently gathered together into larger groups (Davis 1984). Giardino's (1984) analysis of Indian settlements during the historic period in southeastern Louisiana indicates most villages were located along the levees of the Mississippi River, and Bayou Lafourche, and along the shores of Lake Pontchartrain. This pattern is not surprising in light of regional geomorphology, but may be an incomplete record of settlement locations. It is likely that settlements on smaller bayous and backwoods areas were seldom visited by French explorers and settlers, and therefore, were either unknown or little known by early Europeans.

Many "tribal" or group names are recorded in early documents, but only a few major tribes have been identified as important. These are the Chawasha (Tchouache), the Washa (Ouacha), the Chitimacha, and the Bayougoula.

The Chawasha are reported to have been a small group living in the Scarsdale-Belle Chasse area near English Turn (Swanton 1946:108-109). According to DuPratz, the Chawasha and the Washa attempted to attack an English vessel docked at English Turn in 1699 (DuPratz 1758). By the time Charlevoix passed in 1722, the Chawasha had moved their village to the east bank and half a league

down the river. No known sites associated with these particular groups have been identified within the project area.

The Archeology of Shell Middens

Shell middens represent one of the most visible features on the archeological landscape, particularly in the flat marsh lands of Louisiana. Middens range in size from 10 to 1000 meters across and yield varying amounts of associated cultural materials. The enormous quantities of shell have led investigators in the past to assume a primary economic reliance on shellfish during prehistoric times. Recent studies concerning the nutritional representation of these remains in the diet would appear to indicate otherwise. The following discussion will present a brief overview of the kinds of archeological investigations being conducted at shell middens and their ability to contribute to our understanding of prehistoric subsistence patterns. These discussions provide a framework for the assessment of two of the archeological sites discovered during the survey of the Caernarvon project area.

Big Oak and Little Oak Islands (Shenkel 1974a, 1974b, 1981).

Big Oak Island and Little Oak Island, located on the southeastern shore of Lake Pontchartrain, are the type sites for the original definition of the Tchefuncte period by Ford and Quimby (1945). Both sites contain Early Woodland components and produced radiocarbon dates ranging from 500 B.C. to 100-150 B.C. (Shenkel 1981:23). Big Oak Island (16 OR 6) is a multicomponent, deeply stratified site with an extent of approximately 8000 square meters. The oldest cultural component lies in an organic peat containing typical Tchefuncte materials. It has been dated to 520 B.C. (2470 ± 65, UGa 640) (Shenkel 1981:23). Overlying this layer is a shell midden containing thick lenses of clean shell interspersed with strata of crushed shell, silt, and humus. This layer contains the remains of a Tchefuncte occupation. Radiocarbon assays indicate a date of occupation between 200 and 300 B.C. for this layer. The third component, a shallow shell deposit, contains a mixed assemblage of Marksville and Tchefuncte ceramics dating to 90 B.C. Shenkel (1981) has described the fourth layer as problematic. It consists of 20 to 30 disturbed burials mixed with Marksville-Tchefuncte midden debris. One of the bones yielded a radiocarbon date of A.D. 495 (1455 ± 65, UGa 882) (Shenkel 1981:24).

Two thousand meters to the east of Big Oak Island is Little Oak Island (16 OR 7), a single component site with a surficial extent of 6600 square meters. It is a pure earth midden and appears to be contemporaneous with the shell midden at Big Oak. A number of features, including compacted floors, post moulds, hearths, and

pits, have been identified at 16 OR 7.

Ceramic and faunal analysis of remains collected at the two sites have confirmed the initial interpretation of site utilization. Shenkel has described the two sites as complementary; Little Oak Island being the living site with a broad range of activities, and Big Oak Island a fishing, hunting, and shellfish gathering site. From this, Shenkel (1981) has developed a model for Tchefuncte coastal adaptation as discussed above.

Shellfishing Seasons in the Prehistoric Southeastern United States (Claassen 1986).

This report is a summary of seasonality studies at sites containing both freshwater and saltwater molluscan remains in the southeastern United States. Claassen (1986) examined freshwater shell remains from six sites located in four different states. Macroscopic examination of shell cross-sections allow the separation of specimens into those killed during fast growth, and those killed during slow growth. The percentage of fast growth specimens is then calculated and compared to percentages from collections of living specimens killed on a monthly basis (Claassen 1986:22). From this comparison, the time of year in which the shells were harvested is estimated.

Claassen's discussion of saltwater shell studies focuses on the various techniques utilized by researchers to determine site seasonality. Of primary interest in the present study are techniques associated with Rangia cuneata. Included in those noted by Claassen are valve size comparisons (Fairbanks 1963), and annual growth determination (Aten 1981).

The results of these studies appear to indicate, with few exceptions, that freshwater shellfish were collected spring to fall. Brackish water, Gulf Coast shellfish were collected during this same period. Claassen (1986:31) suggests that this seasonal preference corresponds to the animals' fast growth period.

The Morton Shell Mound (Byrd 1974, 1976, 1977).

Byrd also has examined the nutritional importance of shellfish versus other faunal remains. She considers their dietary importance to be minimal. The excellent preservation at the Morton Shell Mound has allowed the examination of a variety of floral and faunal remains. Based on comparison of length measurements with known meat weight-valve length correlates for Rangia, Byrd determined that 81 clams (leaving 162 shells) would supply approximately 2.4 oz. of meat. The average volume of the

discarded 162 shells would be 64.68 cu. in. (Byrd 1974, 1976). Byrd notes that the meat/shell refuse ratio is very poor (Byrd 1976). She goes on to note that a 100 pound deer, represented by a single bone, could contribute about 50 pounds of meat. Byrd estimated that the clam equivalent would be 25,300 clams leaving 50,600 shells with a volume of 11.8 cu. ft. Even more significant for prehistoric populations is the Rangia cuneata's nutritional value as compared with other protein sources. Clams fall well below deer, raccoon, and other species in terms of protein and calories per hundred grams. Byrd suggests, therefore, that there must be a reason other than dietary advantage to explain the extensive utilization of Rangia. She suggests that shellfish represent a low risk and low energy expenditure, and a fairly continuous food supply.

Cameron Parish Shell Midden (Goodwin 1986).

This report by R. Christopher Goodwin, presents the results of investigations conducted at site 16 CM 61, a prehistoric shell midden located on the Mermentau River in Cameron Parish. The site was situated on a small peninsula; approximately thirty meters of linear shell deposits were exposed along the bankline. Deposits varied in depth from surface expression along the beach to approximately 50 centimeters below surface. Rangia was the prime constituent of the midden; other remains included fish bones, turtle shell, mammal bones, and ceramic sherds. Again, one of the problems these investigations attempted to address was site seasonality. A number of techniques were employed including the examination of otoliths (ear bone) of the black drum (see Smith 1983), and analysis of Rangia shells using Aten's (1981) seasonality determination procedures (annular growth increments). Results of both the otolith and the Rangia shell analysis indicated that deposition occurred during the months of May to July. Based on the ceramic analysis and the apparent season of occupation, Goodwin (1986) suggested that the models of seasonal transhumance for historic Attakapas (Gibson 1975; Aten 1983) may be projected into prehistory as far back as the advent of grog-tempered pottery during the Coles Creek period (Goodwin 1986:69).

Summary

This review of some of the recent literature concerning shell middens has been presented in order to define the nature of archeological information expected to exist at such sites. The primary focus of archeological investigations concerning shellfish remains is the reconstruction of subsistence activities and dietary preferences of the prehistoric occupants of these sites. Information related to the seasonality of shellfish collection represents the most common type of information

available in shell middens. Use of this information to determine the seasonality of shellfish collection requires that samples be from intact portions of a midden that represent temporally distinct episodes of shellfish gathering. As noted by Goodwin et al. (1985), distinct episodes of shellfish collecting may be represented vertically or horizontally over a site surface. That is, repeated occupations at a site may create either vertical or horizontal accretion of shellfish remains. These "components," either vertically or horizontally distinct, represent the units of analysis necessary to determine the seasonality of shellfish collection. Middens that do not possess spatial integrity of this nature will not provide the information necessary to determine specific schedules of resource extraction.

Dietary reconstructions also must be attempted within the portions of a site that represent a distinct temporal episode of occupancy. That is, all subsistence remains, e.g., shellfish, vertebrate fauna, or flora, from a distinct temporal episode must be examined to define adequately the dietary preferences or emphases of prehistoric site occupants. Examinations of portions of the site that represent more than a single temporal episode will provide general information concerning the range of exploited resources present at the site. However, emphases and scheduling of resource extraction will be impossible without the temporal and spatial integrity described above.

CHAPTER IV

HISTORIC OVERVIEW

The Colonial Period

The bend in the Mississippi River below New Orleans, known as English Turn, was the scene of an important historical event that influenced the early European explorations and development of the Mississippi River Valley. Although the Caernarvon study area, located approximately three river miles above English Turn, was not affected directly, the historical magnitude of this event necessitates a recapitulation.

France was not convinced during the early 1690s that it was necessary to establish a colony in Louisiana to counter British and Spanish expansionism (Kemp 1981). Despite the famous 1682 expedition of Robert Cavelier, Sieur de LaSalle, and later the Henri Tonti expedition of 1684 (who was looking for the original route of LaSalle), France was still reluctant to fund the establishment of a permanent settlement. In 1697, Tonti sent his own request to the King for a Mississippi River colony. It was not until September 24, 1698, that the French government dispatched the Canadian Lemoyne brothers, Pierre, Sieur d'Iberville, and Jean Baptiste, Sieur Bienville, and five small ships to settle the lower Mississippi River region. On March 3, 1699, Iberville rediscovered the mouth of the Mississippi. Upstream at a Bayogoula Village, Iberville met the chief of the Mougoulachas who possessed a letter written by Tonti, confirming his assertion that this was the great river of LaSalle.

Iberville returned to France with the intention of developing a permanent settlement to protect the Mississippi River region from other European explorations. Iberville was particularly concerned about the colonial activities of the English in the area. He warned the King, "the English colony which has become very considerable will grow in such a manner that in less than one hundred years, she will be strong enough to seize all America and drive out all other nations" (Kemp 1981:14). Back in Louisiana, Iberville's brother, Bienville, confirmed these fears. On September 15, 1699, Bienville led a scouting expedition up the Mississippi River from its mouth. During his reconnaissance, Bienville encountered the British corvette Carolina Galley anchored at a large bend in the river. Bienville convinced the captain of the English vessel that French troops awaited them if they did not turn back. They did, hence, the term English Turn (Detour des Anglais) is used to designate this bend in the river. This incident was significant because it convinced France of the necessity to build a permanent settlement in the area.

Despite the competition from the English and Spanish colonies, and the warring Native American nations such as the Tunicas, Chitimachas, and the Natchez, as well as the constant threat of starvation and disease, the French began colonial establishments at Mobile, Maurepas and the Fort de Mississippi. Iberville died of yellow fever in 1706, leaving Bienville as the acting Governor of the Louisiana Territory. Through the first decade of the eighteenth century, political infighting, and the lack of food, slaves and supplies contributed to an unstable economy and the slow development of the region. Eventually, Bienville chose what he thought to be a strategic site along the Mississippi for a new settlement. In 1718, the clearing of cypress was begun for the establishment of New Orleans. At this time, John Law set up a land selling company called the Mississippi Company for the new territory. Pioneers from France, Germany and Switzerland bought shares in Law's company, and with the addition of African slaves, the Louisiana Territory grew from 400 inhabitants in 1718 to 8,000 in 1722 (Beer 1911). The identity of the Caernarvon concessionaire during these early years is uncertain.

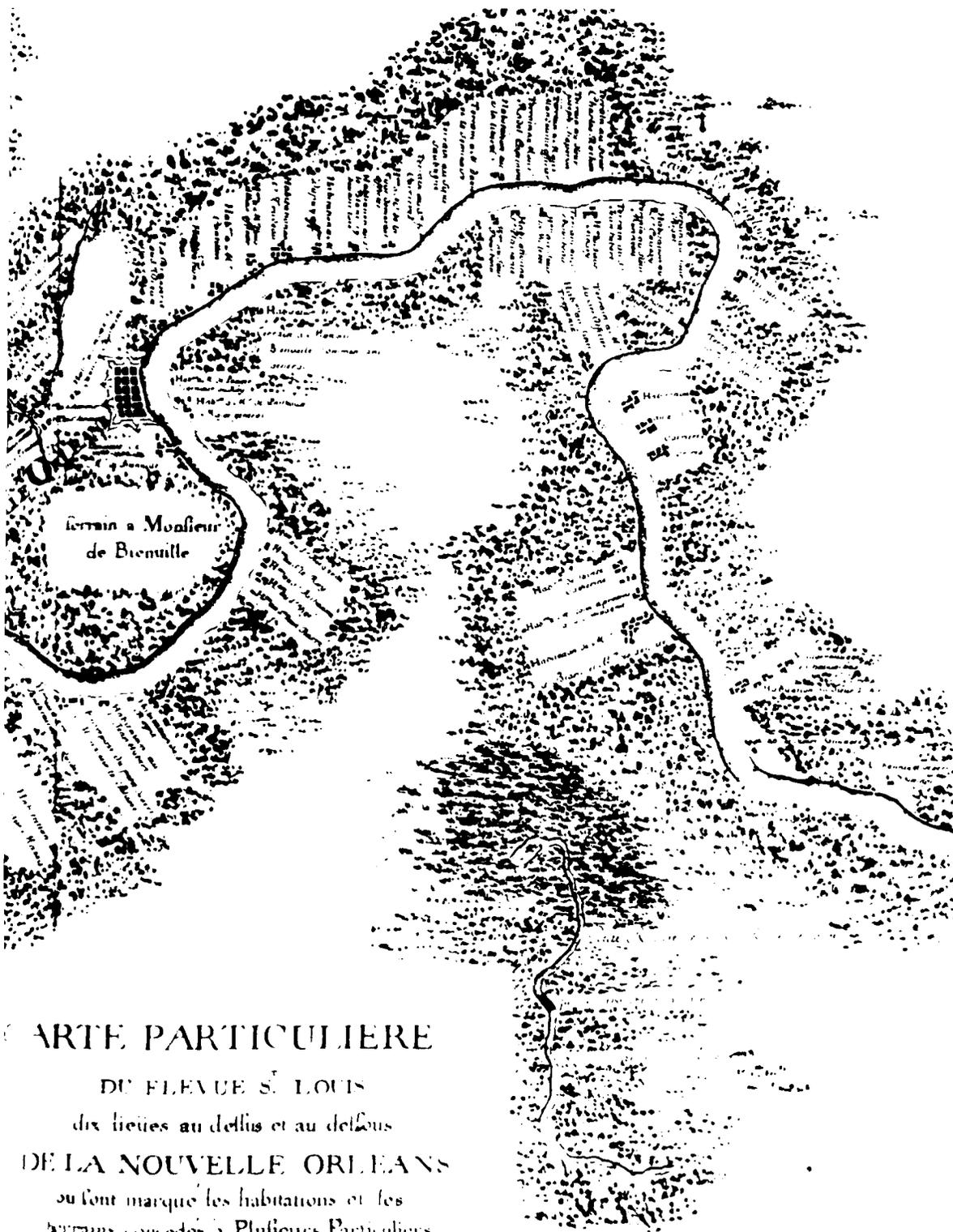
A circa 1726 map called Carte Particuliere du Fleuve St. Louis (Figure 4) from the Newberry Library in Chicago, shows the French land claims along the Mississippi River near New Orleans. The map indicates a M. La Tour as the concessionaire of the study area. However, this ownership could not be substantiated in the Plaquemines or Orleans Parish Courthouse records or any other historical manuscripts. There is no record of ownership of the study area in question listed in Maduell's (1975) French Land Grants in the Territory of Orleans, the Delta Parishes, or the Early Census Tables of Louisiana, Louisiana Historical Society, edited by William Beer (1911). Eminent architectural historian, Samuel Wilson Jr., believes that the Newberry Map is reliable, and that M. La Tour was Pierre Latour, a captain in the French military (Samuel Wilson, Jr., personal communications 1987). Architectural historian and archivist William R. Cullison (1979) wrote that Jean Gravier was the property owner of the study area during the Spanish colonial occupation; however, this also could not be substantiated.

