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ARCHAEOLOGICAL EVALUATION OF THE PARIS ROAD SITE (16 OR 1/1

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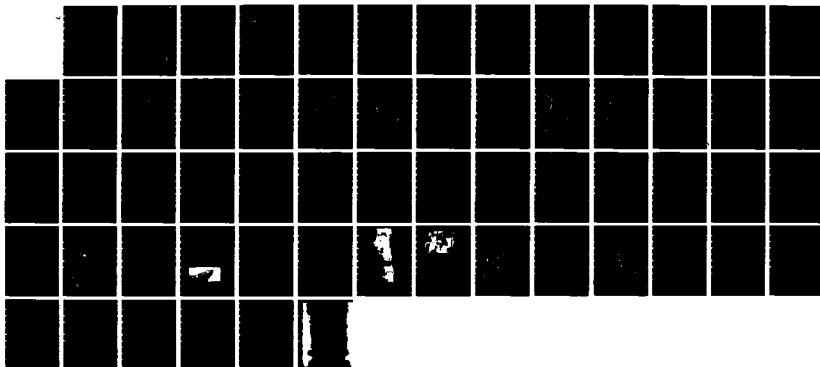
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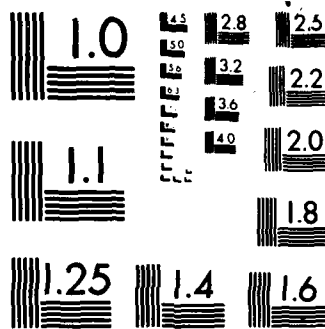
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Report PD-RC-84-03

AD-A141 462

**ARCHAEOLOGICAL EVALUATION OF THE
PARIS ROAD SITE (16 OR 41),
ORLEANS PARISH, LOUISIANA**

**COASTAL ENVIRONMENTS, INC.
1260 Main Street
Baton, Rouge, La. 70802**

March, 1984

Final Report

Prepared for:

**Department of the Army
New Orleans District,
Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160**

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occupation which, when inhabited, was located on the levees of a crevasse splay channel off of Bayou Sauvage, a major distributary of the Mississippi River.

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PREFACE AND ACKNOWLEDGMENTS

Under contract to the U.S. Army Corps of Engineers (Contract No. DACW29-83-M-2598), Coastal Environments, Inc. conducted an archaeological search for the Paris Road site (16 OR 41) located in Orleans Parish, Louisiana. The purpose of the study was to locate and evaluate the site relative to National Register criteria. The work, instituted because of planned levee construction adjacent to the Mississippi River Gulf Outlet, which would possibly impact the site, was conducted in compliance with ER 1105-2-50 and EP1105-2-55 of the Corps of Engineers' Planning Guidance Notebook. Additional Federal laws and regulations which made this project possible are as follows:

Procedures of the Advisory Council on Historic Preservation
(36 CFR 800)

Executive Order 11593, Protection and Enhancement of the
Cultural Environment (36 FR 8921) 1971

Public Law 93-291, Preservation of Historical and
Archaeological Data - Moss Bennett Act (88 Stat. 184) 1974

Recovery of Scientific, Prehistoric, Historic, and
Archaeological Data: Methods, Standards, and Reporting
Requirements (36 CFR 66)

The study also complied with the Cultural Resources Code of Louisiana.

A number of individuals are to be thanked for their contribution to the project. McClelland Engineers provided and operated the augering equipment. William Preslan, director of McClelland's New Orleans office, and the drilling rig crew, Bill Broughton and Pat Jurss, are thanked for the expert and efficient service provided. Mr. J. R. Baxter, who discovered the Paris Road site in 1964, provided invaluable firsthand information on the original condition of the site and spent one afternoon in the field delineating the probable location of the site. Mr. Mike Stout served as Contracting Officer's Representative on the project and provided pertinent maps and aerial photographs. The field crew consisted of David Kelley, Bryan Guevin, Janice Cullen, and Richard Weinstein. David Kelley and Rod E. Emmer aided in the interpretation of the auger core data collected and Richard Weinstein identified the ceramics collected at the site in 1964. Drafting was done by Curtis Latiolais, editing by Linda Richard, and typing by Ree Musso and Susan C. Crump.

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CHAPTER 1: INTRODUCTION

This report presents the results of a program of study designed to locate and archaeologically test the Paris Road site (16 OR 41), a prehistoric Tchefuncte culture (500 B.C. to A.D. 1) site located in Orleans Parish about 13 km (8 mi) east of New Orleans. The site was originally discovered in 1964 during dragline borrow operations associated with construction of the Paris Road bridge over the Mississippi River Gulf Outlet (MRGO). At the time of its discovery the site was buried beneath several feet of overburden. Since its initial discovery the site has apparently never been revisited or examined.

The present study to relocate the site was initiated as a result of planned levee enlargement along the south shore of the MRGO between the Paris Road bridge and Bayou Bienvenue. The U.S. Army Corps of Engineers (USACE) felt that the proposed construction threatened to adversely impact the site, reportedly located within the levee project right-of-way. In light of this, the Corps of Engineers contracted with Coastal Environments, Inc. (CEI) to attempt to locate the site, determine site boundaries, determine site content, and gather data from the site sufficient to make a National Register evaluation.

The study area consists of a parcel of land 200 m (700 ft) wide and 600 m (2000 ft) long extending east from the Paris Road bridge (Figure 1). Bayou Sauvage, a relict Mississippi River distributary channel, is located less than a mile north of the project area. The proposed levee alignment extends through the center of the study area. At the time of the fieldwork, spoil was being deposited in the western half of the area. This spoil was being removed from another levee and, by mistake, was stockpiled in the study area. This disposal activity did not seriously impede the progress of the fieldwork. The MRGO is located approximately 245 m (800 ft) north of the study area. The entire study area is covered by thick dredge-spoil deposits derived from the MRGO channel and the former Gulf Intracoastal Waterway (now the MRGO in this area).

The Paris Road site, on the basis of all available information, was located in the western portion of the study area. The "Reported Site Location" depicted in Figure 1 encompasses the site location as delineated by Mr. J. R. Baxter in the field.

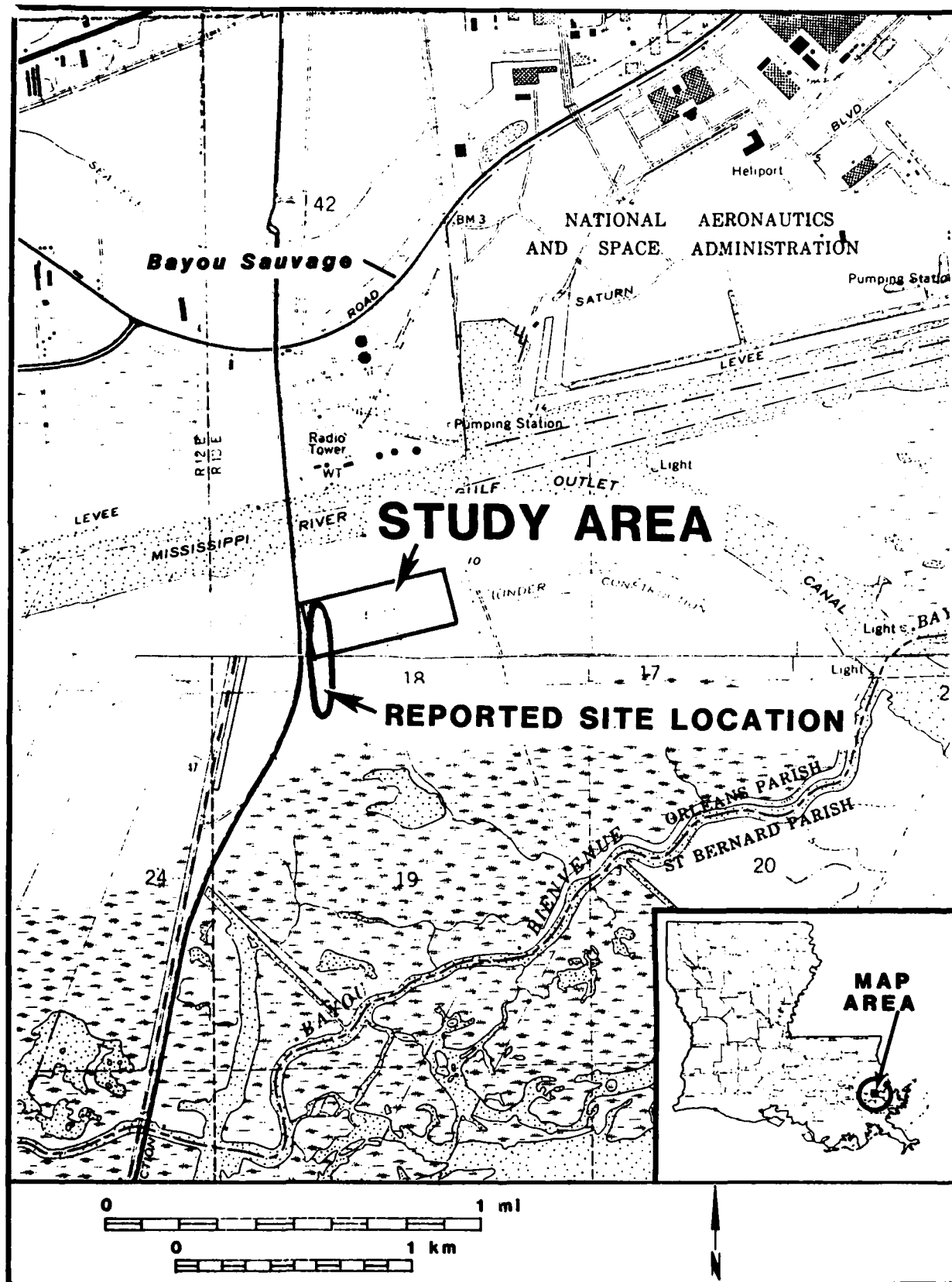


Figure 1. Location of study area and reported site location given by J.R. Baxter (personal communication 1983).

The program of research proposed by CEI included background research, systematic mechanical augering and, should the augering locate the site, backhoe and hand excavation. The augering failed to locate any evidence of the Paris Road site. As a result, the excavation phases of the project were not initiated. Despite its failure to locate cultural remains, the study served to gather together a set of archaeological, cartographic, and geological data pertinent to the site and its locale. As is discussed later, a synthesis of this collection of data adds to our knowledge and understanding of the interrelationships between prehistoric settlement and the geomorphic history and environmental setting of a specific, defined locale.

Research Issues

The primary objective of the study was simply to locate the Paris Road site and gather sufficient information to assess site significance. Within the constraints of this objective it was assumed that several issues of interest to archaeological research in the region could be addressed. One issue of interest centered around the fact that the Paris Road site reportedly contained little or no shell (J.R. Baxter, personal communication 1983). Literally nothing is known about the material content of non-shell midden Tchefuncte sites in the region since none have yet been studied. The Paris Road site may have supported a unique set of functional activities (i.e. not related to shell fishing) unrecorded at other sites and thus provide an opportunity to expand our knowledge of Tchefuncte material and non-material culture.