Although there is little direct historical evidence of land tenure during the French and Spanish colonial periods (besides the Newberry map), secondary data provide general information about ownership and property description at English Turn. Many of the original concessionaires in this area were absentee landlords. It is possible that M. La Tour did in fact buy the property of the study area but never settled it. According to Mr. Wilson, many property owners abandoned their estates when Spain took over the colony. It also is known that three devastating hurricanes

LAC PONTCHARTRAIN



Figure 4. Carte Particuliere du Fleuve St. Louis, ca. 1723, showing concessions along the Mississippi River including Caernarvon (Edward E. Ayer Collection, Newberry Library, Chicago).



CARTE PARTICULIERE
 DU FLEUVE S. LOUIS
 dix lieues au dessus et au dessous
 DE LA NOUVELLE ORLEANS
 ou sont marqués les habitations et les
 terrains concédés à Plusieurs Particuliers
AU MISSISSIPY

Echelle de 4 lieues

between 1786 and 1792 destroyed many of the plantations at English Turn. Governor Carondelet, while inspecting the nearby Fort St. Leone in 1792, remarked that "the cypress swamp along both sides [of the fort] were in ruins with only useless traces remaining" (Robertson 1911:1:326-327).

The American Period

Although it is uncertain how and from whom the first substantiated landowner, Benjamin Morgan, acquired the study area property, it is possible he may have taken advantage of New Orleans' unstable government during the transition between the French and Spanish occupation. It is unusual that Morgan's American land claim does not mention the previous owner. It is possible that the wealthy Morgan acquired the land from the many small scale farmers in the area, mostly free men of color (Gilmore et al. 1983). These small farmers may have lacked the legal rights to the property.

Benjamin Morgan claimed the property of the Caernarvon study area in 1803. In fact, according to the American State Papers (Gayles and Seaton 1862), Morgan had five adjacent claims measuring approximately 67 arpents front on the left descending bank of the Mississippi River. The two Caernarvon property claims read as follows:

Benjamin Morgan claims a tract of land, situated in the county of Orleans, left bank of the Mississippi, near the upper end of the English Turn, containing about thirty arpents and twenty eight toises front, and forty arpents in depth; the place now called "Cainanin." This land is claimed by purchase, and deed of sale show it was possessed and sold 1st September, 1803, and they also recognize said land as having been granted by Spanish Governor, Baron Carondelet (American State Papers 1862:2:572).

Benjamin Morgan claims a tract of land adjoining the last mentioned tract, containing three arpents front and extending to the lake. This land is claimed by purchase, and deeds of sale show that it was possessed and sold as early as 23, July, 1791 (American State Papers 1862:2:572).

Benjamin Morgan was one of New Orleans' most prominent American citizens. Born to a wealthy and prestigious family in Philadelphia, Morgan traveled to Louisiana in the late 1780s, and

decided to stay. Benjamin Morgan's contributions to the economic and political development of New Orleans are extensive. Morgan helped establish the first American banks, played an intriguing role as a General in charge of monitoring British and Spanish forces, and was an innovative planter and developer. Morgan was also one of the founders of the first Episcopal Church in New Orleans (Taylor 1939).

As a banker, Morgan participated in the development of a New Orleans branch of the United States Bank of Philadelphia and the Bank of New Orleans, serving as its first president. Before the American period, there were no banks in New Orleans (Rightor 1900). During the first decades of the nineteenth century, New Orleans needed financing for its expanding markets, and to stabilize the new American currency. Through the ingenious efforts of several wealthy New Orleanians, and the cooperation of Governor Claiborne, who opened the field of banking, New Orleans became the banking capitol of the entire South and West (Rightor 1900).

Morgan came from an illustrious line of military heroes. Morgan's grandfather, George W. Morgan served in numerous campaigns against the British as lord of Shire Caernarvon, Wales. His son, General Jacob Morgan, Jr., who came to America before 1730 (Cullison 1973), was a distinguished Revolutionary War veteran. Benjamin's participation in the military activities of New Orleans is intriguing because it seems that he was involved in various clandestine operations. Morgan's neighbor and friend, General James Wilkerson, who was Governor of the Louisiana Territory outside of Orleans and a former spy for the Spanish, allegedly was involved with the Aaron Burr conspiracy. Aaron Burr, the former Vice President of the United States, conspired to wrest Louisiana and the Western states away from the U.S. or a part of Mexico from Spain in order to establish a separate nation (Kemp 1981). Although there is no proof of Morgan's participation in Burr's attempted insurrection, there is evidence that he was involved in conspiratorial activities. Morgan, Wilkerson, and wealthy merchants like Edward Livingston and Daniel Clark belonged to the Mexican Association, a group of traders and adventurers that wanted to invade Mexico. It is likely that Benjamin Morgan was involved in this scheme. In Relations between N.O. and Latin America, 1810-1824, Wellborn (1941) writes about the activities of a Gutierrez, a Mexican official visiting New Orleans and Governor Claiborne. It seems that Claiborne was unsure of the nature of Gutierrez' visit, but, "no sooner was the arrival of this man in New Orleans, than several intriguers (believed to be under foreign influence) made attempts upon him" (Wellborn 1939:723). Wellborn goes on to state that,

he [Gutierrez] was more concerned in establishing valuable connections upon the

basis of the credentials obtained from the state department. His dealings with Benjamin Morgan would indicate this. That gentleman, a prominent merchant, was known to take part in varied schemes. Of interest in this connection is a letter of Claiborne to Morgan, February 7, 1812, in which the governor tells of troop movements to the western boundary, and ends by saying: "Believing that this information may in some degree influence your commercial arrangements, I give it to you with great pleasure." In all probability Gutierrez must have made an agreement with someone to act as his factor, so to speak. Nowhere is there proof that Morgan acted in this capacity, yet no other merchants are mentioned as being on quite so intimate terms. It is certain that there was someone supplying arms and munitions in exchange for wool (Wellborn 1939:724).

Morgan was sent by Andrew Jackson to monitor Mexican troop movements in the western Attakapas region. The following is the contents of a hand written letter (courtesy of Special Collection, Tulane University) from Jackson addressed to General Morgan:

Headquarters
7 mile Dist

Jan 18, 1815
6 Oclock am

Sir your note in pencil of this morning's date is this moment handed to me.

I approve of the steps you have & beg that [you] will continue to reconnoiter with the utmost diligence & circumspection keeping me constantly advised of all discoveries.

I am Very Respectfully
Your Obedient Servant,

Andrew Jackson

Morgan also participated in organizing New Orleans' volunteer battalion which was formed to guard the city against lawlessness during the interm between the leaving Spanish regime and the arriving American government. Under the command of American Consul Daniel Clark, the voluntary enrollment of American and French Creoles grew to three hundred men (Monette 1846). Some of the other prominent members included St. Landry Parish judge George Martin, Colonel Reuben Kemper, George Newman, Dr. William

Flood, Manuel White, and the postmaster of Natchez, Woodson Wren (Monette 1846).

Benjamin Morgan was involved equally in the politics of early Louisiana. When the United States took over Louisiana in 1803, it was assumed by many that Louisiana would be admitted automatically to the Union, and thus would require representation in Congress. Not knowing that statehood would not come to Louisiana until 1812, many of New Orleans' most prominent leaders including Morgan, considered running for Congress. The following is a letter from Morgan to his friend Chandler Price of Philadelphia, dated August 18, 1803, concerning the qualifications of Daniel Clark as a U.S. representative:

I want no office from government and shall occasionally mention to you who I think should be appointed to office & who should not & you may communicate it to the proper authorities if you think proper. In one of my last letters I told you that our Friend D. Clarke declared to me that he wanted no office & I at the same time observed that I did not believe him that I thought he had an eye to be member of congress. He still makes the same declarations but I still disbelieve him. I have now good reason to believe he wishes to be appointed governor of this country and suppose interest will be made for him by his friends in Philad. I have no personal enmity to Mr. D. C. on the contrary we are good friends but as I regard the welfare of this young country which I shall now most probably continue to live in it is my wish he may not be appointed to this important office, you know a good deal of him and it is only necessary to put you in mind that he is deficient in dignity of Character & sterling veracity to fill the office of governor he is liked by few of the Americans here but those dependent upon him - Claiborne above is also unsuitable as I am informed by republicans who know him. Indeed I know no man in this or the natchez country that would be so well relished as a good man from the United States. This country has cost the U.S. a great deal of anxiety & treasure and I hope great pains will be taken by the general government in the appointment of our officers to make us relish the change I say us I mean frenchmen & spaniards - americans will do well enough, let who will preside they know their rights & will have them. It will be those unacquainted with our language & customs that

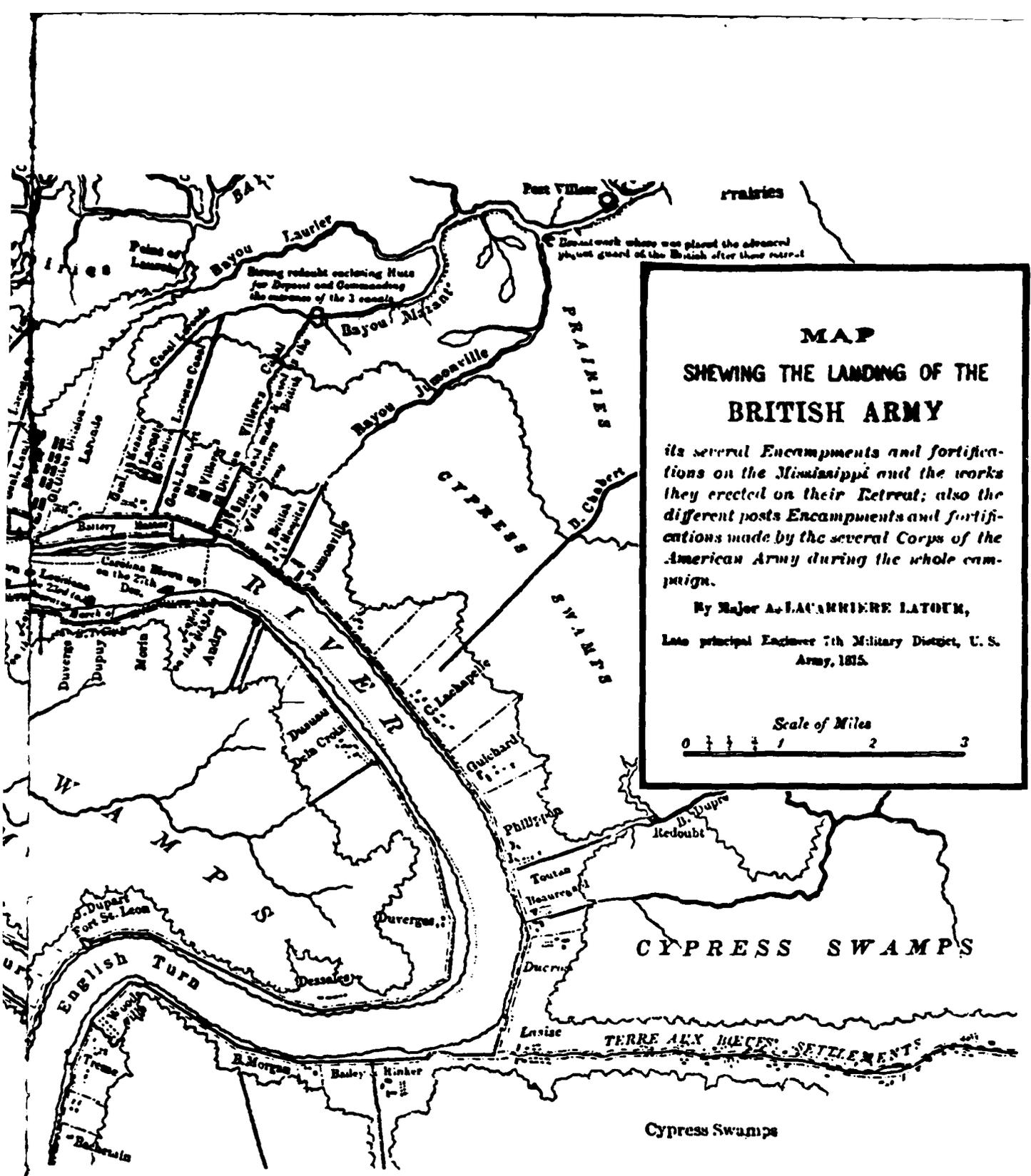
will feel the most and be the most disgusted should improper characters get into power (Prichard 1948 31:312).

It is interesting that in this letter Morgan considers himself to be a Creole, or not an American. It is understandable considering Morgan's financial commitment to New Orleans, and the political uncertainty that was taking place at the time. As a real estate investor, Morgan owned extensive holdings in the newly formed Faubourg Ste. Marie. Morgan purchased much of the Jean Gravier estate in Faubourg Ste. Marie, and became famous locally for using ballast rock to pave his property on Gravier street between Tchoupitoulas and Magazine streets. According to Baudier,

the older inhabitants of the Vieux Carre laughed and freely predicted that Mr. Morgan's stones would sink out of sight in the mud. But on the following day they were still there, and also the next week and the month after. In fact, they remained there a whole year, and finally the skeptics were convinced (Baudier 1930:11).

As a sugar planter, Benjamin Morgan owned a four mile stretch of land including Caernarvon and the adjacent Orange Grove plantation. Although there are few documented accounts of the Caernarvon Plantation, it is known that Morgan refined sugar cane and used slaves. Benjamin Morgan placed an advertisement in the Louisiana Gazette in January of 1805 for slaves coming via Liverpool on the vessel United States (The Goodspeed Publishing Co. 1892). An 1815 engraving by Major Arsene Lacarriere Latour (Figure 5) shows Morgan's English Turn property. It appears from this map that the sugar house and some buildings were present on the Caernarvon land as opposed to the downriver Orange Grove property. This is significant because after Morgan's death in 1826, the Caernarvon Plantation progressively declined, and by the time of the Civil War, most of the agricultural activities took place at Orange Grove. Sugar and rice reports by Champomier and Bouchereau (Table 1) indicate this, as does the succession of Thomas Asheton Morgan, Benjamin's son, in 1865.

Thomas Asheton Morgan was born and raised in Philadelphia. Although Thomas A. Morgan continued his father's success as a sugar planter, he was not a year-round resident of New Orleans; rather, he resided in Philadelphia and visited the Louisiana properties (Cullison 1973). Unlike his father, Thomas did not involve himself in the local politics. In fact, he was a Union sympathizer and was not well received by his fellow planters during his tenure at Caernarvon and Orange Grove (Kane 1944). This did not stop him from using a large contingency of slaves (Table 2).



MAP
SHewing THE LANDING OF THE
BRITISH ARMY

its several Encampments and fortifications on the Mississippi and the works they erected on their Retreat; also the different posts Encampments and fortifications made by the several Corps of the American Army during the whole campaign.

By Major A. LACARRIERE LATOUR,
 Late principal Engineer 7th Military District, U. S.
 Army, 1815.

Scale of Miles
 0 1 2 3

Table 1. Sugar and Rice Production at Caernarvon and Orange Grove Plantations, 1844 - 1914 (Champomier 1844-1862; Bouchereau 1869-1917).

<u>Year</u>	<u>Owner/Operator</u>	<u>Plantation</u>	<u>Hhds. of sugar</u>	<u>Lbs. of rice</u>
1844	Wm. H. Morgan		625	
	J. A. Morgan		635	
1845	Wm. H. Morgan		352	
	J. A. Morgan		395	
1849	Wm. H. Morgan		450	
	Thomas A. Morgan	Orange Grove	325	
1850 ¹	Thomas A. Morgan	"Caernarvon"	350	
	"	Orange Grove	300	
1851	"	"Caernarvon"	437	
	"	Orange Grove	569	
1852	"	"Caernarvon"	440	
	"	Orange Grove	400	
1853 ²	"	"Caernarvon"	580	
	"	Orange Grove	675	
1854	"	"Caernarvon"	410	
	"	Orange Grove	550	
1855	"	"Caernarvon"	300	
	"	Orange Grove	425	
1856	"	"Caernarvon"	98	
	"	Orange Grove	150	
1857	"	"Caernarvon"	275	
	"	Orange Grove	422	
1858 ³	Estate of T.A. Morgan	"Caernarvon" and Orange Grove	1000	
1859	"	"	400	
1860	"	"	300	
1861	"	"	725	
1868 ⁴	Fasnacht & Bros.	Orange Grove	132	
1869 ⁵	"	"Caernarvon"	---	
6	"	Orange Grove	287	
1870	Louis Fasnacht	"Caernarvon"	---	
	"	Orange Grove	269	
1871	"	"Caernarvon"	---	
	"	Orange Grove	230	
1872	"	"Caernarvon"	---	
	"	Orange Grove	163	
1873	"	"Caernarvon"	---	
	"	Orange Grove	163	
1874	"	"Caernarvon"	---	
	"	Orange Grove	261	
1875	"	"Caernarvon"	---	
	"	Orange Grove	315	
1876	"	"Caernarvon"	---	
	"	Orange Grove	350	
1877	"	"Caernarvon"	---	
	"	Orange Grove	240	
1878	"	"Caernarvon"	---	
	"	Orange Grove	372	
1879	"	"Caernarvon"	---	N. Y.
	"	Orange Grove	346	
1880	"	"Caernarvon"	---	869
	"	Orange Grove	311	

<u>Year</u>	<u>Owner/Operator</u>	<u>Plantation</u>	<u>Hhds. of sugar</u>	<u>Lbs. of rice</u>
1881	Louis Fasnacht "	"Caernarvon" Orange Grove	--- 215	800
1882	" "	"Caernarvon" Orange Grove	--- 423	
1883	M. Frank	Orange Grove	142	
1884	F.S. Generes M. Frank	"Carnavon" Orange Grove		Cultivating Rice
1885	F. S. Generes M. Frank	"Carnavon" Orange Grove		600 bbls of rough rice
1886	M. Frank	Orange Grove	194	
1887	"	"	335	
1888	"	"	---	
1889	"	"	396	
1890	Fred Meyer	"Carnavon"	---	
1899	Poydras Planting Co. Kenilworth Su.Est.Ltd.	"Carnavon" Orange Grove	Mississippi overflow 4,759,410 lbs.	
1900	Poydras Planting Co. Kenilworth Su.Est.Ltd.	"Carnavon" Orange Grove	Mississippi overflow 7,802,542 lbs.	
1901	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Orange Grove	Mississippi overflow 7,964,450 lbs.	
1902	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Orange Grove	Mississippi overflow 7,167,450 lbs.	
1903	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Braithwaite Place	Mississippi overflow 5,993,139 lbs.	
1904	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Braithwaite Place	Mississippi overflow 11,156,342 lbs.	
1905	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Braithwaite Place	Mississippi overflow 7,416,421 lbs.	
1906	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Braithwaite Place	Mississippi overflow 4,373,245 lbs.	
1907	Poydras Planting Co. United Ry. & Trad'g Co.	"Carnavon" Braithwaite Place	Mississippi overflow 5,566,556 lbs.	
1911	Poydras Planting Co. Kenilworth Sug.Co. (Leasing)	"Carnavon" Braithwaite Place	Mississippi overflow 9,335,421 lbs.	
1912	Poydras Planting Co. Kenilworth Sug.Co. (Leasing)	"Carnavon" Braithwaite Place	Mississippi overflow 4,393,671 lbs.	
1913	Poydras Planting Co. Kenilworth Sug.Co. (Leasing)	"Carnavon" Braithwaite Place	Mississippi overflow 4,177,234 lbs.	
1914	Poydras Planting Co. Kenilworth Sug.Co.	"Carnavon" Braithwaite Place	Mississippi overflow N.Y.	

Notes

- ¹ Sugar house at Orange Grove was the first in Louisiana to use a vacuum pan apparatus for distillation.
- ² Caernarvon sugar house used steam apparatus.
- ³ Slate roof sugar house, steam and vacuum apparatus at Caernarvon.
- ⁴ Brick and shingle sugar house, steam and vacuum apparatus at Caernarvon.
- ⁵ Caernarvon sugar house destroyed.
- ⁶ Brick and slate roof sugar house, steam, vacuum and centrifuge apparatuses at Orange Grove.

Table 2. List of Slaves Owned by Thomas A. Morgan at his Caernarvon and Orange Grove Plantations, 1836 (from Act of Mortgage No. 1228, March 22, 1836, by Thomas A. Morgan in favor of W.H. Morgan, Harriet Morgan, Rachel Morgan, Sarah Morgan, Elizabeth Morgan, Benjamin Morgan, and Mary Morgan).

Name	Age	Name	Age
Nelson	35	John Red	35
Mat Brown	40	Amus Jackson	35
Frank Jones	35	Dellyard	36
John Bigby	33	Frank Jones	50
Bob Stiff	50	Peter Mayoair	41
Cus, mulatto	21	Peter Cooper	30
David Johnson	28	Robin	35
Loyd	36	John Smith	24
Joe King	22	Phil	21
Dick Walker,	30	Len	21
mulatto		Robert Page,	30
Bristoco	35	mulatto	
George Luck	17	Jarvis	45
Anthony Brown	16	Anthony Miller	32
Jacob	18	Isaac	16
Johnson	12	Mike	11
Bob Taylor	30	Bill Tarken,	40
Peter Carpenter	38	mulatto	
Andry, mulatto	9	Chester	22
Henry	26	Guinis Bob	60
Adam	9	George Gordon	16
John Phillip	19	Yellow Dick	21
Jack	80	Tom Daniel	65
Hamel	80	Joe Smith	23
Lydia	28	Priscilla	30
Sarah	31	Sylvia Jones	30
Minerva	32	Emelia	24
Sophy	22	Nancy	28
Sukey	20	Henny	18
Sully Wright	18	Phyllis Miller	30
Milly	17	Nancy Little	35
Hannah Will	17	Eliza	17
Clarissa	12	Sonia Hunter	12
Peggy Abbott	11	Matilda	12
Caroline Bigby	12	Lavonia Red	10
Philis Hunter	40	Lucy Luck	35
Jane	18	Ossy	6

Table 2, continued.

Name	Age	Name	Age
Anderson	6	Dinah	50
Sarah Wright	60	Hannah	28
Fany Coleman,	28	Jada	30
mulatto		Lucy	16
Polly Mojan	2	Little Carmel	3
Susannah	5	Black	
Sarah Ann Red	4	Nancy Red	2
Diana Minerva	1	Polly	1
Harriette	4	Ruffian Brown	2
Coleman, mulatto		Yellow	
Edmond	2	Thomas Page,	3
Mary Page	2	mulatto	
James Garjill	2	Horace Garjill	1
O. Fanny	50	Caroline	16
Sarah	12	Pat	17
Milly	43	Jinny	21
Nelly, mulatto	28	Nancy	70
Patsy	60	Franky Black	60
Bob Painter	40		

Thomas A. Morgan probably will be remembered most for his building of the stately Orange Grove Plantation house. It was a large Gothic/Tudor mansion, and it was the first house in the nation that had running hot water (via copper pipes that came from furnaces on each floor). More importantly however, was Thomas A. Morgan's contributions to the sugar industry. In 1832, Thomas A. Morgan installed the first vacuum pan devices in Louisiana at his Caernarvon and Orange Grove sugar houses (Cullison 1979). Invented in England, the vacuum pan allowed, through pressurization, control in boiling the cane into syrup. Cullison further states that Morgan conducted "numerous chemical experiments on the plantation, the results of which he generally made available to others in the industry" (Cullison 1979:2).

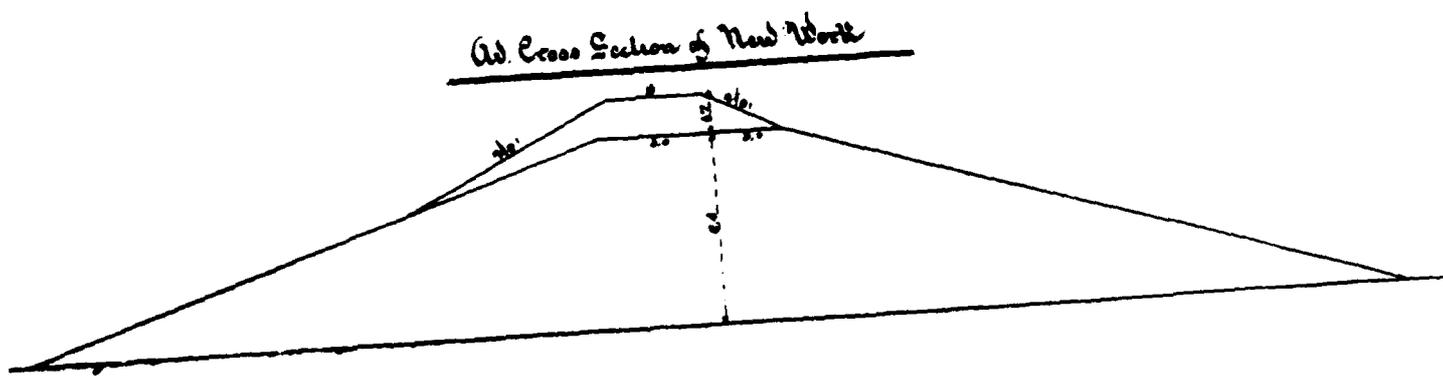
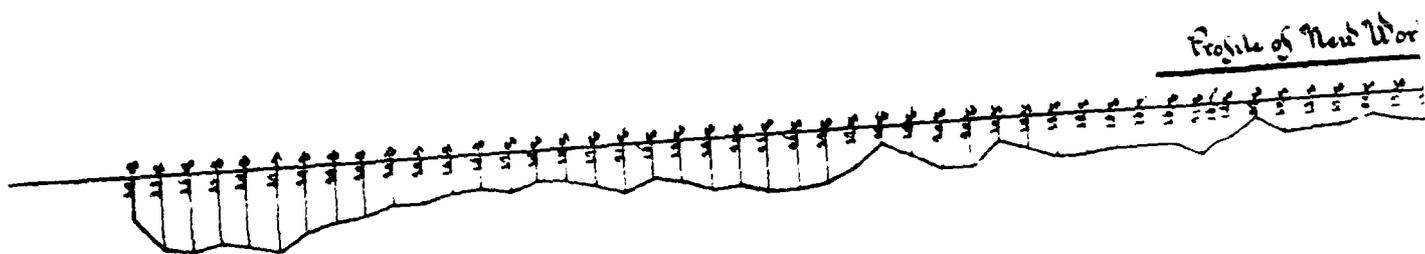
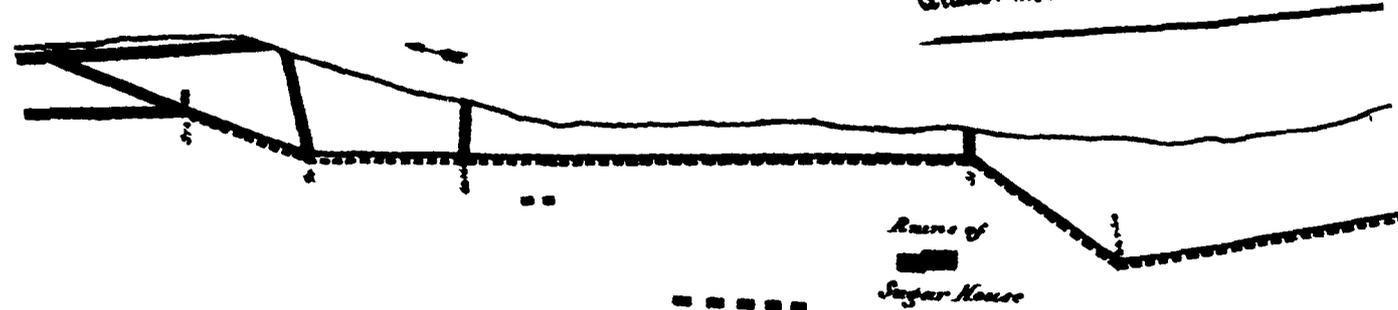
The Postbellum Period

As previously stated, the plantation activities at Caernarvon eventually gave way to the bigger Orange Grove estate. The Caernarvon sugar house, shown in Figure 6, burned down around 1868. The Succession of Thomas A. Morgan on September 16, 1865, put the value of the Orange Grove estate at \$90,000.00, while the Caernarvon Plantation was valued at only \$15,000.00 (MOB 6/1228/202, Plaquemines Parish Courthouse). While the Orange Grove plantation is mentioned in the succession as having a sugar house and steam engine, the Caernarvon improvements mention only "buildings." For the remainder of the century and into the present, the Caernarvon study area existed mainly as agricultural fields.