An additional issue of interest concerns the relationship of the site to the natural setting, particularly in terms of site-landform association. Although a great deal of information is available on prehistoric site/landform relationships in the Louisiana deltaic region, it was hoped that the geological (auger) data collected in this study would allow for examination of this relationship at a finer scale than usual. To some degree, this aspect of the study was accomplished.

Volume Organization

The first chapter of this study presents a discussion of the natural setting of the site locale, particularly as it relates to its dynamic geologic and geomorphic history. An emphasis is placed upon the use of cartographic techniques and sources to portray the relationship of the site locale to the known physical environment.

This is followed by a discussion of the site in terms of its cultural affiliation and content. An outline of the culture history of the region and a review of pertinent archaeological research is also presented.

The next chapter presents a description of the fieldwork and a discussion of its results. The final chapter presents conclusions and implications derived from the study and provides recommendations.

CHAPTER 2: THE SITE AND ITS ENVIRONMENTAL CONTEXT

Introduction

The study area lies within a region known as the Lake Pontchartrain Basin, which encompasses portions of the parishes of St. Tammany, Tangipahoa, Livingston, Ascension, St. James, St. John the Baptist, St. Charles, Jefferson, and Orleans. This chapter presents an overview of the environmental setting of the Lake Pontchartrain Basin which centers primarily on the area's geomorphic history and emphasizes that portion of this history relevant to the present study.

The Pontchartrain Basin is located within the Mississippi Valley, bounded on the south and west by the Mississippi River, on the north by Pleistocene-aged uplands and on the east by relict deltaic and barrier island formations. The recent geologic history of the basin as a whole has been dominated by the Mississippi River, specifically the series of delta complexes which have formed in the area over the past 6,000 years or so. These recent deltaic deposits form a thick mantle which overlays earlier Pleistocene-aged land surfaces. South of Lake Pontchartrain, deltaic deposits provide, with very few exceptions, the only exposed land surfaces on which human occupation was, and is, possible. The exceptions are a few locations where the tops of barrier island sand ridges project through or near present deltaic land surfaces. The archaeological sites of Big Oak Island and Little Oak Island, located several miles north of the study area, are associated with these sand ridge features.

Extensive amounts of research have demonstrated the association of prehistoric settlements with certain deltaic landform features, specifically elevated levee formations which developed along streams, distributaries, and crevasses. These features provided in the past, as they do today, the optimum if not the only, locales suitable for human habitation. As a result, an understanding of the processes and sequences of deltaic formation, stabilization, and subsequent deterioration is important, if not critical, for comprehending human use and settlement in the deltaic region.

The processes of delta formation, to a large extent, dictate patterns of settlement over time as landforms and environments suitable for utilization are created through

delta growth or are altered, destroyed, or removed through deterioration or subsidence. These processes also have an immediate and direct impact on the resultant archaeological record: sites are covered by alluvium, buried through subsidence, or destroyed by erosion and removed from the possibility of study. We must assume that the archaeological record presently known in the deltaic area is but a fraction of that which once existed.

The fragmented and incomplete nature of the archaeological record makes it difficult to approach many questions of anthropological importance and interest. It is especially difficult to develop generalizations concerning the impact and influence of sociocultural forces on settlement arrangement and distribution. The population of sites available for assessing these types of questions are so incomplete for any prehistoric period that legitimate conclusions concerning those cultural forces which affected settlement spacing, internal structure, hierarchies and the like are presently difficult if not impossible to develop. More successful are approaches which examine site-specific relationships to environmental setting and the propositions concerning human utilization of the surrounding environment as Shenkel (1974, 1979) has done at Big and Little Oak Islands. Variability in site locational relationship and material culture content can also lead to arguments concerning differences in site function. Site distributions through time can be utilized to assess and date sequences of deltaic landform formation. This latter aspect of research has been the more common approach utilized in the region (e.g. Saucier 1963; Gagliano et al. 1979; Wiseman et al. 1979).

Concern has been expressed over the lack of consideration of cultural factors in the interpretation of archaeological data in the region (e.g. New World Research 1982). This is certainly a legitimate concern; however, because of the factors mentioned above, the nature of the data makes this a difficult undertaking. Developing the data base needed to establish temporal and spatial controls on the constantly changing environment of the area is seen as a useful pursuit and probably a necessary preface to understanding patterns of cultural adaptation in the region.

Geomorphic History

The processes of delta building which have produced the eastern delta have been the subject of extensive study by geologists and geographers (Russell 1936; Fisk 1944; Kolb

and van Lopik 1958; McIntire 1958; Saucier 1963; Frazier 1967, 1974; Gagliano et al. 1973). The utilization of different lines of evidence and differing interpretation of this evidence has led to a variety of opinions on the sequence and age of events involved. A comprehensive and widely accepted work is that of Frazier (1967). Building upon Frazier is a recent study by Weinstein and Gagliano (1983) which uses current archaeological data to refine the model presented by Frazier. These two studies were drawn upon heavily in the following discussion.

Frazier has delineated five major delta complexes whose sequential development occurred over the last 6,000 years. The model developed by Weinstein and Gagliano (1983) presents seven stages of delta development over the past 9,000 years or so (Figure 2). Of concern here are their third and fourth delta complexes, the Metairie and La Loutre, which generally correspond to Frazier's St. Bernard delta complex.

About 4800 years ago, as a result of a shift in the Mississippi River, a new delta system began to prograde into the area of New Orleans. Various identified as the Cocodrie (Fisk 1944) and early stage of the St. Bernard (Frazier 1967) or the Metairie delta complex (Figure 2), this system built across the entrance to the Pontchartrain embayment, gradually sealing it off from the Gulf of Mexico and converting it into a freshwater lake (Gagliano et al. 1975). Bayou Sauvage, apparently served as one of the major trunk channels for this distributary system.

Between about 3400 and 1800 years ago the initial Metairie system expanded into two major lobes which collectively have been labeled the La Loutre system (Figure 2). The larger of the two lobes built eastward forming much of the land which is today St. Bernard Parish. The trunk channel of the Mississippi followed the course of present day Bayou La Loutre. This massive spurt of delta development extended the delta complex well beyond the present Chandeleur Islands in the 1600-year period between 1400 B.C. and A.D. 200. Thick (up to 3 m) deposits of peat developed in the resulting brackish marsh, fresh marsh, and freshwater swamp environments. The deltaic plain was sufficiently stable to allow the development of marsh vegetation as far out as 120 km. This period represents the maximum extent of delta lobe development in the eastern delta. After a second, smaller pulse of progradation in the vicinity of the old Bayou Sauvage course, floodwater deposition ceased on the eastern delta and the gradual process of subsidence and transgression began. The sequence of environmental events rolled backwards, as freshwater swamp was replaced by freshwater marsh, and

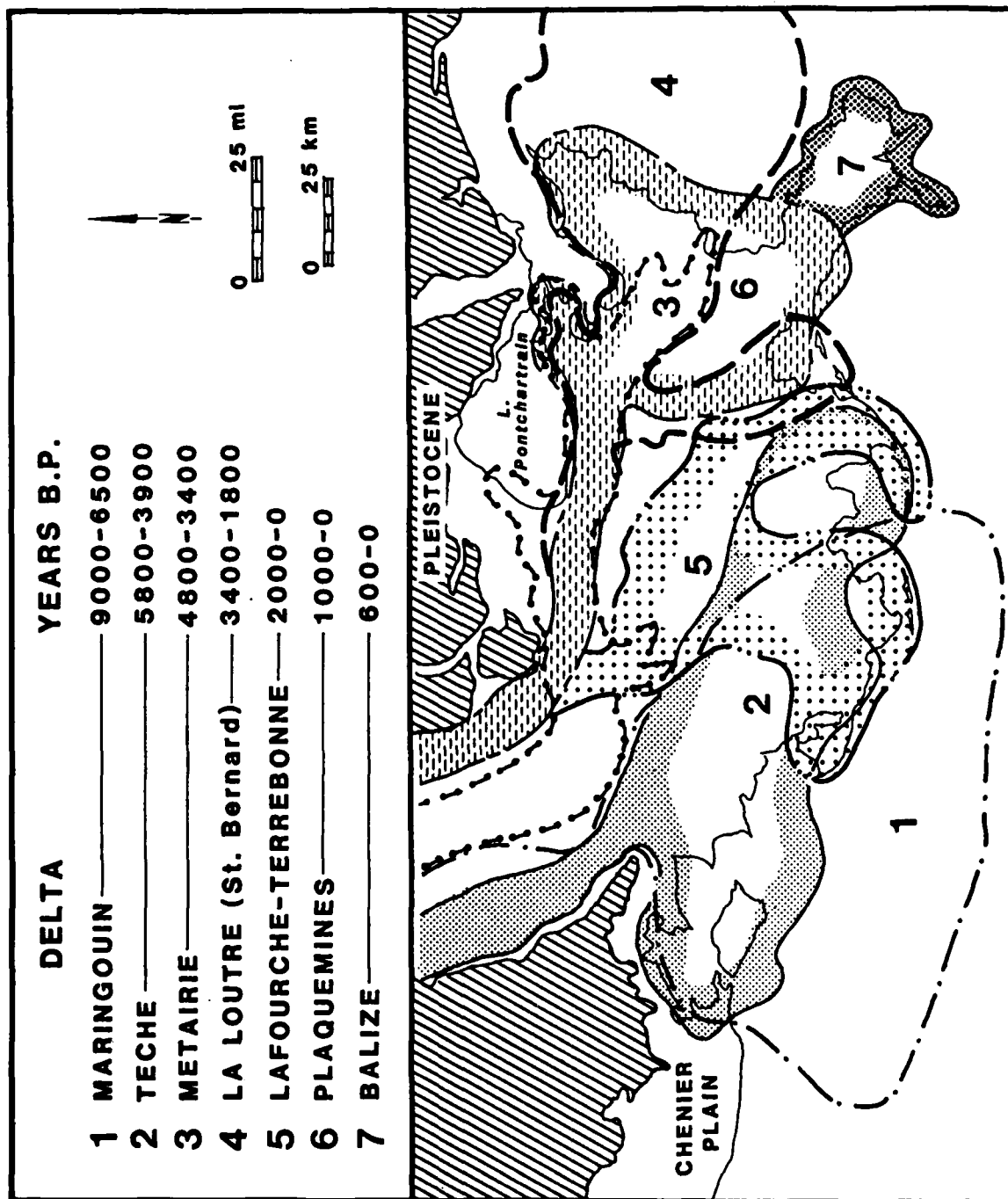


Figure 2. Sequence of major Mississippi River delta complexes (Source: Weinstein and Gagliano 1983).

fresh marsh by brackish, until the Gulf invaded the distal end of the delta. Culturally, however, this period of landform decline saw for a time the flourishing of human settlement on the eastern delta, as the well-developed and stabilized distributary natural levees ceased to suffer the effects of massive annual flooding, and became quiet, but resource-productive homesites.

The Paris Road site is associated with the natural levees of Bayou Sauvage. The Linsley site, a Poverty Point period site located immediately adjacent to the study area and also associated with Bayou Sauvage, has produced a radiocarbon date of about 1740 B.C. (average of several dates), indicating that Bayou Sauvage levee features suitable for habitation were extant at least 3700 years ago. Bayou Sauvage maintained flow and provided desirable habitats for some years after that as evidence by the Paris Road site and other Tchefuncte sites dating to the period 500 B.C. to A.D. 1 and found in associates with the natural levees of Bayou Sauvage or its distributaries.

Relying on available historic maps and characteristic channel geomorphic activity, it is possible to model the specific environmental setting of the Paris Road site at time of occupation. The site is located on the cutbank side of a large meander of Bayou Sauvage and at some distance from the main channel (Figure 1). The levee in this area is much wider than the average Bayou Sauvage levee width as a result of deposition from overbank flooding or minor crevassing, characteristic of cutbanks.

This overbank flooding commonly produces a number of small channels which splay off of the main channel, across the natural levee, and into the backswamp. Although small, short-lived, and probably flowing only during periods of high water, these channels produce minor levees of their own. With blockage at the river and loss of flow, subsidence and delta deterioration occur. It appears that some of these relict channels become reoccupied or remain open in areas of tidal influence and, essentially, become tidal streams extending from the levee flanks into surrounding brackish marshes. Optimum settlement opportunities were offered along these channels, particularly in proximity to where they emanated from the flank of the major stream's natural levee. At these locales high, well-drained land was available for settlement, and access into the marsh was provided by the channel, now a tidal stream.

In all probability the Paris Road site, when initially occupied, was situated at the rear flank or margin of the Bayou Sauvage natural levee and/or along the minor levee of a

relict crevasse splay channel, turned small tidal stream, flowing into the marsh. The presence of Rangia at the site, a brackish water species, indicates that the system was in a period of deterioration when intertributary areas were becoming, or had become, brackish marshes. Several studies have demonstrated that it is during the early stages of deterioration that crevasse or crevasse-like systems reach peak biological productivity and are particularly amenable to human habitation (Coastal Environments, Inc. 1977; Duhe 1981). The fact that settlement occurred at this particular location along Bayou Sauvage during both the Poverty Point and Tchula periods, from circa 1700 B.C. to A.D. 1, indicates that this optimum habitat was possibly maintained for a period of 1700 years or, alternatively, several small-scale episodes of overbank flooding, minor channel levee formation, and subsequent deterioration took place at this locale.

Since its occupation, the Paris Road site has subsided beneath the surrounding marsh, though the extent of subsidence is not known due to the complications caused by massive amounts of modern fill dumped onto the site. A series of maps that portray the study area over the past 150 years and lend support to the model proposed above are available.

The 1873 plat map of the area shows the site location in a marsh, though high ground exists just to the west (Figure 3). Interestingly, this section of high ground resembles a true crevasse system in configuration, though none of the more recent maps show this feature. Several streams emanate from the Bayou Sauvage levee flanks and flow southeast into Bayou Bienvenue. None pass through the study area, though two arise from the possible crevasse system. Though presently tidal streams, as noted above, these are assumed to have reoccupied former overflow or crevasse splay channels.

The 1892 topographic quadrangle of the area provides minimal information (Figure 4). It depicts the study area in a marsh setting and shows the several small streams flowing from the area of Bayou Sauvage to Bayou Bienvenue. A comparison of this quadrangle with modern maps indicates that it is quite inaccurate in the placement of features that are any distance from main streams, roads, etc.

The 1932 Coast and Geodetic Survey map of the area, which is apparently quite accurate (Figure 5), indicates the wide natural levee of Bayou Sauvage (equivalent to Gentilly Road) in this area, depicting it as tree covered. The study area is located in

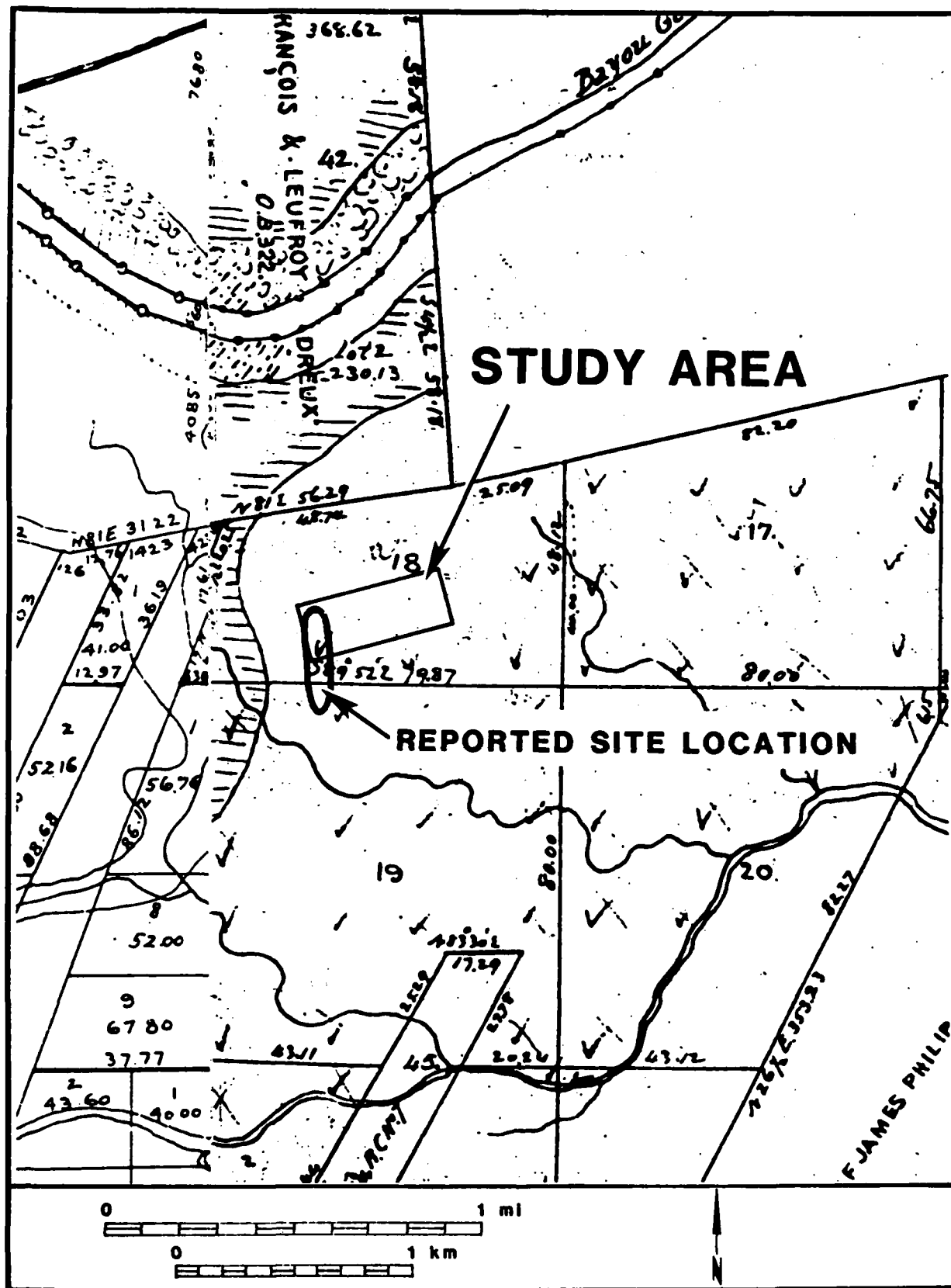


Figure 3. Study area shown on 1873 official plat map (Division of State Lands 1873a, b).

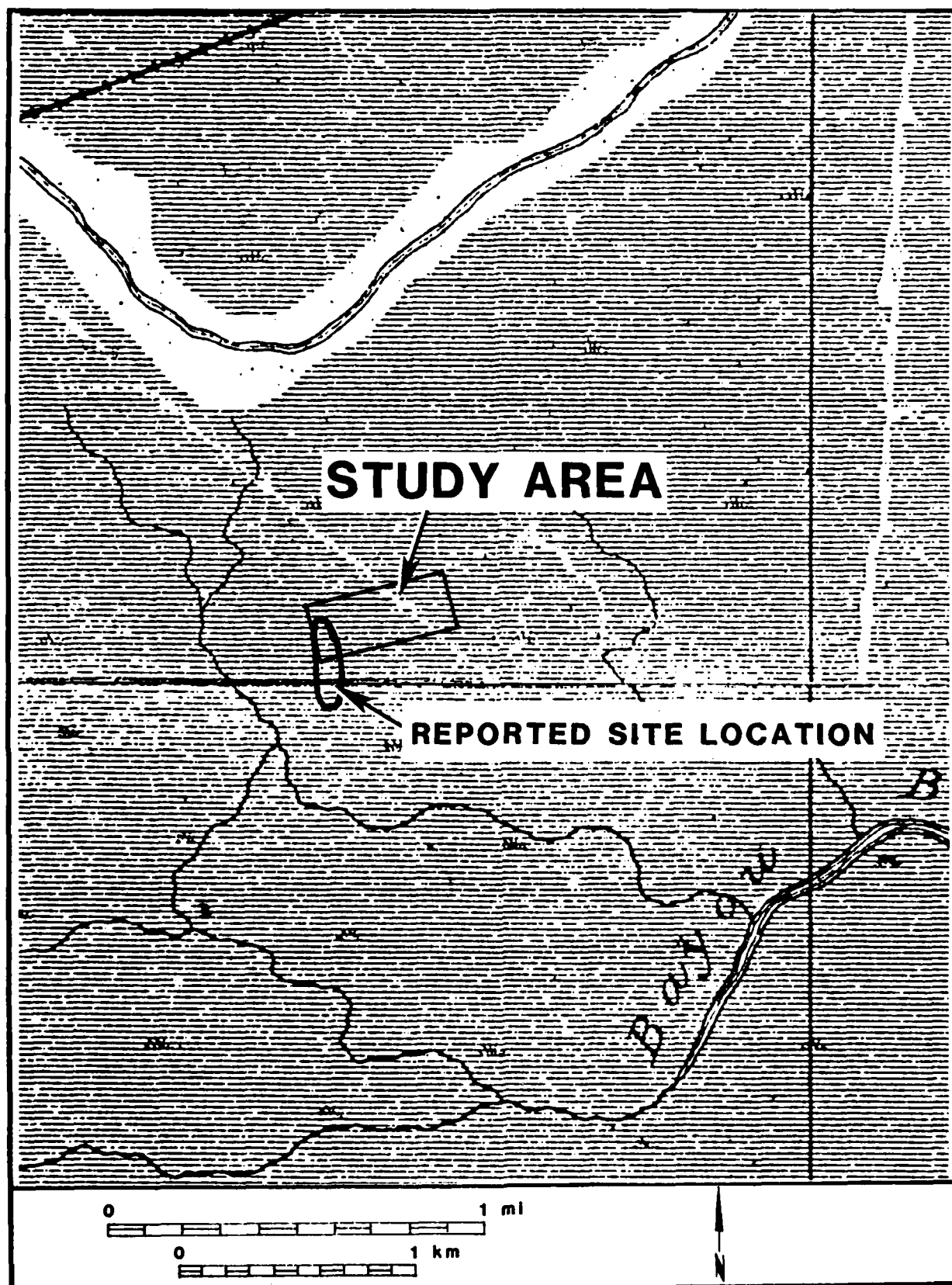


Figure 4. Study area plotted on 1892 topographic quadrangles (U.S. Geological Survey 1892a, b).