In 1867, Louis Fasnacht bought Caernarvon and Orange Grove. Fasnacht was born in Switzerland and came to New Orleans in 1844. Fasnacht started as a manager of the St. Louis Hotel, but eventually became a successful brewer. He purchased Morgan's English Turn holdings for \$60,000.00. During Fasnacht's tenure, Orange Grove was known as a showcase of wealthy New Orleans society; lavish entertainment was Fasnacht's trademark. Callers came by barouche, victoria, buggy, and flatboats towed down from New Orleans with musical entertainment en route (Kane 1944). Unlike T.A. Morgan, Fasnacht was a Confederate sympathizer. He attempted to manufacture a military balloon for the Confederate army. Kane states that "the women of the family contributed petticoats and old dresses and sewed them together at the inventor's orders" (Kane 1944:153).

Fasnacht eventually sold his English Turn properties, including Caernarvon, in 1884 after encountering financial difficulties (Forsyth 1936). Fasnacht divided his property and sold the Caernarvon holdings to F.S. Generes. Generes

Horizontal Scale - 100ft to one inch
 Vertical do. 5ft do
 Grade - 1/2 ft.
 Outer slope - 2 to 1; land slope - 4 to 1
 B.M. No. 1. X. W.M. 1860, on low on batture
 B.M. No. 2. On telegraph pole. opp. Sta. 84.
 Grade - 11.50

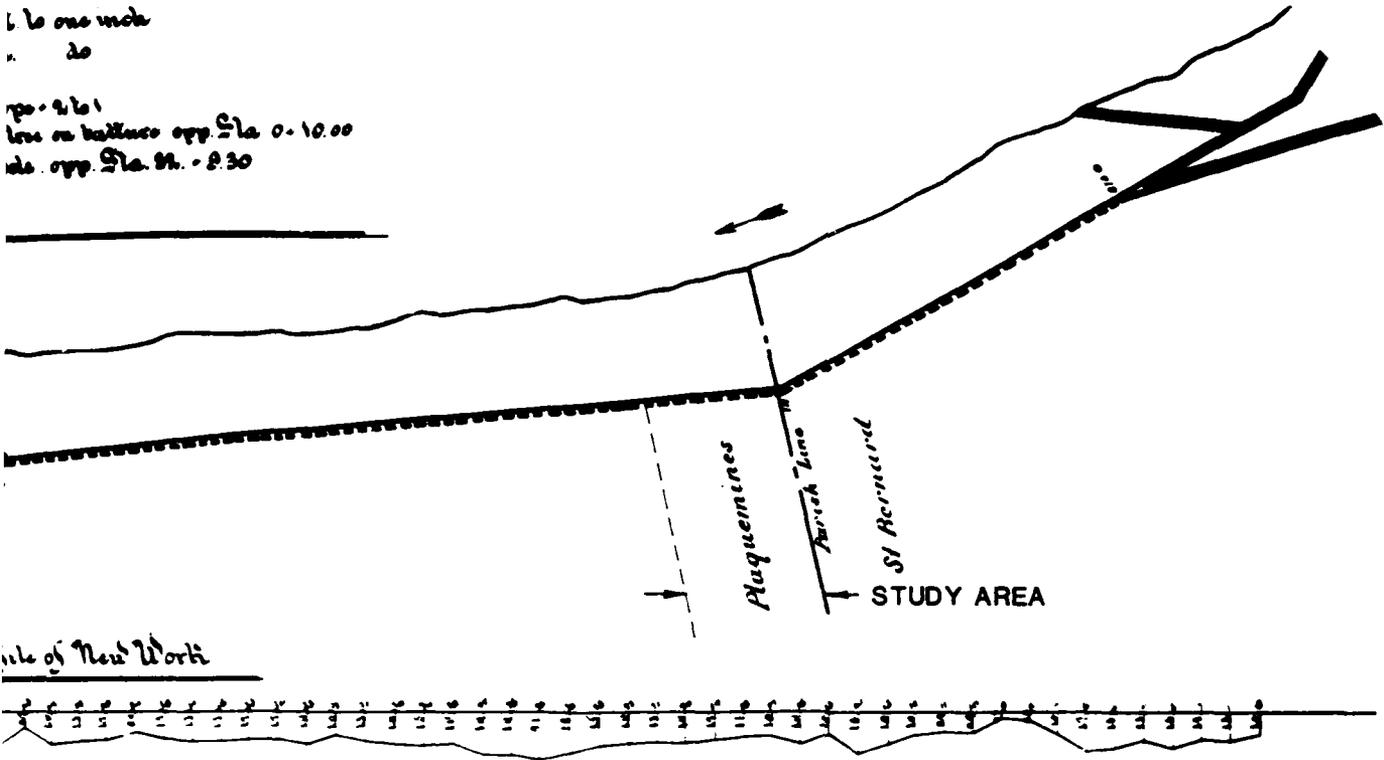


Located and dated
See H. C. Brown's Book No. 1.

Contents C

Figure 6. Excerpt from an 1869 map showing the relationship of ruins associated with Caernarvon Plantation and the present study area (Archives of the Louisiana Department of Transportation).

1 to one inch
do
1/2 to 1
less on balance opp. Sta. 0-10.00
do opp. Sta. 21. - 2.30



0 1100 2200 3300 ft.

Caernarvon Levee
Plaquemines Parish
Mississippi River, Lt. Bk.

Cub Yds

unsuccessfully attempted to grow rice. In 1885, he did manage, however, to produce 600 barrels of rough rice (Table 1). In 1890, Fred Meyer bought the study area property from Generes. During these later decades of the nineteenth century, Caernarvon lost crop after crop due to overflow of the Mississippi River (Bouchereau 1869-1914). A Mississippi River Commission Map originally surveyed in 1873, but probably completed as late as 1890, shows the study area (Figure 7). The map shows that there were still buildings present at Caernarvon during this time; however, as the overlay shown in Figure 8 indicates, these buildings or their remains were destroyed with the building of LA Highway 39 and the levee.

The Twentieth Century

At the turn of the century, the Caernarvon plantation, like many sugar plantations at that time, gave way to more diversified agricultural activities. In 1898, an English syndicate called the Kenilworth Sugar Estate Ltd. purchased Caernarvon. They in turn sold the property to the Poydras Planting Company, part of another larger English syndicate, the United Railway and Trading Company. This syndicate owned several large plantations and built two paper mills, one a giant six roller paper mill on the Orange Grove property. During this time, the adjacent upriver study area remained as unimproved fields. The United Railway and Trading Company closed their operations before World War I.

The present owners, the Southern Railway Company, purchased the study area in the 1920s. This decade witnessed increased flooding of the Mississippi River. The rising water of 1927 forced the Levee District to alleviate the problem by taking drastic measures. It was decided eventually that an artificial crevasse would be opened at Caernarvon at English Turn. The U.S. Department of Agriculture, Weather Bureau, distributed daily flood bulletins during the spring of 1927. On April 29, 1927, the bulletin read:

Levee on left bank of Mississippi opened below Poydras, La., at 2:15 p.m. today, and opening will probably spread to width of 1000 feet. Water at Vicksburg has risen six tenths of a foot in the 24 hours ending 7 a.m. this date, making 1.9 feet of rise at that point in the last three days. People living along the Mississippi above New Orleans in this river district should be governed by the flood warning sent out by the Weather Bureau Thursday afternoon, and should take every precaution to safeguard themselves against the stages then forecast (I. M. Cline,



Figure 7. Excerpt from the 1873 Mississippi River Commission map, showing Caernarvon Plantation and several associated structures.

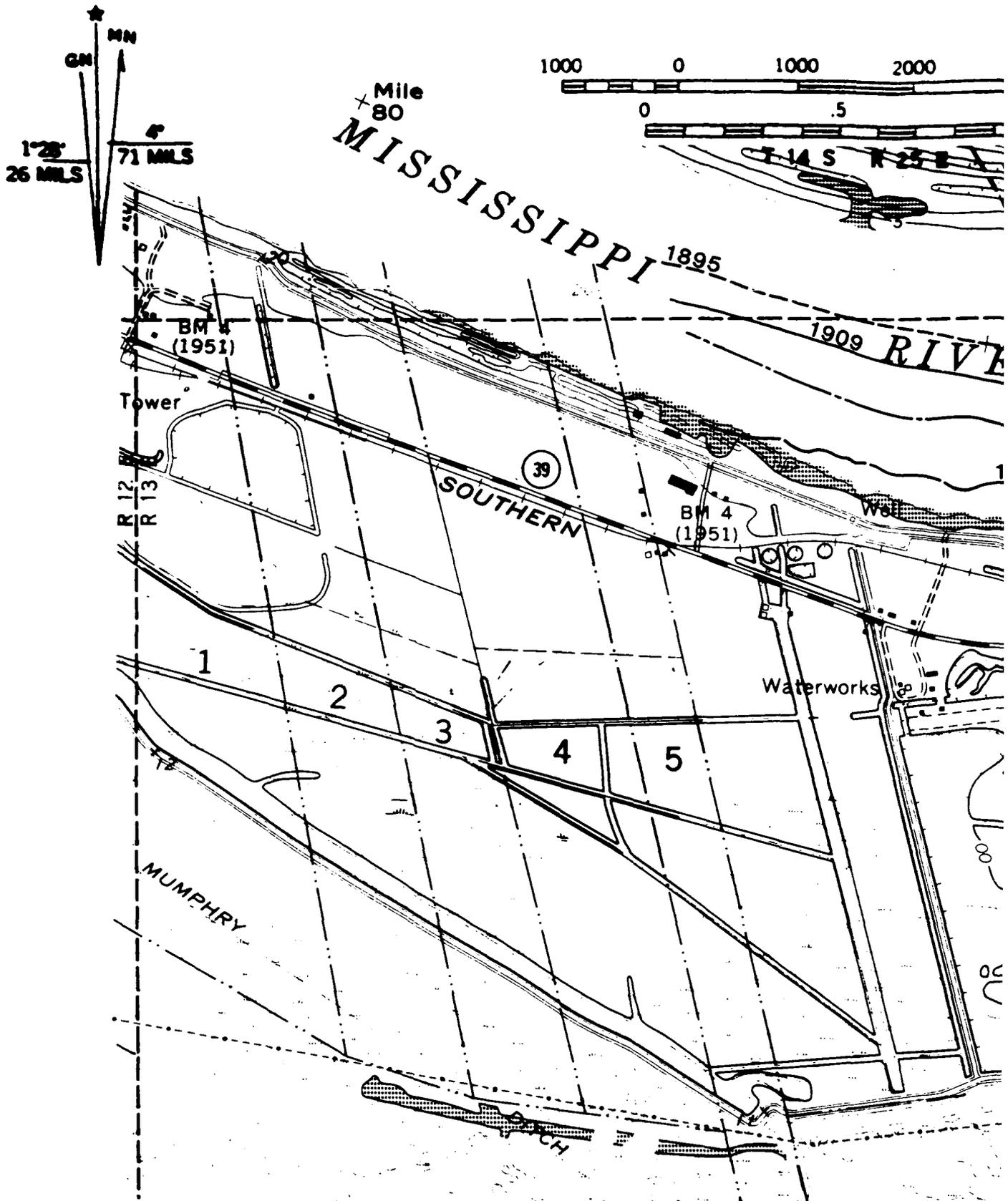
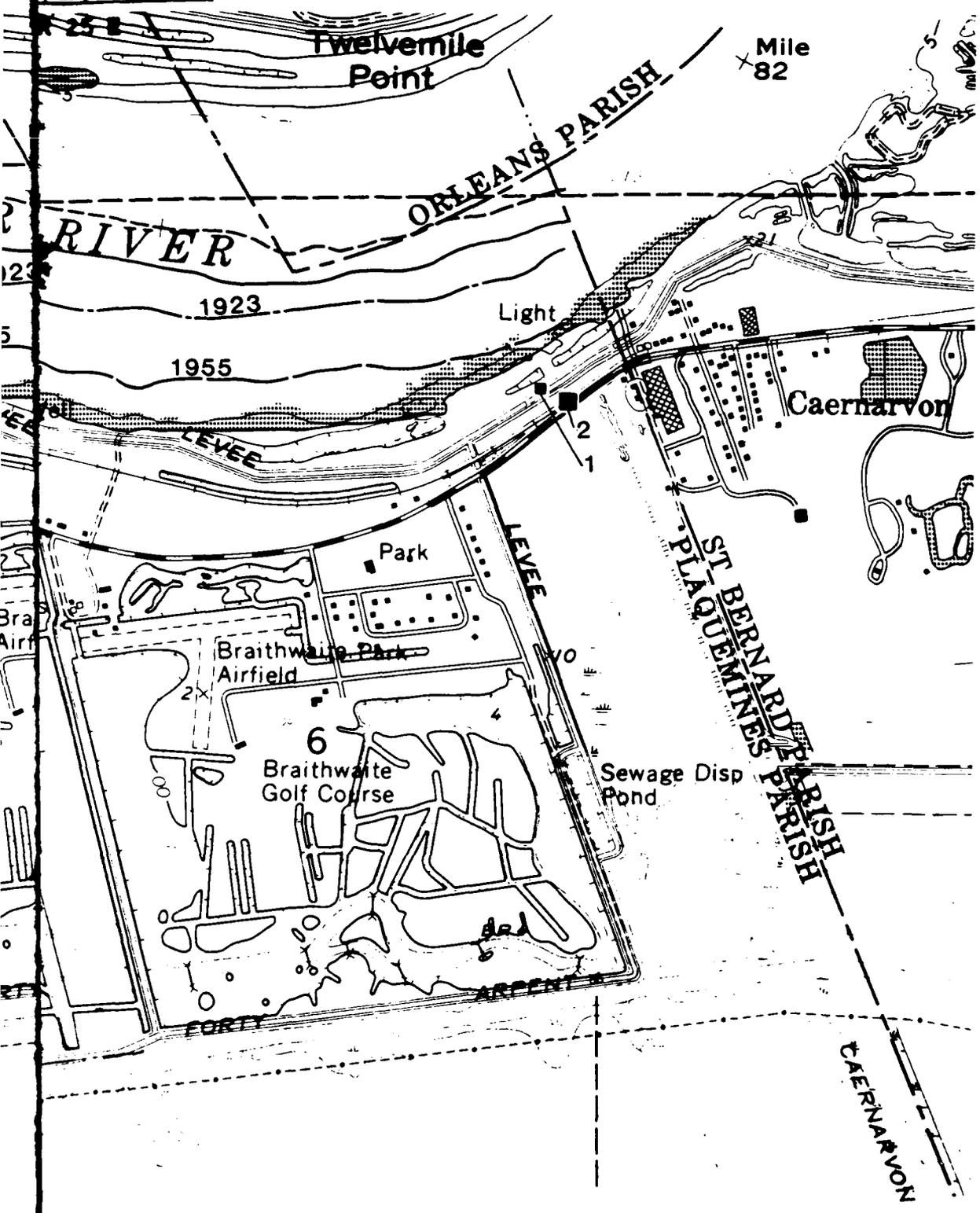
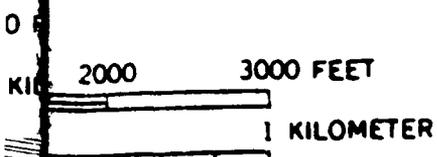