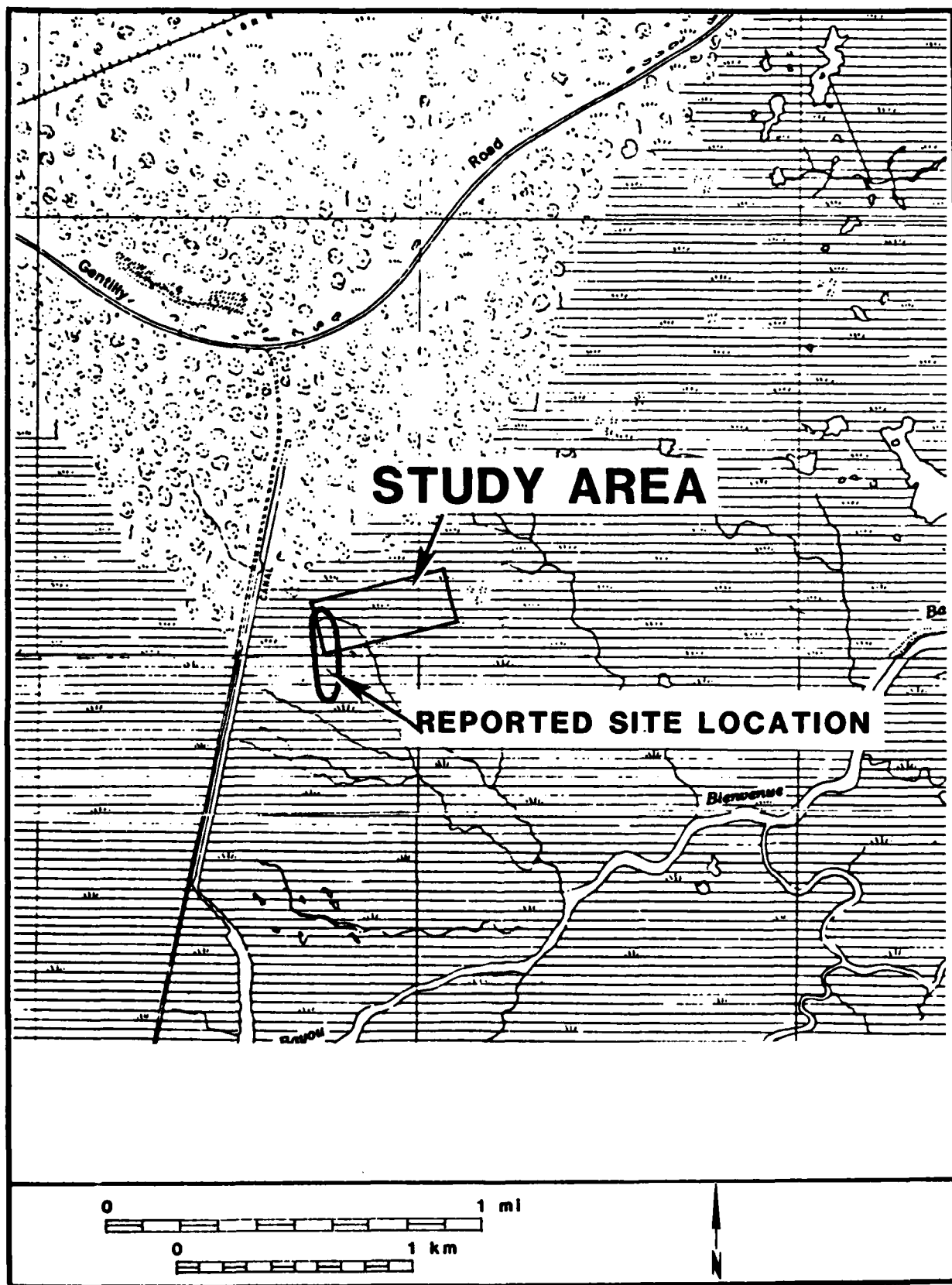


Figure 5. Study area plotted on 1934-1935 maps (U.S. Coast and Geodetic Survey 1934, 1935).

marsh just off the flank of the vegetated levee. One tidal stream interpreted as occupying a relict overflow channel passes through the western end of the study area in the vicinity of the reported site location.

Although the limits of the Bayou Sauvage natural levees are not depicted, two more recent map sets, the 1936-1939 topographic quadrangles and a 1958 engineering map produced for MRGO construction, depict stream channels passing through the study area (Figures 6 and 7).

The combined geomorphic and cartographic evidence is seen as supportive of the model of site location and environmental association presented above. As is discussed later, the data collected during the augering program provided additional supportive evidence for the model.

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PONTON BRIDGE

24" Sub Gas Line

EXISTING LANE

INTRACASTAL WATERWAY

EMILING U.S. R/W

PROPOSED U.S. R/W

BOTTOM OF CHANNEL

CURVE DATA

Δ	30° 45' 30"
R	1"
L	2034.24'
E	9882.50'
N	8729.58'

Outer limit of permanent spoil disposal area for construction and future maintenance

REPORTED SITE LOCATION

Outer limit of temporary spoil disposal area for construction

0 1 mi

0 1 km

N

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CHAPTER 3: THE SITE IN CULTURAL CONTEXT

Site Description

Very little is actually known about the Paris Road site; however, it has become imbedded in the regional archaeological literature and, as a result, has developed an importance which, to a large extent, far exceeds the actual information content of the site.

As mentioned, the site was originally discovered in 1964 when it was hit by a dragline during construction of the Paris Road bridge over the MRGO. Mr. J. R. Baxter, a Corps of Engineers employee, first noticed the site and brought it to the attention of Drs. William McIntire and William Haag of Louisiana State University. The state site form, prepared by McIntire and Haag and based on a visit to the site and information derived from Mr. Baxter, serves as the only primary documentation of the site. Haag and McIntire also made a small collection of artifacts which is stored at the Museum of Geoscience, Louisiana State University, Baton Rouge. Since the 1964 discovery, it appears that no other efforts were made to locate or reexamine the site.

Relative to the present study, Baxter, Haag, and McIntire were contacted and the artifact collection at LSU was examined. Dr. McIntire, now living in California, did not respond to our inquiries; Dr. Haag was able to provide some information on the condition of the site at the time of his visit. J. R. Baxter provided a great deal of useful information in addition to visiting the site with the field crew prior to initiation of the augering.

The site form indicates that the site was an apparently single component, Tchefuncte culture midden buried beneath about 1.5 m (5 ft) of sediment described as "alluvium." The form goes on to state that the site was "associated with a levee that overlies an earlier levee" and lay about 300 m (1,000 ft) east of Paris Road and 300 m (1,000 ft) to 600 m (2,000 ft) south of the MRGO. There is no indication on the site form as to the size or composition of the midden deposit. The fact that there is no mention of shell seems to suggest that shell was rare or absent.

In discussions with J. R. Baxter, he indicated that the site was discovered during dragline dredging related to the building of an approach road or equipment road during the construction of the Paris Road bridge. He remembers the site as being just east of the present bridge and his impression of its configuration was that it was elongated or linear, 5 m (15 ft) or so wide, possibly 30 m long or longer, and oriented in a north-south direction. Figure 1 depicts the area of the site's location relative to the study area as established by Mr. Baxter during his visit to the site. His information indicates that the site extends into the western end of the study area.

Baxter's information substantiated the site form in that the site was buried, though he thought it was only .5 m to 1 m deep rather than the 1.5 m mentioned in the site form. He stated that the site contained a considerable quantity of bone, especially fish and turtle bone; in fact, it was the large amount of bone that first attracted his attention. Material at the site also included ceramics and a small amount of shell which Baxter identified as Rangia. The ceramics which he examined were all Tchefuncte types. Baxter's description of the site is substantiated by Dr. Haag, who emphasized the fact that the site produced only Tchefuncte ceramics (William Haag, personal communication 1983).

The only known tangible evidence of the site is the small artifact collection made by Haag and McIntire in 1964. This material, currently stored at the Museum of Geoscience, Louisiana State University, was examined and analyzed. The collection consists of only 12 sherds as well as some bone and shell. The results of the analysis of this material is presented in Table 1.

The extremely small size of the collection limits the inferences which can be made about the site. It certainly contains a Tchefuncte component; and, if we can assume the collection is representative, it is likely a single component occupation. The faunal material suggests the inhabitants were exploiting, at least, a brackish-to-fresh marsh habitat which supported Rangia, fish (bowfin), and turtle species. Although minimal, the faunal remains do not contradict what is currently known about coastal Tchefuncte subsistence practices (Byrd 1974, 1976).

The information available on the Paris Road site, though meager, suggests the site could be significant in providing information on material culture and coastal adaptation during the Tchula period. Of particular relevance is the very small amount

Table 1. Artifact Collection from the Paris Road Site. (Made by W. Haag and W. McIntire, 1964.)

Ceramics	Count
Tchefuncte Plain, <u>var. Tchefuncte</u> (body)	10
Tchefuncte Plain, <u>var. Tchefuncte</u> (rim)	1
Tchefuncte Plain, <u>var. Tchefuncte</u> (wedge-shaped foot)	1
Fauna	Count
Bowfin (<u>Amia calva</u>)	9
Unidentified fish	2
Unidentified turtle	3
White-tailed deer (<u>Odocoileus virginianus</u>)	1
Unidentified bone	2
<u>Rangia cuneata</u> shells	4

of shell reported at the site, making the site somewhat unique since most known coastal Tchefuncte sites are characterized by large amounts of shell.

At the time of its discovery the Paris Road site was buried by several feet of sediment. Subsidence may have been responsible for some of this overburden but most of it is dredge spoil derived from a number of episodes of channel dredging conducted in the area. The Gulf Intracoastal Waterway (GIWW) was dredged through this area in 1942-1943 to provide a new eastern approach to New Orleans. This segment of the GIWW replaced the passage through Lake Pontchartrain, saving 30 mi in travel distance, offering the advantages of cheaper channel maintenance and providing traffic a route safe from German submarines operating in the Gulf of Mexico (Alperin 1983:34).

When it was initially dredged, spoil was placed on the south side of the GIWW in the vicinity of the study area and the Paris Road site. Aerial photographs of 1945 and 1955 indicate, however, that minimal amounts of spoil were placed on the presumed location of the site proper. Between 1958 and 1963, much of the Mississippi River Gulf Outlet channel was constructed. Connecting with the GIWW just east of the

study area, construction of the MRGO resulted in the deposition of large amounts of spoil on top of the site. Design drawings made in 1959 for the MRGO show the study area included within the proposed spoil disposal area. Aerial photographs of 1964 and 1965 depict spoil deposits in the study and site area.

Dredge spoil has periodically been placed on the area since 1960 as a result of maintenance and expansion dredging. This occurred in 1962 as a result of channel expansion (Thomas 1982) and again in the early 1970s from maintenance dredging (Ron Lee, personal communication 1983). The latest episode of dredging supposedly added approximately 8 ft of spoil to the study area.

It is evident that by the time of its discovery, the Paris Road site was covered by dredge spoil and since that time even more spoil has been pumped onto the site. The dredging activities, in addition to the natural process of subsidence, have buried the Paris Road site and significantly altered the study area relative to its natural state at the time of aboriginal occupation. The dredge fill was clearly evident in the auger borings and is fully discussed in a later chapter. The natural processes which have affected the site locale since its occupation have been discussed earlier.

Previous Research and Regional Culture History

In order to gain a proper cultural perspective, the Paris Road site must be viewed within the context of the Lake Pontchartrain region. The following summary of previous archaeological research and culture history in the Lake Pontchartrain Basin provides a background against which the Paris Road site may be assessed. Thorough discussions of the archaeology of this region are presented by Saucier (1963), Gagliano (1980), and New World Research (1982). These studies were used extensively in assembling the present summary. Table 2 presents an outline of the regional culture history as it is presently known.

Much of the previous research into the prehistory of the Pontchartrain Basin has been accomplished in conjunction with investigations into the geologic history of the Mississippi River delta. Kniffen (1936) was one of the first to report on archaeological sites of the area in the scientific literature, and McIntire (1958) initiated research on the relationship of prehistoric settlements to the landforms of the deltaic plain. Gagliano and Saucier (Saucier 1963) visited and made collections from a number of

Table 2. Culture History Sequence for Louisiana Coastal Region.

STAGE	PERIOD	CULTURE	TIME INTERVAL	PHASES		
				Eastern Area	Central Area	Western Area
FORMATIVE	Historic	Various Cultures	Present		Various Tribes	Little Pecan
	Mississippi	Natchezan	A.D. 1700			
		Mississippian	A.D. 1600	Delta Natchezan	Petite Anse	
				Bayou Petre	Burk Hill	Bayou Chene
		Plaquemine	A.D. 1300			
				Medora	Three Bayou	Holly Beach
	Coles Creek	Coles Creek	A.D. 1000	Bayou Ramos	Morgan	Jeff Davis
	Baytown	Baytown	A.D. 850	Bayou Cutler	White Lake	Welsh
			A.D. 700		?	
			A.D. 400	Whitehall	?	Roanoke
	Marksville	Hopewellian-Marksville	A.D. 200	Gunboat Landing	Mandalay	
				Magnolia		
				Smithfield	Jefferson Island	
				LaBranche		
ARCHAIC			0			
	Tchula	Tchefuncte	250 B.C.	Beau Mire	Lafayette	Grand Lake
				Pontchartrain		
			500 B.C.			
	Poverty Point	Poverty Point	1000 B.C.	Garcia	Beau Rivage	?
				Bayou Jasmine	Rabbit Island	
	Late Archaic	Archaic	1500 B.C.	Pearl River	Copell	Bayou Blue
	Middle Archaic		3000 B.C.	Monte Sano	Banana Bayou	?
				Amite River		
	Early Archaic		5000 B.C.	St. Helena	?	?
LITHIC	Late Paleo	Paleo-Indian	6000 B.C.	Jones Creek	Vatican	Strohe
	Early Paleo		8000 B.C.	?	Avery Island	
	Pre-Projectile Point	?	10,000 B.C.	?	?	?
			?			

sites in the vicinity of New Orleans during the 1950s, and since then have contributed important syntheses on the paleogeography of the region. During the 1960s and 1970s a number of archaeologists—including William Haag, Robert Neuman, Richard Shenkel, and Richard Weinstein—carried out surveys in the Pontchartrain Basin. Much of this work was done in the context of cultural resources management. The surveys often covered small areas and offered little opportunity for synthesis, but the information produced has, in many cases, contributed significantly to the growing regional data base.

Several of the cultural resources surveys carried out in the vicinity of the study area were of a relatively large scale and resulted in substantive studies of the archaeology and paleogeography of the region. One of the first of these was "Archaeological Investigations Along the Gulf Intracoastal Waterway" (Gagliano et al. 1975). An important contribution of this report was its discussion of the impact of maintenance dredging on sites along the waterway. In 1978 CEI conducted a similar survey along the MRGO (Wiseman et al. 1979). As part of this study a detailed paleoenvironmental reconstruction of the St. Bernard delta lobe was proposed and partially tested using archaeological data from the Mulatto Bayou site (16 SB 12). Also in 1978 CEI undertook surveys of five U. S. Army Corps of Engineers construction areas in the Pearl River mouth area (Gagliano 1980). The results of this research were combined with information obtained in the previous projects to produce a series of paleogeographical reconstructions of this area extending from 11,000 B.P. to the present.

Other studies conducted in the vicinity of the present study area are also of relevance. They include a cultural resources survey of the proposed I-510 right-of-way (Weinstein et al. 1980); a cultural resources survey of the Almonaster-Michoud Industrial District (Castille and Reeves 1981), which documents historic occupation along and adjacent to Bayou Sauvage; and a cultural resources study conducted for the Lake Pontchartrain and Vicinity Hurricane Protection Project, which includes synthesized environmental and cultural data relative to the Lake Pontchartrain Basin (New World Research 1982). Of particular relevance to the present study is a report on an augering program undertaken to locate the Linsley site (16 OR 40) located immediately adjacent to the present study area (Thomas 1982). The approach and field techniques used in the Linsley site study parallel those used in the present endeavor.

Excavations have taken place at 20 archaeological sites in the Pontchartrain Basin. The first, published in 1909 by David Bushnell, was little more than a description of the major internal features of the Chinchuba site (16 ST 25) on the northern shore of Lake Pontchartrain in St. Tammany Parish. Nearly 30 years later Czajkowski (1934) conducted extensive excavations at the Little Woods middens (16 OR 1 to 16 OR 5) located northwest of the study area. Unfortunately, the records and most of the artifacts have been lost (Ford and Quimby 1945:3). Excavations beginning in 1939 by Johnson, Doran, Ford, and Quimby at the Tchefuncte site (16 ST 1) in St. Tammany Parish and the Little Woods and Big Oak Island (16 OR 6) sites in Orleans Parish led to a definition of Tchefuncte material culture. Shenkel's 1972 to 1974 re-excavation of Big Oak Island and excavation of Little Oak Island (16 OR 7) highlight some of the changes in approach which have occurred in the intervening 30 years (Shenkel 1974, 1980).

Cultural Sequence

The Lake Pontchartrain Basin has emerged in the literature only within the last 15 years as a distinct regional subdivision of the Lower Mississippi Valley with its attendant regionally and temporally subdivided phases (Phillips 1970:867). The chronological sequence shown in Table 2 reflects Phillips' recognition of suggestions by McIntire (1958) and Gagliano (1963, 1967a) favoring a tripartite division of the delta into eastern (Pontchartrain), central (Teche), and western (Chenier Plain) regions (Phillips 1970:867). The eastern delta and the Pontchartrain region include all or part of the parishes of St. Tammany, Orleans, Jefferson, Tangipahoa, Ascension, Livingston, St. James, St. John the Baptist, St. Bernard, Plaquemines, and St. Charles, Louisiana. The western portion of Hancock County, Mississippi, is included because of the importance of the Pearl River Valley in the prehistory of this region.

Paleo-Indian Period to Early Archaic Period

Most of the Prairie Terrace deposits and associated cultural remains in the Pontchartrain Basin which were exposed during the Late Wisconsin period of lowered sea level are now covered by a thick layer of later deposits. A notable exception is the Garcia site (16 OR 34) which produced Dalton and unfluted Clovis-like points. (Gagliano and Saucier [1963:324] identified these as Meserve points; Gagliano [1963:127] noted Dalton points.) Other exceptions are along the Prairie Terrace,

which borders the basin on the north and the Deweyville Terrace just below the Prairie Terrace along the Pearl River. Kirk Serrated, a point type associated with the Early Archaic period, has been identified from both of these locations (Gagliano 1967a:5-6). Other than these finds, little is known about human utilization of the Pontchartrain Basin during this early era. The Jones Creek phase (Late Paleo-Indian) is based on scattered finds of San Patrice, Dalton, and Plainview-like points from the Prairie Terrace to the north and west of the basin (Weinstein et al. 1977:3).

Middle Archaic to Late Archaic Period

Based on radiocarbon determinations, Saucier (1963:46) postulated the existence of a marine embayment in the area now occupied by the basin, which reached its fully developed stage between 3000 and 2800 B.C. The mainland shoreline of the embayment, known as the Milton's Island Beach Trend, and a barrier spit (the Pine Island Beach Trend) were, in addition to the Prairie Terrace, the areas open for occupancy during this period. The Pontchartrain Embayment persisted until about 2800 B.C., when the Mississippi River began introducing sediment into the area via the Metairie Delta lobe (discussed above) and by 1400 B.C. most of the present basin was marsh covered and crossed by distributaries and their associated natural levees (Saucier 1963:Fig. 23; Weinstein and Gagliano 1983).

The Late Archaic period in the basin is represented by three sites in the Pearl River mouth area which have been assigned to the Pearl River phase. A radiocarbon date of 1240 ± 300 B.C. was obtained from Cedarland Plantation (16 HC 506), which is located in Hancock County, Mississippi, on the east side of the Pearl River (Gagliano and Webb 1970:69). The presence of oyster shells suggests that it was a coastal site at the time of occupation. Saucier (1963:Fig. 23) shows the Gulf at this time to be about 16 km (10 mi) from the site, and Gagliano and Webb (1970:66) have suggested an estuarine situation. Typical artifacts of this phase are boatstones; winged and cylindrical atlatl weights; and Kent, Pontchartarin, Maçon, Hale, and Palmillas points. A semi-circular village plan is evident at Cedarland. The occupants of the site were apparently already participating in an extensive trade network, as suggested by the exotic materials at the site (Gagliano and Webb 1970:72). Two other sites of this phase are the Graveyard site (16 ST 4) (also an oyster midden), located about 2.8 km north of the Rigolets; and Cedar Point (16 ST 14, also known as the Oyster Shell site) on the north

shore of Lake Pontchartrain. Both are at approximately the same latitude as Cedarland Plantation.

Archaic camps may also be located on the now-submerged Milton's Island and Pine Island Beach Trends. Archaic type points were collected by Boy Scouts from the vicinity of Fort McComb (16 OR 32) on the west bank of Chef Menteur Pass, probably in association with a buried surface of the Pine Island Beach Trend (Department of Culture, Recreation and Tourism, Division of Archaeology [DOA] site files).

Poverty Point Period

The cultural patterns which appear to have been established in the Late Archaic period in the eastern basin were continued in the Poverty Point period. The earlier regional phase of this period is known as the Bayou Jasmine phase, and the later as the Garcia phase.

By the time of the Bayou Jasmine phase, the coastline had evidently built out far enough so that the use of oysters at this latitude was no longer an efficient strategy. Saucier (1963:62) associates the period with the full development of the Cocodrie delta lobe, while Weinstein and Gagliano (1983) equate it with their Metairie lobe. Lake Pontchartrain was in existence at this time, as was probably the Rigolets as an outlet to the Gulf. Saucier reconstructed a number of distributaries for the Mississippi course of this period based in part upon the distribution and location of Poverty Point sites. Some of the sites on these levees have been radiocarbon dated to the period between 2000 and 1550 B.C. (Saucier 1963:61). Two Bayou Jasmine phase sites, the Linsley site (16 OR 40), located adjacent to the present study area, and the Claiborne site (22 HA 501) are radiocarbon dated to 1740 B.C. (average of several dates) and 1150 B.C. (youngest date), respectively. A third site of this phase is the type-site, Bayou Jasmine (16 SJB 2). All of these are predominantly brackish-water clam (*Rangia* spp.) and earth middens. Continuing a pattern established at the neighboring Late Archaic Cedarland site, the midden at Claiborne is horseshoe-shaped and associated with a small conical sand mound (Gagliano and Webb 1970:49). Because of the nature of the site and the exotic materials utilized in manufacturing artifacts there, the excavators suggested that Claiborne was a regional center in the Bayou Jasmine settlement system (Webb 1977:Fig. 6).