Figure 3. Scaled composite map of the Belle Chase 7.5' quadrangle with 1955, 1923, 1909, and 1895 bankline locations. Buildings 1 and 2 were present at the time of the 1873 survey (Mississippi River Commission Map).



meteorologist 1927).

The Caernarvon crevasse was opened on April 27, 1927. During the previous weeks, the people who lived behind the Caernarvon levee were evacuated. Most of the people involved in the exodus lived in small houses and shacks, and were poor farmers, fishermen, and hog and cattle raisers (William Oberhelman, personal communication 1987). The residents of New Orleans agreed to pay for the refugees that would be evacuated from the area. The breaking of the Caernarvon levee brought international press. One British writer wrote,

A conclave of notables had come to town for the occasion, such as not even the most brilliant Mardi Gras had ever been able to draw. Cabinet members, United States army officials, world-famous writers, engineers who were learning for the first time that blasting a levee is as complicated a feat as building one, all joined the corps of reporters and photographers and moving-picture men and trekked down to Caernarvon (Saxon 1927:333).

Since the opening of the Caernarvon Crevasse, the study area has remained unimproved fields subject to seasonal inundation. The area is used primarily as a recreational facility for waterfowl hunting and fishing.

Summary

Two of the owners of the Caernarvon project area, Benjamin and Thomas Morgan, represent significant personages in local economic and political development during the antebellum period. However, there is no historical documentation to suggest that either resided on the Caernarvon property, or that they were associated directly with any potential historic sites in the project area. In addition, historic maps and documents examined during this study did not indicate the presence of structures or features associated with Caernarvon plantation within the present project area that were not destroyed by previous levee improvements or highway construction. Also, the Caernarvon sugar house that contained a vacuum apparatus was present west of the project area (Figure 6), within the present area of Braithwaite Golf Course. Therefore, there is no historical documentation to suggest that any extant archeological features or structures associated with Caernarvon Plantation may be present within the project area.

CHAPTER V

FIELD METHODS

Field methods were tailored to the three distinct portions of the Caernarvon project area (Figure 2). The batture and the corridor of land between the Caernarvon Canal and the Braithwaite Golf Course were scheduled for visual inspection through pedestrian survey. The shores of Big Mar and the banks of the canals that parallel the lake to the north, west, and south were inspected visually from a canoe. Techniques employed during these examinations are described below. A description of the efforts employed to define the extent and nature of the archeological sites discovered during these investigations conclude this chapter.

Description of the Pedestrian Survey

Batture Area

The batture area (Figure 2) was scheduled for intensive survey through the pedestrian traverse and visual inspection of transects oriented parallel to the river. These transects were to be spaced at 20 m intervals between the levee and the river. Shovel tests would be excavated at 30 m intervals along each transect. High water completely covered the batture during the course of the field work, thereby preventing the implementation of the described procedure. However, no visible architectural remains were observed during the inspection of the batture from the modern levee crest. Additional efforts to inspect the batture were not considered necessary since this portion of the project area had been surveyed previously by Shenkel (1977).

Channel Between Caernarvon Canal and Braithwaite Golf Course

The corridor of land between the levee and the north shore of Big Mar, i.e., between the Caernarvon Canal and the Braithwaite Golf Course (Figure 2), also was scheduled for intensive survey and visual surface inspection by pedestrian traverse. Transects were oriented at 160°/340° or parallel to the Caernarvon Canal. These transects were spaced at 30 m intervals over the project area. Shovel tests were excavated at 30 m intervals along each transect, except where standing water prevented access to the ground surface. Shovel tests were numbered from north to south along each transect in order to maintain spatial control over the location of any resources discovered during the survey. Tests were excavated to the water table. The average depth of shovel tests was approximately 30 cm below the present ground surface.

One archeological site, 16 PL 150, a scatter of historic artifacts, was discovered during the inspection of this portion of the project area.

Boat-based Bankline Survey

The bankline survey focused on the southern and western shores of Big Mar and the banks of the adjacent canals (Figure 2), since these margins of the lake are expected to experience the heaviest impacts from rising water levels, erosion, and sedimentation. The survey was conducted using an eighteen foot, two-man canoe; it included a visual inspection of all banklines and some subsurface testing to determine soil types and/or to identify subsurface deposits at possible sites. The survey area included the entire shore of Big Mar, the eastern bank of Braithwaite Canal, the northern bank (where present) of Delacroix Canal, and the bankline of all marsh islands located in Big Mar. A total of two sites, 16 PL 148 and 16 PL 149, were located during the survey. 16 PL 148, a prehistoric shell midden, is located on the east and west banks of Braithwaite Canal, 640 meters south of the levee above the Forty Arpent Canal (Figure 2). 16 PL 149, a scatter of prehistoric ceramics, is located on the southeastern shore of Big Mar, 4.2 km south of the head of Caernarvon Canal.

Description of Site Testing

Following the initial survey effort, more intensive examinations of the three sites discovered in the project area were conducted. 16 PL 148 was located on the east and west banks of the Braithwaite Canal. Due to the bifurcated nature of the site, remains located on the west bank of the canal were designated West Locus, and those located on the east bank were designated East Locus. Investigations at the West Locus consisted of systematic shovel testing performed at 2.5 m intervals along five rays. These rays originated at the west bank of the canal, near the center of the surface scatter of shell. They were oriented at 45° increments between 0° and 180°. All tests were excavated to the water table or below the layer of shell.

The examinations of 16 PL 148 East Locus included auger tests, shovel tests, and excavation of a single 1 X 1 meter unit. After the placement of a site datum, a single baseline running north-south was established. Shovel and auger tests then were dug at 2 meter increments along the baseline in order to determine the horizontal and vertical extent of the shell.

A 1 X 1 meter test unit also was established along the baseline in approximately the middle of the shell scatter. The unit was

excavated in 10 cm arbitrary levels to a depth of 89 cm below the ground surface (i.e., just below water table). Because shell was present below the water table, an auger test was dug in the bottom of the unit to a depth of two meters below ground surface in order to determine the vertical limits of the shell deposits. Fill from the west half of the unit was water screened, while fill from the east half was sorted manually.

16 PL 149 was a surface scatter of prehistoric ceramics on the beach of a small island in the southeast corner of Big Mar. The site was examined through the excavation of judgementally placed shovel tests on the marsh behind the surface scatter of artifacts. No intact subsurface deposits were located in these tests.

16 PL 150 was examined through the systematic excavation of shovel tests along six rays that emanated from the center of the surface scatter of artifacts. Rays were spaced at 60° increments. Shovel tests were excavated at five meter intervals along each ray. All tests were excavated to the water table, or an average depth of approximately 25 cm below the ground surface.

CHAPTER VI

RESULTS OF THE SURVEY

Pedestrian Survey

During the intensive survey of the channel of land between the Caernarvon Canal and the Braithwaite Golf Course, a variety of surficial deposits were encountered. These deposits were related to both natural levee formation and to the development of crevasse splays in the project area. Natural levee deposits occurred throughout the surveyed area. Soils derived from these deposits varied from olive brown clayey sands (2.5Y4/4) to dark gray sandy loams (10YR4/1). Deposits and features related to the 1927 Caernarvon Crevasse were encountered on a number of transects. These deposits occurred in the form of splays that were visible on the surface. Testing revealed that the deposits consisted entirely of olive yellow (2.5Y6/6) to olive brown (2.5Y4/4) sands. The course texture of these deposits was indicative of deposition during a flood situation. The depth of these sands varied from 20 cm to more than 70 cm below the present ground surface. Natural levee deposits, i.e., darker silty or sandy clays, often were encountered beneath the splay sands. Channels and swamps between the splay deposits apparently represented watercourses associated with the crevasse. Both the channels and the splays generally trended northeast to southwest across the project area. Local vegetation included hackberry, maple tupelo, live oak, water oak, greenbrier, grapevine, and poison ivy.

During the survey of this channel of land, one historic archeological site, designated Caernarvon 3 (16 PL 150), was identified (Figure 9). The site consisted of a sparse surficial scatter of historic brick, coal slag, and one manganese glass bottle fragment. Subsurface testing of the area failed to reveal any intact deposits. A fuller description of the site is presented below.

High water levels prevented the planned examination of the batture just north of the portion of the project area described above (Figure 10). However, no foundations, wharves, etc., were noted during visual inspection of the area from the crest of the modern levee. As stated above, Shenkel's (1977) survey of the batture also failed to identify any cultural resources within that portion of the project right-of-way.

Boat-Based Bankline Survey

Examination of the margins of Big Mar, Braithwaite Canal, and Delacroix Canal, resulted in the identification of two prehistoric



Figure 9. A view of 16 PL 150 looking south.



Figure 10. A view of the bature near levee station 12+88.7 within the study area showing high water levels.

archeological sites, sunken remains associated with oil development, and numerous dock ruins (Figure 2). The two sites, designated Caernarvon 1 (16 PL 148) and Caernarvon 2 (16 PL 149), appear to be the remains of prehistoric shellfish procurement camps.

Seven shovel tests around the perimeter of the lake (Figure 2) revealed backswamp deposits in marsh and spoil materials dredged from the canals or lake bottom. Soils derived from these deposits varied from mottled silty clay spoil at the surface to blue/grey clay at the bottom of shovel tests. Mottled gray clays were observed in some localities. Shovel tests were excavated to the water table approximately 30 to 40 cm below the surface. A number of modern features were observed in the lake during the survey. These include boat docks and remains thought to be associated with previous oil exploration in the area. These features are indicated on Figure 2. Vegetation in the area consisted primarily of common reed. Scrub oak and smaller undergrowth often were associated with higher spoil bank areas.

16 PL 148, located on Braithwaite Canal, represents the remains of what was a rather large shell midden (Figure 11). Dredging has destroyed a significant portion of the site, although intact deposits still exist on both sides of Braithwaite Canal. Initial analysis of the site indicated that further testing was warranted and a 1x1 meter unit was excavated. A detailed description of the site and the results of the testing regime are presented below.

16 PL 149, located on the eastern shore of Big Mar, may represent the remains of a shell midden. Either, the site is badly eroded or the artifacts may have derived from material dredged and redeposited during the construction of Caernarvon Canal (Figure 12). Although several artifacts were located, no intact subsurface deposits could be located. The site is described further below.

As stated above, numerous dock remains and submerged debris thought to be associated with oil development in the area were noted during the survey. None of these recent remains were considered to warrant site designation or further investigation.

Site Descriptions

During examination of the Caernarvon Diversion Site project area, three archeological sites were located and documented. Two prehistoric sites, designated Caernarvon 1 (16 PL 148) and Caernarvon 2 (16 PL 149), were recorded during the bankline survey, and one historic site, designated Caernarvon 3 (16 PL 150), was



Figure 11. A view of the East Locus of 16 PL 148 showing the shell midden exposed in the east bank of Braithwaite Canal.



Figure 12. A view of 16 PL 149 looking south.

recorded during the pedestrian survey. Following the initial survey effort, further testing was conducted at Caernarvon 1 and 3 to examine site stratigraphy and to assess the subsurface integrity of the sites. Further testing was not necessary at Caernarvon 2 because of the extremely poor condition of the site and the negative results of previous shovel testing. Descriptions of the sites, the testing regimes implemented, and the cultural resources observed, are presented below.

Caernarvon 1 (16 PL 148)

Description of the Site. The Caernarvon 1 site (16 PL 148) is a shell midden discovered during the boat-based bankline survey of Big Mar. The site is situated on the east and west banks of Braithwaite Canal, approximately 2.35 km south of the Mississippi River (Figure 2). The site lies on backswamp deposits overlain with dredged material from the construction of Braithwaite Canal. Construction of the canal apparently has destroyed much of the site; only a portion of the site remains on either side of the canal. Due to the discontinuous configuration of the site, remains located on the east bank of the canal have been designated East Locus, and those located on the west bank have been designated West Locus (Figure 13).

During the initial examination of the site at the East Locus, a datum was established and a transect running north/south was delimited. A site datum was located near the center of the East Locus, approximately 600 m south (180°) of the junction of the Braithwaite Canal and the 40 Arpent Canal. Auger tests then were dug at two meter intervals starting at the extreme north and south ends of the surface occurrence of shell in order to delimit the site boundaries and to examine the site stratigraphy (Figure 14). The shell scatter, consisting almost entirely of Rangia clam, extended over an area approximately 27 m North-South by 10 m East-West. The auger tests revealed the presence of shell to the water table, approximately 80 cm below the ground surface.