Additional excavations were conducted at the Bayou Jasmine site in the 1970s by Louisiana State University, though no report on the work has been produced. Duhe (1976), in an analysis of faunal remains from the site, suggests the site served as a seasonal camp during Poverty Point times and subsistence emphasis was upon fishing and hunting marsh and swamp species. The types of faunal remains suggest a primary occupation during the spring and summer.

Later occupations dating from Tchefuncte through Plaquemine are also known from the Bayou Jasmine site. During all periods there appears to have been a heavy reliance on marsh and/or swamp resources.

The Garcia phase of the Poverty Point period was defined by Gagliano (1963:116) based on the Garcia site (16 OR 34). A high percentage of imported stone characterizes this site.

Tchula

The next recognized archaeological period in the region is the Tchula, associated with the cultural manifestation known as Tchefuncte.

The earliest report of Pontchartrain Basin Tchefuncte sites was J. R. Czajkowski's 1934 study on the Little Woods Middens (16 OR 1-5) situated along the south shore of Lake Pontchartrain. Unfortunately, Czajkowski's notes and artifact records were lost, so little useable data on these sites are available. They now lie below a housing development.

Following Czajkowski's work at Little Woods, the next major endeavor occurred as a result of WPA-sponsored archaeological research. Excavations during 1940 took place at the Tchefuncte site (16 ST 1) on the north shore of Lake Pontchartrain, at Big Oak Island (16 OR 6) in the marshes of eastern New Orleans, and again at the Little Woods sites (16 OR 1-5). The results of these excavations were published in 1945 by J. A. Ford and G. I. Quimby, Jr., and their work has become the standard reference on the Tchefuncte culture (Ford and Quimby 1945).

It was not until the late 1950s and early 1960s that additional research on southeastern Tchefuncte sites supplied by McIntire (1958), Saucier (1963), and Gagliano (1963)

became available. The information provided by these authors was minimal, usually site location and a brief ceramic analysis; but it did serve to increase the Tchefuncte data base. In 1967, Gagliano provided two studies (Gagliano 1967a, b) which attempted to reorganize the known Tchefuncte-related data and to formally recognize specific coastal phases. Gagliano established the Pontchartrain phase for those sites, mostly shell middens, situated around the edge of Lake Pontchartrain and its nearby marshes. It is presently assumed that the Paris Road site represents a component of the Pontchartrain phase.

By the mid-1970s research by Robert Neuman at the Morton Shell Mount (16 IB 3) in Iberia Parish, by Gagliano and later J. R. Shenkel at Big and Little Oak Islands (16 OR 6 and 7) in Orleans Parish, and by Gibson at several sites near Lafayette, all began to provide data for specialized studies and regional interpretation (Shenkel 1974; Shenkel and Gibson 1974; Gibson 1974; Byrd 1974, 1976, Shenkel and Holley 1975; Shenkel 1979). Shenkel's (1974) and Shenkel and Holley's (1975) reports on Big and Little Oak Islands were important in adding new data on the Pontchartrain phase. During the same period, Philip Rivet (1973) offered a reanalysis of Tchefuncte pottery from the Tchefuncte site itself, utilizing the type-variety system of classification.

During the mid- to late-1970s several survey reports, most due to contract archaeological requirements, began to provide additional Tchefuncte components in southeast Louisiana (Weinstein 1974; Gagliano et al. 1975; Neuman and Servello 1976; Neuman 1977; Weinstein et al. 1977; Weinstein and Rivet 1978; and Gagliano et al. 1979).

Within the 1980s several new studies have further advanced our knowledge of coastal Tchefuncte culture. Perhaps most significant of these is Shenkel's (1980) culminating report on the past decade of excavations at Big and Little Oak Islands. The study follows a "cultural ecological" approach and attempts to define Pontchartrain phase Tchefuncte in relation to the exploitation of selected resources, the most important of which was the clam Rangia cuneata. Within the study are presented data on Tchefuncte burials, possible Tchefuncte house structures, ceramic vessel morphology, and a lithic analysis by James Morehead (1980). The latter, the first complete analysis of coastal Tchefuncte lithics, includes an assessment of reduction strategy and functional interpretations.

Lastly, a recent paper by Gertjerjansen (1982) may be one of the most enlightening. Modern ceramic vessels were created out of local Pontchartrain Basin clays in an attempt to identify the cause for the well-known laminated quality of Tchefuncte paste. It was found that the clay simply was not wedged, but rather used as taken from the ground and then rolled into coils preparatory to vessel formation.

Radiocarbon dates for the Tchefuncte occupations at Big Oak and Little Oak Islands range from about 740 B.C. to about 165 B.C. (Shenkel 1980). Saucier (1963:76) and Shenkel (1974:44) have suggested that the Tchefuncte sites were abandoned as shell gathering loci when the St. Bernard/La Loutre delta distributary system reached its fullest development because the influx of freshwater into Lake Pontchartrain was too great to allow Rangia growth. Prior to the period of fullest delta development, the islands would have been ideal places for settlements located between the natural levee (and probably also the fringe of freshwater swamp) of the Bayou Sauvage distributary and the brackish-water marsh near Lake Pontchartrain. Other favored areas were the Prairie Terrace/marsh interface north of Lake Pontchartrain and the natural levees of delta distributaries.

Recently the Tchula period has been subdivided into an earlier Pontchartrain phase and a later Beau Mire phase (named after the Beau Mire site [16 AN 17] in Ascension Parish). The latter is characterized by new pottery styles, suggesting the absorption of Marksville culture ideas (Weinstein and Rivet 1978; Weinstein 1982).

Marksville Period

Beginning about A.D. 1, the Mississippi River began diverting a large percentage of its flow into the Lafourche course. However, parts of the Metairie/La Loutre systems continued to function and later expanded into the Plaquemines lobe (Weinstein and Gagliano 1983). Saucier (1963:79) feels that some of the Metairie/La Loutre delta distributaries were inactive by this period, and it is along these distributaries that late Marksville period sites are located. Other changes in settlement location were also occurring during this period. The Pine Island Beach Trend, which had been popular as a shellfish-gathering area in Tchula times, shows only small, thin occupations during early Marksville. Big Oak Island apparently was used only as a cemetery by A.D. 40 (Shenkel 1974:45), probably due to the influx of freshwater into Lake Pontchartrain

and subsequent decline of Rangia. Continued subsidence of the Pine Island Beach Trend may account for the failure to reinhabit this feature (Saucier 1963:81).

A number of sites were established to the northwest and west of Lake Maurepas, which had grown by this time to capture the drainage of the Tickfaw and Natalbany Rivers, transforming their lower courses into a tidal pass. Lake Maurepas must have been at least moderately brackish at this time to account for the increase in Rangia middens in the Amite River area (Saucier 1963:79). As in the previous period, shellfish-gathering camps continued to be occupied on the north shore of Lake Pontchartrain.

Early and late Marksville phases have been defined for both the eastern and western sections of the basin. Most of the early Marksville sites around Lake Pontchartrain have been assigned to the LaBranch phase, which is characterized by typical early Marksville ceramic motifs. Most late Marksville sites have been placed in the Magnolia phase, which includes ceramics and other artifacts very similar to the Issaquena phase of the Yazoo Basin, Mississippi (Weinstein et al. 1977:8). Late Marksville sites in the Lower Amite and Bayou Manchac drainage have been assigned to the Gunboat Landing phase (Weinstein n.d.).

All of the Marksville sites around Lake Pontchartrain are Rangia middens of varying sizes. Mounds are present at the Marksville sites in the lower Amite River area (Weinstein 1974) and along the natural levees of the distributaries of the La Loutre lobe in St. Bernard Parish. While most of the Marksville burials are found in cemeteries or in middens, some apparently were interred in conical mounds such as those at the Magnolia Mound site (16 SB 49) in St. Bernard Parish. Several mounds may surround a "plaza" area at this extensive set of earth and shell middens strung out along the natural levee (Gagliano et al. 1978:71-74). Possibly this site was a central village at which a large number of people congregated for part of the year for social events and ceremonies, dispersing at other times into smaller family units for gathering and hunting.

In the absence of more detailed information about the structure and content of the Marksville middens, it is difficult to draw any conclusions about the settlement system of this period, even though the data set includes nearly 40 sites.

Baytown to Coles Creek Periods

During this time span delta deposition again shifted to the eastern delta, and the Mississippi River established a new course whose natural levees have been radiocarbon dated to between A.D. 850 and A.D. 1000 (Saucier 1963:83). Lake Borgne, which had begun to form during the preceding period, achieved almost its present size, and Chef Menteur Pass formed between this lake and Lake Pontchartrain. Several new sites were established along the shores of Lake Borgne. Otherwise, a settlement pattern similar to that of the Marksville period appears to have existed, with the exception of an increase in the number of sites in the basin, a feature of the delta as a whole.

Two phases, the Whitehall phase (Baytown period) and the Bayou Cutler phase (Coles Creek period), have been defined for the basin. Both of these are in need of refinement (Weinstein et al. 1977:9). The Bayou Cutler phase, originally described by Kniffen (1936), is characterized by the presence of lugs on vessel rims, incised lines on rims, and check stamped decoration.

Elsewhere in the Lower Mississippi Valley, agriculture is believed to have been well established by late Coles Creek times. If agriculture was practiced in the basin during this period, it appears to have had only a slight effect on the settlement system. Although the wide natural levees of the Mississippi would have provided ample land for cultivation, the severe floods of the trunk stream might have acted as a deterrent to agriculture. Smaller streams and distributaries may have been more suitable, and in fact, a few sites appear to have been established at this time on Bayou Sauvage, at the mouths of the Tangipahoa and Tickfaw Rivers, and along the lower Amite River. The major area of expansion appears to have been on the growing delta east and south of Lake Borgne, with at least 21 sites having their initial occupation during the Baytown or Coles Creek periods.

Mississippi Period

The physical landscape remained relatively uniform during this period (Saucier 1963:85). Many of the same sites continued to be occupied, but many were also abandoned. Very few new sites were established. As Weinstein (1974:292) has proposed, this may not be due so much to decrease in population as to a consolidation of population, in other words, increased sedentism with an attendant decrease in the

number of short-occupation camps. Such an increase in sedentism might have been caused by an increased reliance on agriculture.

Early and late Mississippi period phases have been recognized for the eastern delta. The first, the Medora phase, has not been extended to the Pontchartrain Basin. The second, the Bayou Petre phase (Kniffen 1936; Phillips 1970), partially overlaps in space and time the Delta Natchezan phase, which is slightly later and to the west (Phillips 1970; Weinstein et al. 1977:10). The late Mississippi period is marked by some ceramics decorated with "southern cult" motifs and the introduction of shell-tempered pottery (Gagliano et al. 1978:10). Most of the Mississippi period sites are shell middens. Some pyramidal mounds were constructed in the easternmost delta area (for example, at Magnolia Mound), continuing a pattern established in Baytown and Coles Creek times.