The East Locus was subjected to further testing in order to determine whether intact subsurface deposits were present. A 1 X 1 meter excavation unit was placed at grid N3-4 m, E0-1 m (Figure 14). Vertical control was maintained by the removal of 10 centimeter levels within the unit. Fill from the western half of the unit was water screened through 6 mm (1/4 in) mesh, while fill from the eastern half was sorted manually. Excavation continued to the water table, at a depth of 73 cm below surface. Since shell was present below the water table, the floor of the unit then was augered to a depth of 201 cm below the ground surface to determine the vertical limit of shell. Shell was present only in the first 10 cm below the floor of the unit. Therefore, the shell extends to maximum depth of 83 cm below the ground surface.

16 PL 148
Shell Midden
East and West Loca

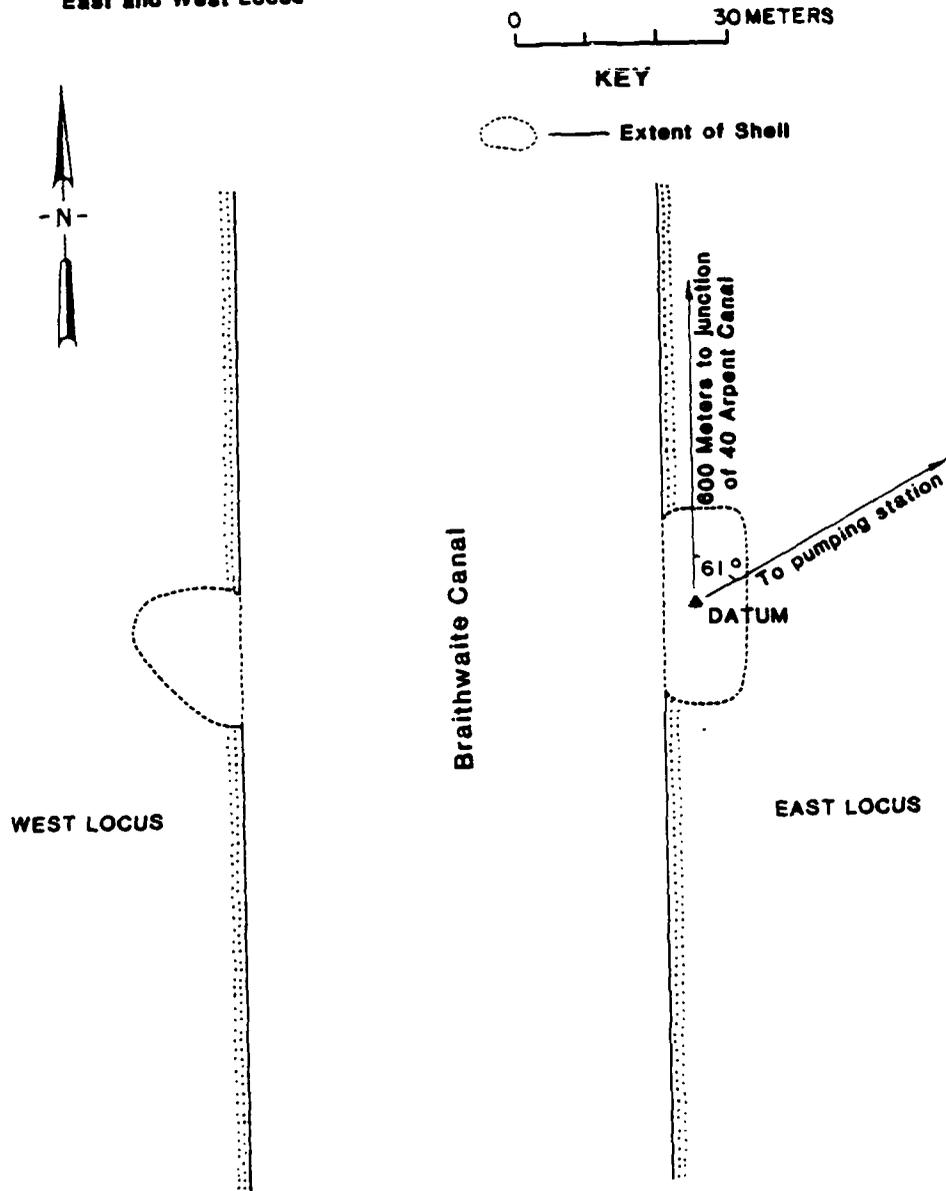
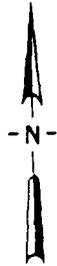


Figure 13. Site map of 16 PL 148 showing the East and West Loci of the site.

16 PL 148
Shell Midden
East Locus



0 3 6 METERS

KEY

- — Auger Test w/shell
- — Auger Test w/o shell
- — Excavation Unit

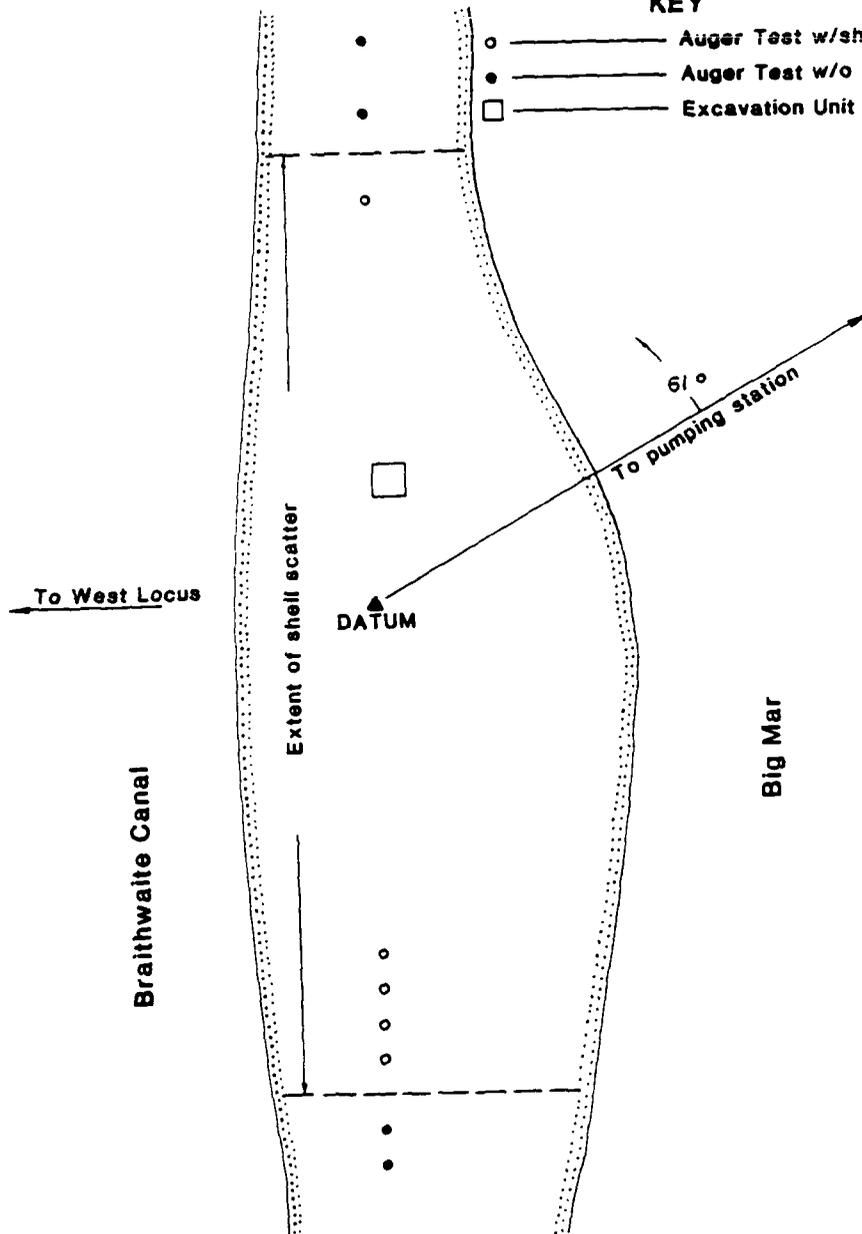


Figure 14. Map of 16 PL 148, East Locus, showing the location of the shovel tests and excavation unit.

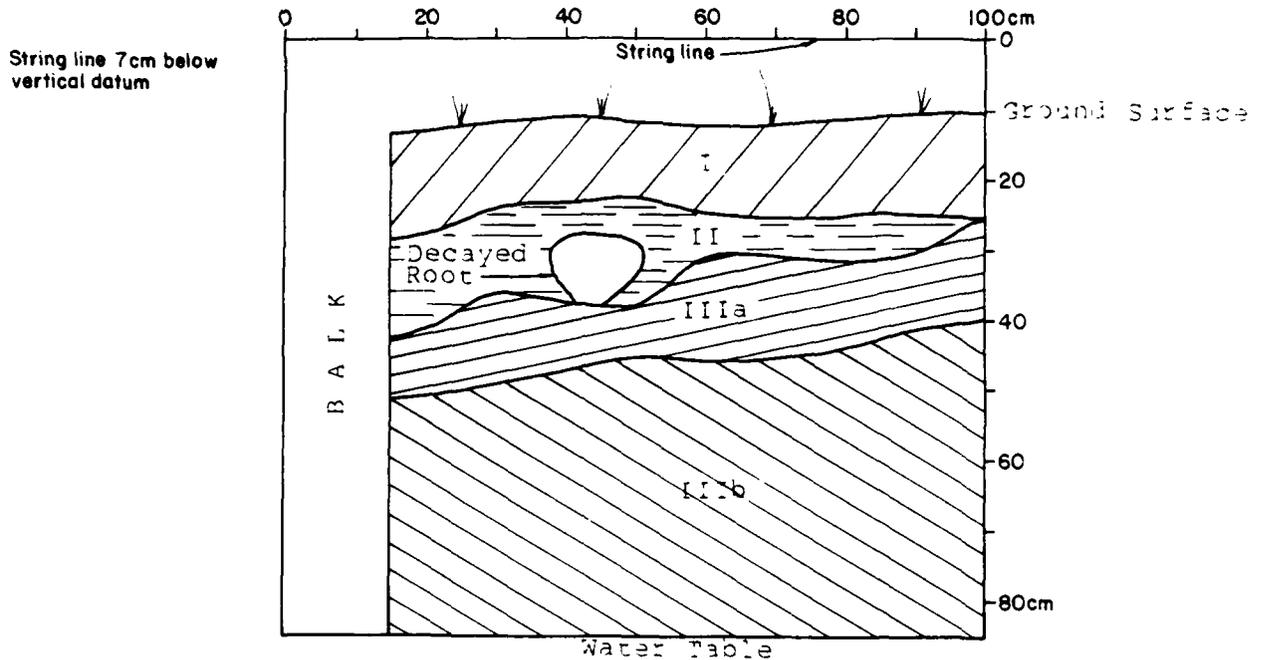
A profile was drawn of the west wall of the unit. Three depositional strata were identified (Figure 15). Stratum I consisted of dredged material, a very dark gray silty clay (2.5Y3/0), mixed with Rangia shell; no artifacts were recovered from this stratum. Stratum II also appears to be dredged material, apparently from the construction of Braithwaite Canal; however, this stratum contained very little shell remains. This dredged material consisted of a very dark gray silty clay (2.5Y3/0). No artifacts were observed in Stratum II. Stratum III was subdivided into two substrata designated IIIa and IIIb. Substratum IIIa, a very dark grey (2.5Y3/0) fine clay, contained badly crushed shell remains. It is thought to have been the original ground surface on which the dredged material was deposited. Substratum IIIb was composed of the same fine dark gray clay; however, shell remains within this matrix were more intact and less dense than in Stratum IIIb. It is thought that this stratum represents original midden deposits. Faunal remains from this stratum consisted of four pieces of fish bone (drum?) from Level 5 (42 to 52 cm below surface), and two pieces of fish bone (drum?) from Level 6 (52 to 62 cm below surface). With the exception of clam shells, no other remains were observed.

Examination of the West Locus of Caernarvon 1 included a systematic shovel test regime. Shovel tests were dug at 2.5 meter intervals along five rays (Figure 16) in order to delimit the subsurface extent of the shell. The shell extends approximately 20 m North-South and 15 m East-West. Shell is present to 50 cm below the ground surface. Like the East Locus, the upper limits of the tests contained a mixture of shell and dredged material from Braithwaite Canal. Below this layer is a mixture of soil and shell. Two ceramic sherds were found in Shovel Test 0, located at the origin of all shovel test rays (Figure 16). Although badly eroded, these irregularly fractured sherds appear to represent Tchefuncte ceramics. No other cultural remains were located.

Interpretations of the Site. The disturbed nature of 16 PL 148 (Caernarvon 1), and the paucity of cultural remains makes interpretation of the formation of the site and its prehistoric use difficult. Two interpretations are presented below.

This site appears to represent a shellfish collecting station, possibly associated with the Tchefuncte period. The extremely low density of ceramic remains or faunal remains besides Rangia suggests that the site does not represent the location of extended human occupation. While periodic visits over a long period of time (i.e., years to decades) may have occurred, these visits appear to have been restricted largely to the collecting and processing of shellfish. The presence of intact cultural deposits at 16 PL 148 suggests that this site may have had the

16 PL 148
 Shell Midden
 East Locus
 Excavation Unit 1 West Wall Profile



- Stratum I. Very dark grey 2.5 Y 3/0 loam with whole shell.
- Stratum II. Very dark grey 2.5 Y 3/0 silty clay with sparse shell.
- Stratum IIIa. Very dark grey 2.5 Y 3/0 fine clay with dense crushed shell.
- Stratum IIIb. Very dark grey 2.5 Y 3/0 clay with shell.

Figure 15. Stratigraphic Profile of Excavation Unit 1 showing the West Wall.

16 PL 148
Shell Midden
West Locus

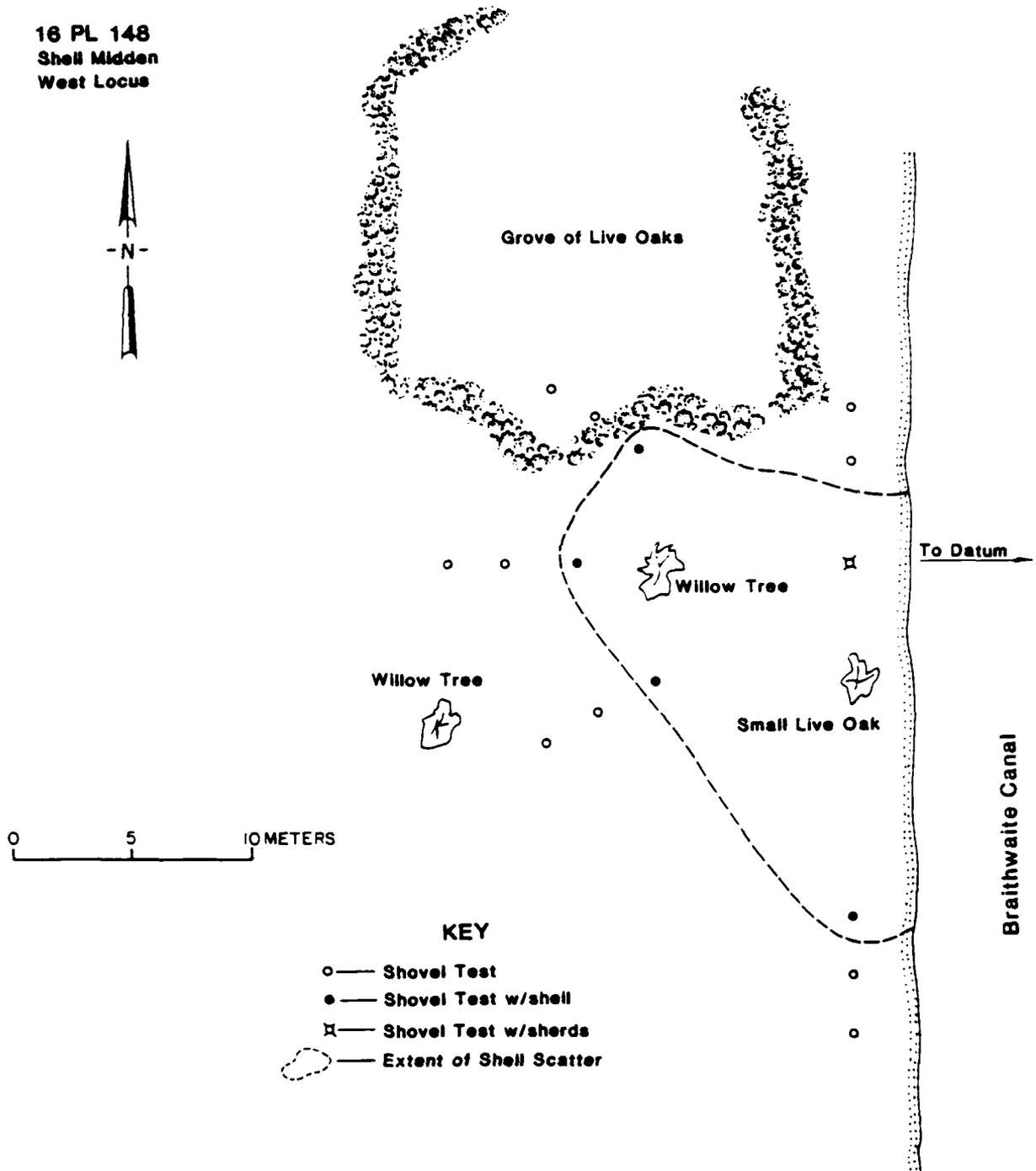


Figure 16. Map of 16 PL 148, West Locus, showing the location of the shovel tests.

potential to contribute to the understanding of prehistoric (Tchefuncte?) subsistence patterns within the region. However, at least 60 per cent of the site, i.e., the portion of the site that originally existed within the present Braithwaite Canal, has been destroyed by the construction and dredging of the canal. In addition, artifact densities beyond shellfish remains are extremely low. These conditions effectively limit the research potential of the site to the examination of the shellfish remains for evidence of seasonality.

These endeavors may be limited, as well, by the loss of horizontal stratigraphy at the site that has resulted from the construction and maintenance of the Braithwaite Canal. The horizontal arrangement of shellfish remains should be indicative of episodes of shellfish collecting. As discussed in Chapter III, the identification of temporal or activity specific loci within the site is nearly impossible without this spatial integrity. The location and the nature of the deposits at the site have been documented during survey and testing efforts to date. Samples of the fill from the excavation and from stratigraphic levels within the site have been retained to permit future examination of the matrix, if desired.

Alternatively, it is possible that the remains at 16 PL 148 represent redeposited material. If the site consists of the remains from a Tchefuncte occupation, one may expect, as a result of subsidence and other geomorphological processes, the site to extend well below the present marsh surface. Excavation and augering of the 1 x 1 meter test unit showed that shell extended only to 10 cm below the water table. This approximates the present marsh surface. Thus, the site may represent the secondary deposition of materials that existed below the present marsh surface. These materials were dredged up and deposited in their present location during construction of Braithwaite Canal. Given this scenario, the present cultural resource documented in the spoil banks of the canal would represent redeposited portions of the original site.

Inspection of the shell deposits at 16 PL 148 suggested that the first interpretation of the site is the most valid. However, further archeological investigations would be required to ascertain the true nature of 16 PL 148. Such work is not warranted, since under either scenario, the site has lost most of its archeological integrity, and therefore, it cannot contribute significantly to our understanding of the prehistory of the region beyond the information already recovered.

Caernarvon 2 (16 PL 149)

Site 16 PL 149 is located on the eroding west bank of

Caernarvon Canal (i.e. the east shore of Big Mar), 4.2 km south of the head of Caernarvon Canal. The site lies on the northern end of an eroding spit of the west bank of the canal (Figure 17). With respect to its geomorphic setting, the site is associated with backswamp deposits overlain by dredged material from Caernarvon Canal. Cultural remains located at the site include six small prehistoric ceramic sherds, one bone fragment, and two pieces of corroded metal (apparently intrusive). The ceramic and faunal remains from 16 PL 149 were badly eroded, preventing their identification as to type or species. A small quantity of Rangia shell was scattered across an approximately two meter by two meter area on the beach, and in the water around the locality. Shovel Test 7, dug in the center of the shell scatter, revealed no subsurface deposits of shell or cultural material. Soils varied from mottled gray/brown clay at 0-20 cm below surface, to gray clay from 20-40 cm below surface. The water table was encountered at 40 cm below the ground surface. It is possible that these artifacts eroded from the dredged material associated with the construction of Caernarvon Canal. Due to the very poor preservation of the site, the continuing erosion of the bank, and the lack of subsurface remains, 16 PL 149 does not possess sufficient integrity to contribute to the understanding of the prehistory of the region.

Caernarvon 3 (16 PL 150)

Site 16 PL 150 consists of a surface scatter of historic artifacts, located adjacent to LA 39 near the northern end of the project corridor between the Caernarvon Canal and the Braithwaite Golf Course (Figure 18). The artifacts, consisting of eight brick fragments, six fragments of coal slag, and one manganese glass sherd, were scattered over an area approximately 15 m North-South by 20 m East-West. Systematic shovel testing at the site failed to reveal any subsurface artifactual remains or intact cultural deposits. Soils at the site consisted of dark grayish brown (10YR3/2) silty clay loams over dark gray (10YR4/1) silty clay. Water was encountered at approximately 25 cm below the ground surface. These soils are similar to those underlying natural levee and crevasse deposits observed throughout the area subjected to pedestrian survey. While these materials are of sufficient age to be associated with Building 2 (Figure 8), the construction of the modern levee, LA 39, and the existing railroad appears to have destroyed any intact deposits that may have been present. The opening of the Caernarvon Crevasse in 1927 also may have contributed to the destruction of this site. The presence of only surface-occurring artifactual remains also suggests that these materials may be redeposited, either through flooding or from spoil or fill added to the area during road construction or refuse disposal.

16 PL 149
Prehistoric Site

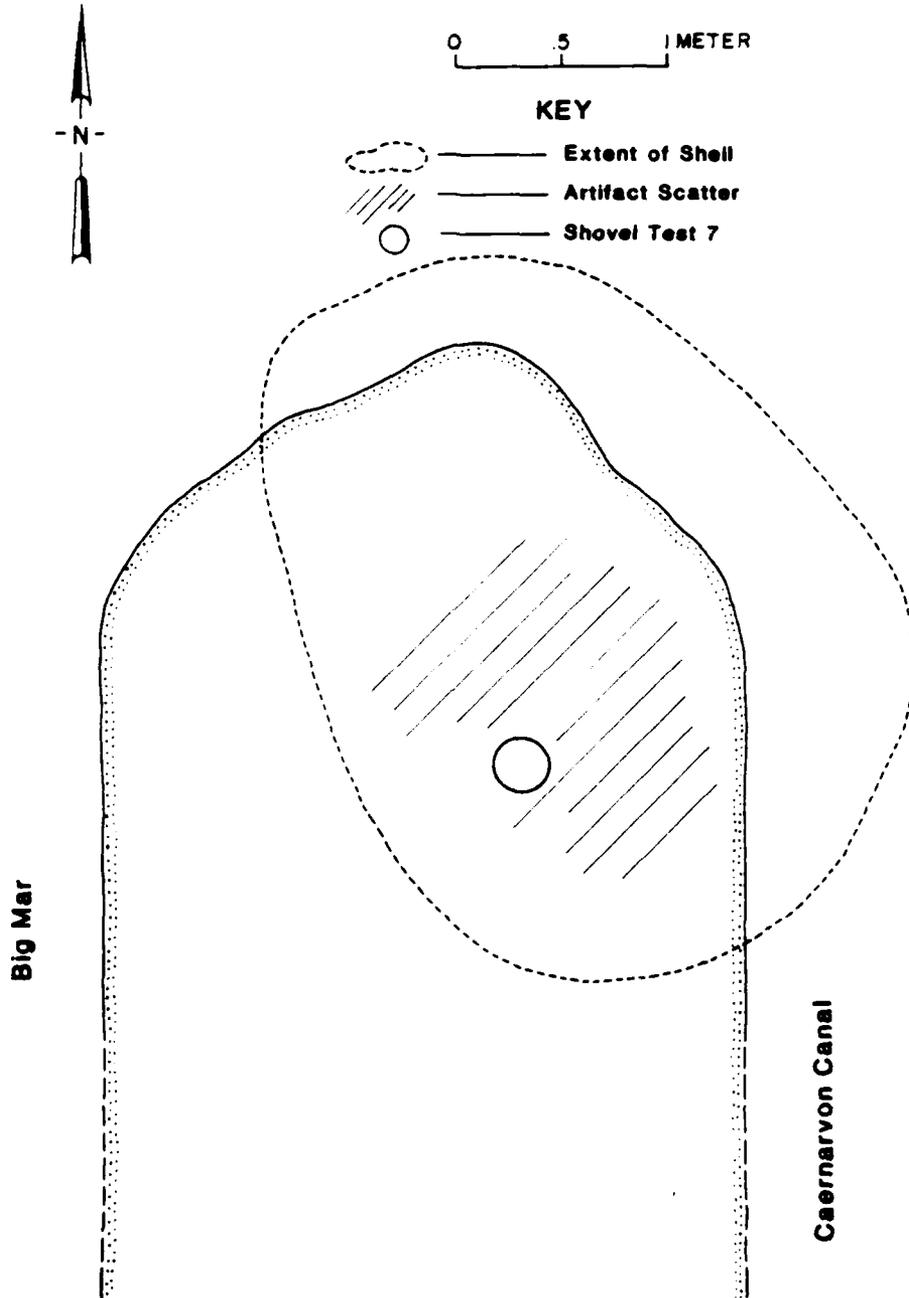


Figure 17. Site map of 16 PL 149.

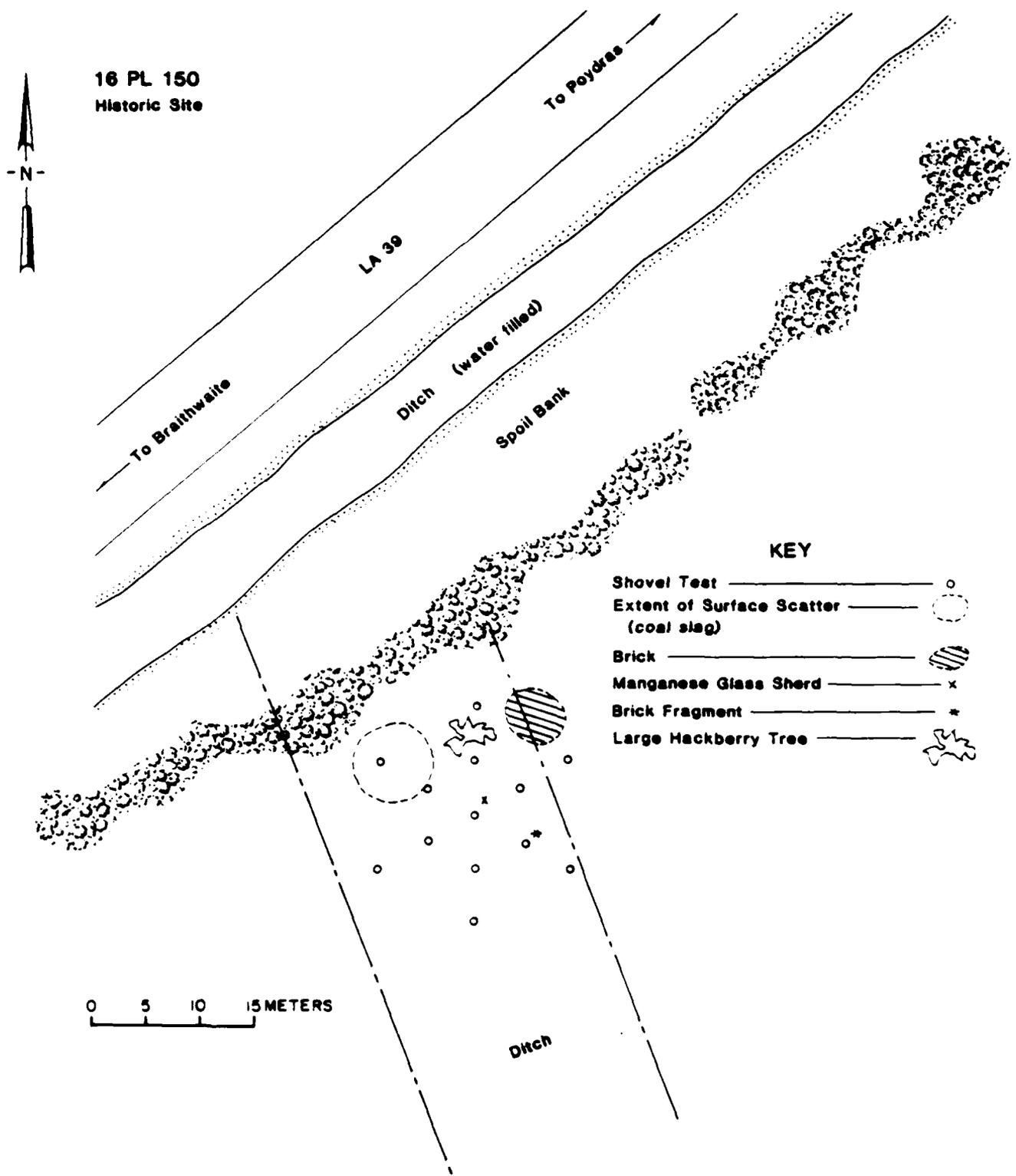


Figure 18. Site map of 16 PL 150, showing location of shovel tests.