Historic Period

One of the historically recorded groups living in the Pontchartrain Basin was the Acolapissa, who were first located near the mouth of the Pearl River and later moved north of Lake Pontchartrain. Penicaut spent a winter with them in 1706 and has left a description of their religious customs (which included the use of a "clan house" containing totem images), burial practices (reburial), foods, and hunting practices (Swanton 1911:282). Very little else is known about the Indian inhabitants during this period. A group known as the Quinipissa greeted LaSalle with a volley of arrows on his way up the Mississippi in 1682 (Swanton 1911:279).

Although corn is mentioned as a food of the ethnographically-known Chitimacha Indians of the central delta and of the Acolapissa Indians of the basin region, only little mention is made of the location of fields (Durnford 1771), suggesting that hunting and gathering remained important (Swanton 1911:252, 346). Possibly in both ethnographic and prehistoric cases, crops were an adjunct, rather than a primary food source in the eastern delta. The type of agriculture practiced, if similar to that known in other regions, would have been slash and burn.

Historic Background

The European history of Orleans Parish begins in the earliest years of French settlement of Louisiana. The study area itself, however, had apparently never been settled or directly impacted by historic activities until this century with the construction of the GIWW, the MRGO, and the Paris Road bridge. In light of this, emphasis in this section is placed on the history of the Bayou Sauvage area with which the Paris Road locale is closely associated. European settlement in the area began with the founding of New Orleans in 1718. The city was located specifically to take advantage of the portage route provided by Bayou St. John between Lake Pontchartrain and the Mississippi River.

The settlement of New Orleans grew rapidly as immigrants arrived from Europe. These people usually landed at Dauphin Island and were taken to New Orleans by smaller boats which passed through the Rigolets to Lake Pontchartrain, then down Bayou St. John to the city (Roberts 1946:27-29).

Outside the original town boundary, other early-eighteenth-century areas of settlement included Bayou St. John and the ridge along Bayou Sauvage. The Bayou Sauvage-Gentilly ridge was utilized for European settlement from the very first year that New Orleans was established. Within the New Orleans vicinity, the Bayou Sauvage ridge represented one of the few topographic features of sufficient elevation for overland travel. For this reason, the road along Bayou Sauvage became an important link in the route from New Orleans to Chef Menteur Pass and other places to the east of the city.

Most of the land west of present-day La. Hwy. 47 and east of the Industrial Canal, the portion of Bayou Sauvage adjacent to and just north of the study area, was settled in the early-eighteenth century by the Gentilly Dreux family. Land was granted to brothers Mathurin and Pierre Dreux by the Company of the West in 1718 (King 1971). On their property, the Dreux brothers established a cattle plantation which by the early nineteenth century had shifted to sugarcane production. The plantation remained in the hands of the Dreux-St. Geme families until 1850. At that time, the land was purchased by John McDonogh, who subdivided the land into small parcels and sold it in 1859. Since that time, the property has been continually subdivided and converted to residential, and more recently, commercial-industrial use. Lands to the

west of the Dreux property were first occupied by plantations and farms of the Doricourt, Chauvin, and Fleitas families. On these landholdings, the houses and other buildings were located along the banks of Bayou Sauvage well outside of the present study area.

In 1763, Gilbert Antoine, Sieur de St. Maxent, petitioned the interim French governor for a tract of land bounded on the west by a "place called Chantilly (Gentilly)...to a place called Chef Menteur" (Samuel 1959:1-2). The St. Maxent property included almost all the land along Bayou Sauvage east of present-day La. Hwy. 47. Like the Dreux brothers, St. Maxent raised cattle. In 1794, the St. Maxent Plantation was purchased by Louis Bronies de Clouet, and in 1801 it was resold to Barthelemy Lafon. An 1809 plan of the Lafon property lists a cypress house, three cabins, and a brickyard—structures which appear to have been located along the south bank of Bayou Sauvage in what is now the extreme west end of Section 37 just northeast of the study area. This 1809 map represents only a crude sketch of the plantation, and a precise location of the plantation structures cannot be made, though none appear to be in the vicinity of the study area.

Around 1827, the plantation was purchased from the Lafon family by Antoine Michoud. The Michoud family kept the plantation until 1910 when it was sold to the New Orleans Drainage Company. The plantation complex is indicated on an 1883 map of the Michoud Plantation (Grandjean 1883). The 1883 map is considerably more detailed than the Lafon map, and it is possible that the building complex may have shifted as much as 1 mi to the northeast between 1809 and 1883. On the 1883 Michoud Plantation site were located "chimneys of old sugarhouse," three "cabins," and "former residence."

The presence of the residence and three cabins suggests that this was the same spot as the St. Maxent-Lafon Plantation building complex. If the St. Maxent-Lafon site and the Michoud site are the same, then both are now covered by the modern Higgins-NASA building complex. If the St. Maxent-Lafon site was further to the southwest, then it may have been impacted by the construction of over 300 domestic structures which were occupied by workers at the Higgins-NASA plant during the early 1940s. This plant complex is located just north of the study area across the MRGO.

The high ground along Bayou Sauvage was important both for agricultural purposes and as a firm foundation for the east-west road and railroads which connected New Orleans to other communities to the east. The great importance of the road to Chef Menteur became apparent during the War of 1812. As a precaution against the threatened British invasion of New Orleans, the Americans constructed an earthen fortification across the road along Bayou Sauvage probably just northwest of the study area, and another fortification with cannon at the confluence of Bayou Sauvage and Chef Menteur Pass (Latour 1816:55,64; Pl. V). Although no fighting took place along Bayou Sauvage during the War of 1812, the British military attack from Bayou Bienvenue made the Americans aware of the susceptibility of the area to invasion. In response to these defense needs, the United States constructed Fort Wood (Fort Macomb) in 1824 at the confluence of Bayou Sauvage and Chef Menteur Pass. The Chef Menteur Road (later called Gentilly Road) served as the main artery between the fort and the city of New Orleans. In 1860, the New Orleans, Mobile, and Texas Railroad completed a line which followed the Bayou Sauvage ridge. In 1881, this railroad went bankrupt and the line was purchased by the Louisville and Nashville Railroad and is still in operation (Charles Castner, personal communication 1981).

Small railroad stations were established at Lee and at Michoud points where the railroad crossed or came close to Bayou Sauvage. According to an early-twentieth-century map, construction of a railroad switchyard was planned along Bayou Sauvage at least as early as 1909 (Phillips and Jonah 1909). However, records of the L&N Railroad indicate that a switchyard with a roadhouse, shop, and stock pens may have been constructed at this location as early as 1907 (Charles Castner, personal communication 1981). Other buildings were constructed during the second and third decades of the twentieth century. The switchyard and associated buildings are located on the site of the old Doricourt Plantation.

None of these activities along the Bayou Sauvage ridge seem to have impacted the study area, which was apparently not conducive to habitation. One indication that the study area was never settled in historic times is that the section in which it is included, Section 18, is shown as Public Land on the 1873 plat map (Figure 3). Generally, only marsh and swamp lands were left unclaimed by this date in this area.

By the 1920s what is now Paris Road extended south from Bayou Sauvage, passing just west of the study area. In 1964, the Paris Road Bridge was constructed adjacent to

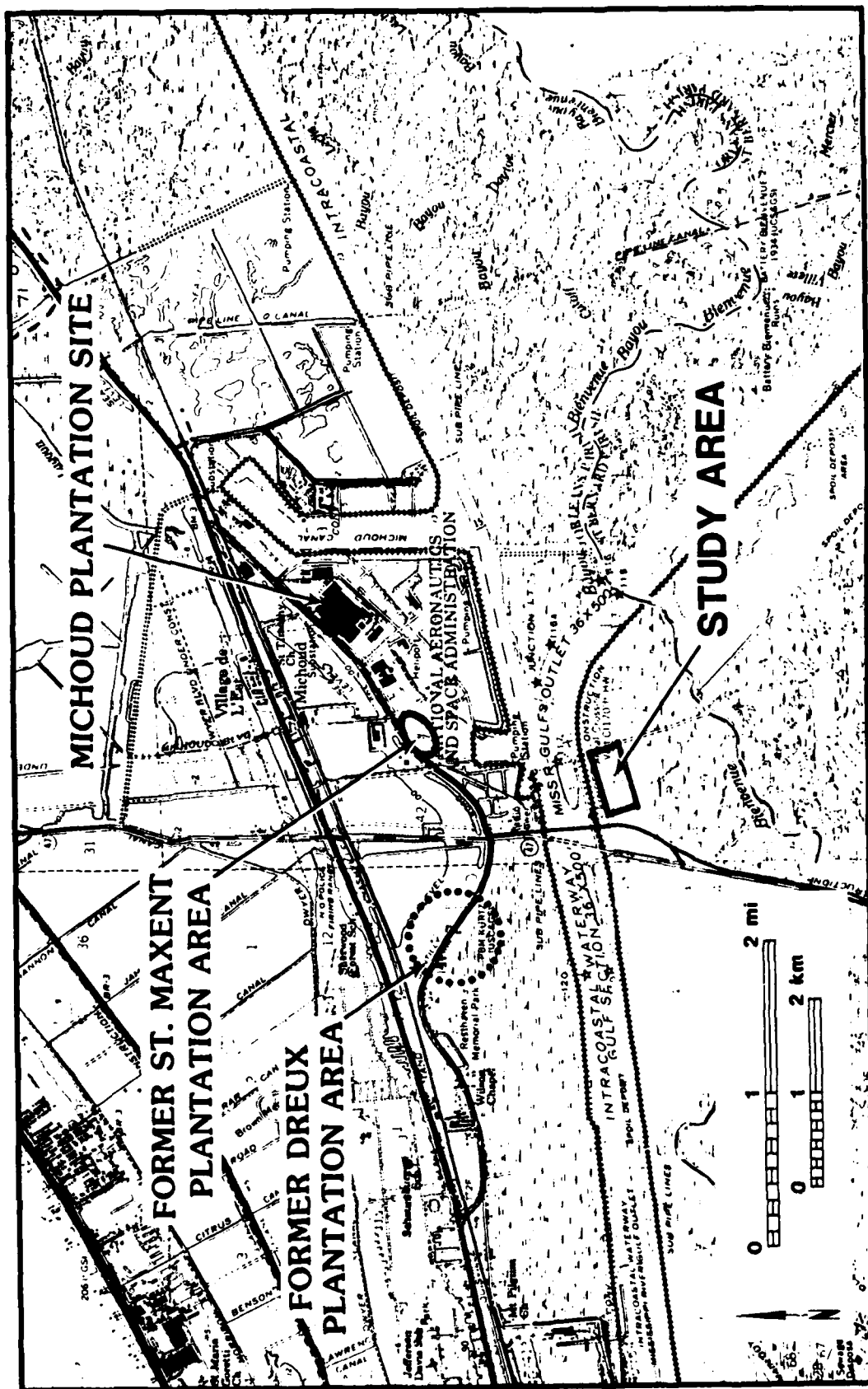


Figure 8. Locations of historic plantations and recent state of industrial and residential development in the Bayou Sauvage area (U.S. Army Corps of Engineers 1969a, b).

the west edge of the study area. As mentioned earlier, other man-induced impacts on the study area were the construction of the GIWW in the 1940s and the MRGO in the 1950s. Figure 8 shows the locations of known historic plantation sites in the area and demonstrates the extensive industrial and residential development which has taken place along Bayou Sauvage.