Given the lack of intact cultural deposits, this site does not possess sufficient integrity to contribute to our understanding of the history of the region. While the site may be associated with structures identified on the 1873 Mississippi River Commission maps, the relationships of the structures to events or personages important to the historical development of the region also have not been demonstrated through extensive archival research.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Conclusions Concerning the Project Area

An intensive archeological survey of the Caernarvon Diversion Site project area located three archeological sites within the project rights-of-way. These three sites comprised two prehistoric shell middens (16 PL 148 and 16 PL 149), and one historic site (16 PL 150). Archival research, including the examination of historic documents and maps, failed to identify any structures or activity areas associated with Caernarvon Plantation within the project area. While 16 PL 150 may have been associated with a structure shown on the 1873 Mississippi River Commission map, that structure was destroyed by the construction of the modern levee, LA Highway 39, and the railroad parallel to the highway. Given that the artifactual remains recovered from the site were observed on the surface, these materials also may represent a secondary deposit of artifacts from the identified historic structures or from other sites.

The opening of the Caernarvon Crevasse in 1927 also resulted in the deposition of sandy splays throughout the channel of land between the Caernarvon Canal and the Braithwaite Golf Course. Intensive survey and archival research failed to identify any cultural resources that may have been affected by this event. Therefore, it appears that any structures or sites that may have been present within the project area, either associated with the Caernarvon Plantation or with twentieth century squatters and farmers, were removed completely by the opening of the crevasse.

Examination of the shoreline of Big Mar and the banks of the adjacent canals also failed to locate any historic structures that may have been present prior to the 1927 crevasse. The two sites located in this portion of the project area, 16 PL 148 and 16 PL 149, represented prehistoric shellfish collecting sites. Both have been affected by the construction of the canals around Big Mar and subsequent erosional and depositional processes. These cultural and natural activities have destroyed the integrity of both 16 PL 148 and 16 PL 149.

Recommendations

Intensive archeological survey of the portions of the Caernarvon Diversion Site project area adjacent to the modern levee (i.e., the batture and the channel of land between Caernarvon Canal and Braithwaite Golf Course), has failed to identify any

significant cultural resources within the project rights-of-way. While the batture was not examined by pedestrian traverse due to high water levels during the course of fieldwork, previous examinations (e.g., Shenkel 1977) and archival research failed to identify any cultural resources on the batture. Examination of the shoreline of Big Mar and the banks of the adjacent canals also failed to identify any significant cultural resources within this portion of the project area. Therefore, no further archeological investigations of the Caernarvon Diversion Site are recommended.

Three archeological sites were discovered during the course of this study. These resources include 16 PL 148, a Tchefoncte period shell midden, 16 PL 149, a scatter of shell, bone and unidentified prehistoric ceramics, and 16 PL 150, a scatter of historic artifacts. None is considered significant.

Caernarvon 1 (16 PL 148) lacks sufficient integrity to contribute significantly to our understanding of the prehistory of the region due to the disturbance of the site by the construction and maintenance of the Braithwaite Canal and subsequent erosional activities. It also lacks sufficient artifact densities to contribute significant information to the understanding of the prehistory of the region beyond that already recovered from the site. Therefore, 16 PL 148 cannot be recommended as eligible for nomination to or inclusion on the National Register of Historic Places under 36 CFR 60.4 (d). No further archeological investigations at 16 PL 148 are recommended.

Caernarvon 2 (16 PL 149) does not possess sufficient integrity to contribute to the understanding of the prehistory of the region due to the destruction of the site through the construction and maintenance of the Caernarvon Canal and subsequent natural erosional and depositional processes. Therefore, 16 PL 149 is not recommended as eligible for nomination to or inclusion on the National Register of Historic Places under 36 CFR 60.4 (d). No further archeological investigations at 16 PL 149 are recommended.

Caernarvon 3 (16 PL 150) does not possess sufficient integrity to contribute to the understanding of the history of the region due to the the disturbance of the site through the construction of LA 39, the modern levee, and the existing railroad. Also, the site cannot be associated with any personages or events important to the historic development of the area [36 CFR 60.4 (a)]. Therefore, 16 PL 150 is not recommended as eligible for nomination to or inclusion on the National Register of Historic Places. No further archeological investigations at 16 PL 150 are recommended.

Therefore, development activities related to the construction of the Caernarvon Freshwater Diversion Project will have no adverse effect on any identified cultural resources within the project area. However, there is a possibility that deeply buried cultural remains that could not be discovered by the survey techniques employed during this study may exist within the project area. If any such remains are discovered during the course of development activities, the Environmental Analysis Branch, Planning Division, New Orleans District, U.S. Army Corps of Engineers, should be notified to determine the proper course of action necessary to assess their significance.

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APPENDIX I
SCOPE OF SERVICES

SCOPE OF SERVICES**CULTURAL RESOURCE SURVEY OF THE
CAERNARVON DIVERSION SITE,
MISSISSIPPI DELTA REGION, LA PROJECT**

1. Introduction. The work under this delivery order will consist of a cultural resources survey of the proposed Caernarvon freshwater diversion site located on the Mississippi River in Plaquemines Parish, Louisiana. The proposed diversion site includes the diversion structure, channel and containment dikes. The primary purpose of the survey is to locate, describe, and assess the significance of cultural resources which exist in the project right-of-way.

2. Background Information. The Mississippi Delta Region project is authorized under the Comprehensive Plan for modification of flood control and improvement of the lower Mississippi River; approved under Public Law 89-298, 27 October 1965, House Document No. 308, 89th Congress, 1st Session. Located in the Lower Mississippi River Delta Region in Plaquemines Parish, Louisiana, the project consists of four salinity control structures. There will be two (2) structures on each bank of the Mississippi River with necessary channels and levees that will divert fresh water from the river to the bays and marshes below New Orleans, Louisiana, for fish and wildlife purposes. The four salinity control structures were proposed by the U.S. Fish and Wildlife Service in cooperation with the Wild Life and Fisheries Commission.

Letters of intent were furnished by local interests for the Bohemia and Caernarvon structures in December 1969. Initial studies were suspended in 1970 at the request of local interests who were restudying freshwater needs in the area. The project remained inactive until January 1982, when the State of Louisiana indicated an interest in implementing the Caernarvon structure and furnished a letter of intent stating that the State would provide the local interest share of project funding and further, would consider the use of advance local funding to expedite the project. A general design memorandum is now in preparation for the Caernarvon structure.

The Caernarvon diversion site is the location of the Caernarvon Crevasse which occurred in April 1927. This crevasse was artificially created by State and city authorities to reduce the flood height at New Orleans during the great flood of 1927. This crevasse served its purpose and saved the City of New Orleans at the expense of the residents of Plaquemines and St. Bernard Parishes and Caernarvon Plantation in particular. The 2,600-foot-wide crevasse effectively destroyed the structures behind the Caernarvon levee. Aerial photographs taken in 1933 confirm the destructive force of the crevasse.

3. General Nature of the Work to be Performed. The work to be performed by the Contractor shall be an intensive cultural resources survey of the project's potential environmental impact areas. An intensive cultural resources survey is a comprehensive, systematic, and detailed physical examination for the purpose of locating cultural resources in the potential impact area of the project. The survey will include subsurface testing and evaluations of identified resources against the National Register's criteria (36CFR60.4). The cultural resources survey will provide adequate information to seek determinations of eligibility from the Keeper of the National Register, and determine the need for avoidance of project effects on individual National Register and Register-eligible properties.

4. Description of the Study Area. The study area generally consists of the potential environmental impact area of the project as shown on the attached maps (Attachment 1). The study area consists of the proposed diversion structure, channel and containment dikes as shown on Attachment 1, and the southern and western margin of Big Mar. The study area is approximately 150 acres. This estimate should be confirmed by the Contractor during preparation of his proposal.

5. Study Requirements. The evaluation will be conducted utilizing current professional standards and guidelines including, but not limited to:

- the National Park Service's draft standards entitled "How to Apply the National Register Criteria for Evaluation" dated June 1, 1982;
- The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation as published in the Federal Register on September 29, 1983;
- Louisiana's Comprehensive Archaeological Plan dated October 1, 1983;
- The Advisory Council on Historic Preservation's Section 106 Update/3 entitled "Manual of Mitigation Measures (MOMM)" dated October 12, 1982.

The work to be performed by the Contractor will be divided into three phases: Background Research, Intensive Survey, and Data Analysis and Report Preparation.

a. Phase 1: Background Research. The Contractor shall commence with a literature and records review of previous archeological work relevant to the project area. This review shall include but not be limited to review of the literature, consultation with the Louisiana State Historic Preservation Officer's (SHPO) staff and local archeologists and historians, review of archives, historic collections at various libraries, ethno-historic records, and court records. Due to the schedule constraints and limited potential of the study area, a formal research design will not be required. The Contractor, however, shall identify research problems relevant to the study area.

b. Phase 2: Intensive Survey. Upon completion of the Phase 1 work, the Contractor shall initiate the fieldwork. The survey shall be an

intensive pedestrian investigation augmented with systematic subsurface testing. The survey will also include boat-based inspection of spoil banks along dike rights-of-way where standard survey techniques are not possible. The southern and western margins of Big Mar will also be inspected for evidence of cultural remains as these areas may be affected by the project. State site forms and state-assigned site numbers will be utilized for all archeological sites located by the survey. All sites located in the survey corridors will be mapped, photographed, and tested using shovel, auger, and limited controlled surface collection to determine depth of deposit, site boundaries, stratigraphy, cultural association, and possible activity areas. Further test excavations to determine site significance within the historic context will be conducted at a maximum of one site which the Contractor, in consultation with and approval by the Contracting Officer's Representative (COR), deems possibly eligible for inclusion in the National Register. Should the survey locate more than one site which requires further testing to determine eligibility, such testing is beyond the scope of this work item. Test excavations will include excavation of one or more 2m x 2m test units per site as necessary. All profiles and features excavated shall be mapped and photographed. Any standing structures located in the right-of-way will be recorded using state standing structure forms and a minimum of three clear black and white photographs. Any such structures will be professionally evaluated to determine historical association and significance.

Upon completion of the fieldwork, a management summary succinctly reporting the results of the survey shall be submitted to the COR within 4 weeks after work item award.

c. Phase 3: Data Analysis and Report Preparation. All survey data will be analyzed using currently acceptable scientific methodology. The Contractor shall catalog all artifacts, samples, specimens, photographs, drawings, etc. utilizing the format currently employed by the Louisiana Archeological Survey and Antiquities Commission. The catalog system will include site and provenience designations.

The Contractor shall provide descriptions of geomorphology, ecology, and cultural history, as well as a summary of previous research. This information shall be integrated with the research problems, survey results, and laboratory analyses to produce a graphically illustrated, scientifically acceptable draft report. Project impacts on all cultural resources located by the survey will be assessed. All cultural resources located by the survey in the study area will be evaluated against the National Register criteria contained in Title 36CFR Part 60.4 to determine eligibility for inclusion in the National Register. The Contractor shall provide justification of the criteria used and a detailed explanation of why each resource does or does not meet the National Register criteria. For each resource recommended as eligible to the National Register and assessed to be impacted by the project, the Contractor shall evaluate and recommend mitigation alternatives. Inferential statements and conclusions will be supported by statistics where possible. Specific requirements for the draft report are contained in Section 6 of this Scope of Services.

6. Reports.

a. Phase 2 Management Summary. Two copies of a management summary, one set of 7.5 minute quadrangle maps accurately delineating site locations, and one set of site forms and standing structure forms for all located cultural resources will be submitted to the COR within 4 weeks after work item award. The management summary will succinctly report the results of the survey, i.e. number, type, brief description, and assessment of project impacts for all cultural resources located and preliminary assessments of site significance. This summary report is not intended to be a lengthy interim report, but shall contain enough information to serve as a planning aid and a means of disseminating information immediately to the COR.

b. Draft and Final Reports (Phases 1, 2, & 3). Six copies of the draft report integrating all phases of this investigation will be submitted to the COR for review and comment within 8 weeks after work item award. Along with the draft reports, the Contractor shall submit one copy of support documentation for each cultural resource which the Contractor recommends as eligible for inclusion in the National Register of Historic Places. This documentation will follow the format and contain all the data required by the Guidelines for Level of Documentation appended to Title 36 CFR Part 63. The Contractor shall also provide recommendations for mitigation of each cultural resource recommended as eligible for the National Register. The written report shall follow the format set forth in MIL-STD-847A with the following exceptions: (1) separate, soft, durable, wrap-around covers will be used instead of self covers; (2) page size shall be 8-1/2 x 11 inches with a 1-1/2-inch binding margin and 1-inch margins; (3) the reference format of American Antiquity will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual dated January 1973. The COR will provide all review comments to the Contractor within 8 weeks after receipt of the draft reports (16 weeks after work item award). Upon receipt of the review comments on the draft report, the Contractor shall incorporate or resolve all comments and submit one preliminary copy of the final report to the COR within 3 weeks (19 weeks after work item award). Upon approval of the preliminary final report by the COR, the Contractor will submit 40 copies and one reproducible master copy of the final report to the COR within 22 weeks after work item award. Included as an appendix to the Final Report will be a complete and accurate listing of cultural material and associated documentation recovered and/or generated which the Principal Investigator considers worthy of preservation. In order to preclude vandalism, the draft and final reports shall not contain specific locations of archeological sites. Site specific information, including site and standing structure forms, black and white photographs and maps, shall be included in an appendix separate from the main report. The Contractor shall submit 6 copies of this separate appendix with the draft reports, and 10 copies and one reproducible master copy with the final report.