The available evidence suggests no occupation of the study area in historic times. During this period, it has apparently always been a low, periodically if not permanently wet, swamp to brackish marsh area adjacent to the backslope of the Bayou Sauvage natural levee.

CHAPTER 4: FIELD INVESTIGATIONS

The original plan of fieldwork involved three phases of work: Phase I - developing a site map; Phase II - augering; and Phase III - conducting test excavations. As mentioned, only the first two phases were implemented since the augering failed to locate any cultural remains.

At the time of the study, spoil deposition was underway in the western half of the study area. Except for the area around the spoil deposition locale, the study area was covered in relatively thick second growth consisting primarily of myrtle, illex, Chinese tallow and grasses. The northern portion of the study area is low and was partially under water during the fieldwork. Although spoil stockpiling activities prohibited the placement of auger borings along the center western half of the study area, these activities had cleared adjacent areas of underbrush, providing easier access to many auger locations (Figure 9).

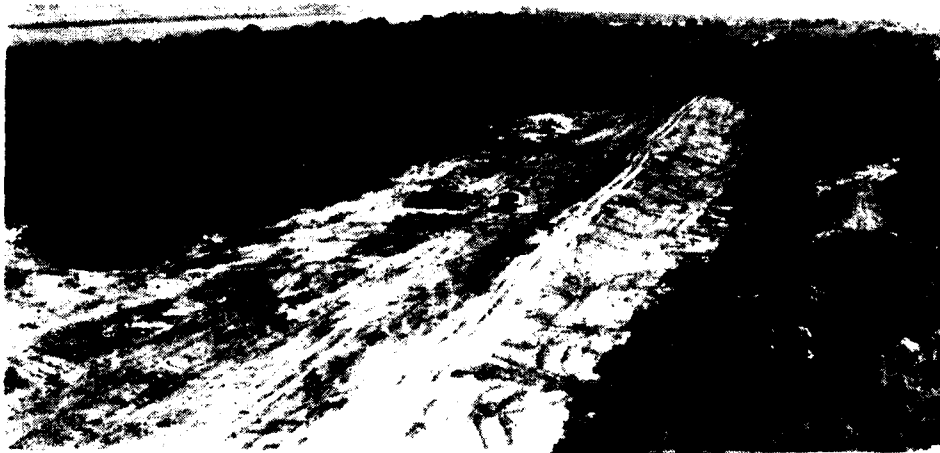


Figure 9. View of study area from east. Spoil stockpile in center of area and the MRGO shown in the left background.

The initial plan was to place a series of 21 auger holes in the western 150 m section of the study area. Auger holes were to be spaced 60 m apart in a staggered arrangement to achieve overall aerial coverage. Augering was concentrated in this western section since the site probably extended into this portion of the study area (J. D. Baxter, personal communication 1983). Nineteen auger holes were actually placed in this section, several having to be eliminated because of the stockpiling activities. The locations of some auger holes were shifted slightly from that planned because of standing water, large trees, and a spoil retainment levee crossing the southern portion of the study area (Figure 10).

Fifteen auger borings were proposed for the eastern two-thirds of the area. Spoil deposits and standing water resulted in the elimination of several auger holes and only 10 were drilled. The locations of these borings are also shown in Figure 10.

The first three days of fieldwork involved the establishment of auger hole locations and the development of a contour map. The study area, except for the area of levee construction, was relatively flat, sloping slightly toward the south. Trails were cut from the cleared central portion of the study area to each of the auger locations to provide access for the augering equipment. Some of these were cleared using machetes and axes; however, in much of the area the underbrush was extremely thick and a bulldozer was required to clear access trails.

The augering equipment, provided by McClelland Engineers, consisted of a hydraulic, self-propelled, four-wheel drive, drilling unit capable of wet and dry drilling (Figure 11). The equipment is capable of drilling to circa 150 ft, depending on soil conditions, using a 6-in diameter auger and can also collect solid 3-in cores in 2-ft lengths with a hydraulic probe tube.

Initial tests to acquire intact cores with the probe tube were unsuccessful. The upper levels of sediment in the area consist of unconsolidated sands which collapsed in the core, preventing the extraction of an interpretable sample.

Augering was found to be an efficient and effective testing procedure. A 6-in diameter open flite auger was used (Figure 12). Samples were taken in 30-cm (1 ft) segments, the auger being withdrawn after each 30 cm of drilling and the sample which adhered to the flite examined (Figure 13). The rig could drill to 5 m without the

STUDY AREA

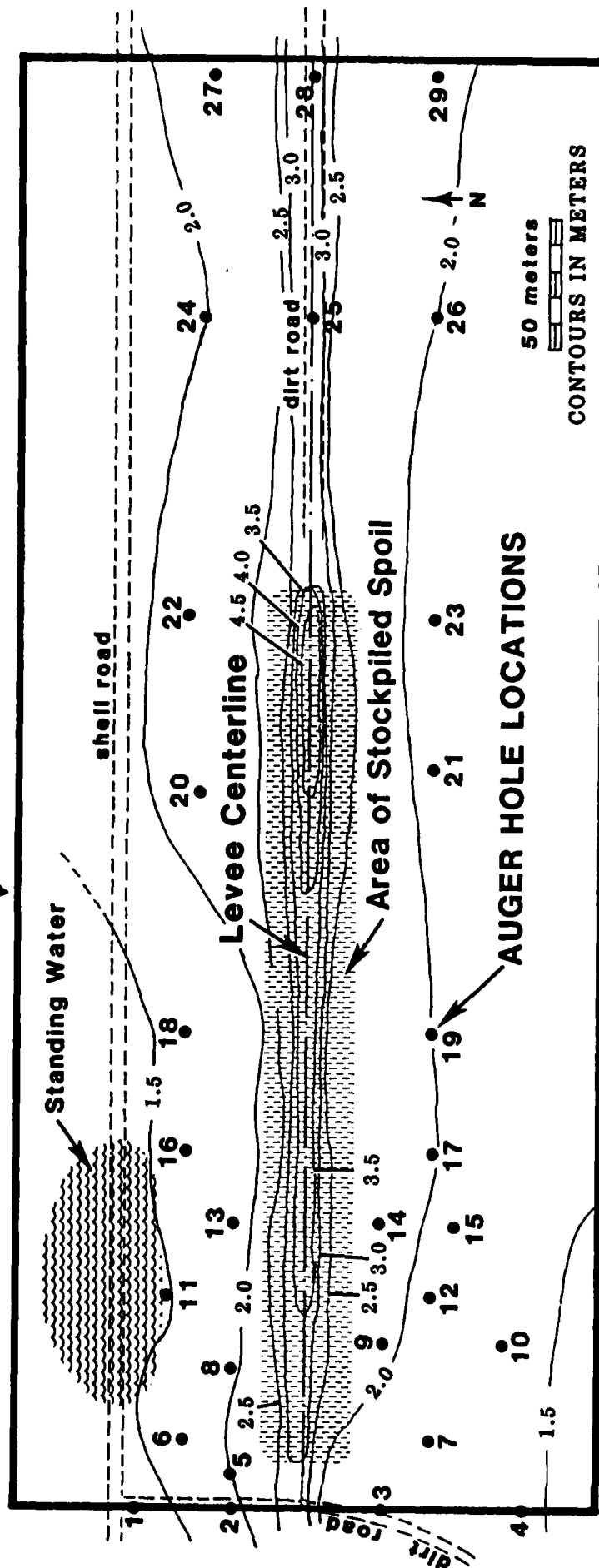


Figure 10. Study area showing auger hole locations and other surface features.

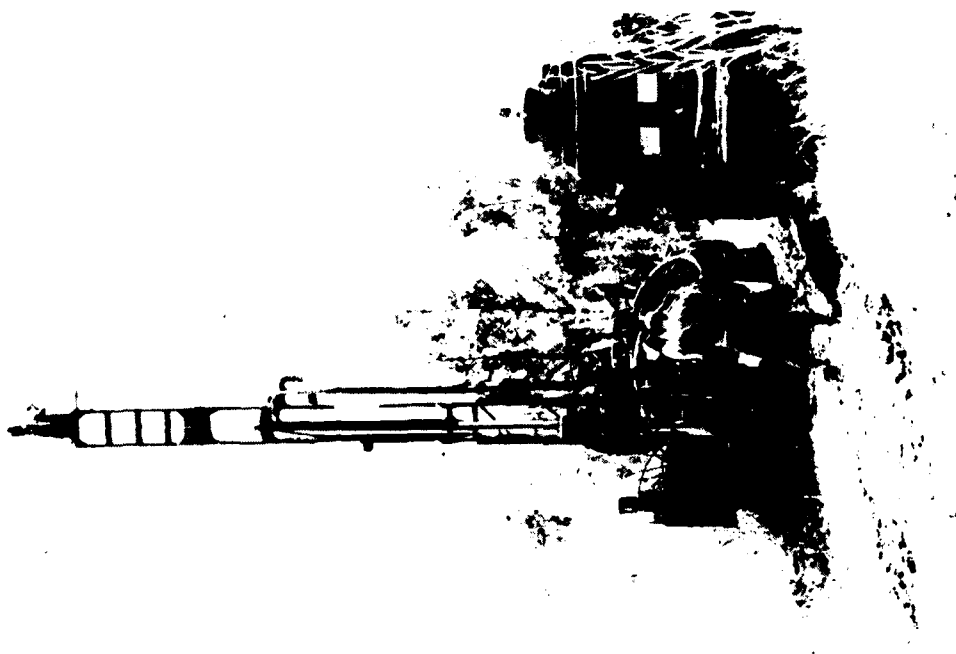


Figure 11. Auger vehicle.



Figure 12. Auger in operation



Figure 13. Clearing auger flite.

addition of drill pipe segments. Each sample was recorded for color, texture, and inclusions. Soil samples sufficient to characterize each auger hole were collected in plastic bags and returned to the CEI offices for analysis.

A total of 29 auger holes were drilled. The maximum depth reached was 6.1 m (20 ft). Most holes went to 5.2 m (17 ft). With one exception (auger hole number 29), all auger holes extended through what is identified as dredge spoil deposits.

The stratigraphy in all of the bore holes was roughly similar and essentially depicted an episode of dredge spoil deposition over a former backswamp, levee fringe, crevasse splay, area. Two lines of auger borings have been selected to provide representative, stratigraphic cross sections across the study area. One north-south transect consists of bore hole numbers 1, 2, 3 and 4 and an east-west transect includes bore hole numbers 7, 9, 12, 17, 19, 21, 26 and 29 (Figure 10).

The stratigraphy shown in the north-south transect (Figure 14) consists of an upper stratum of sands, sandy clays, and clayey sands, which ranges from 1.9 m to 2.8 m in thickness. Fragments of shell and an occasional piece of chert gravel occurred in this upper stratum in auger hole number 3. This upper deposit is interpreted as artificial

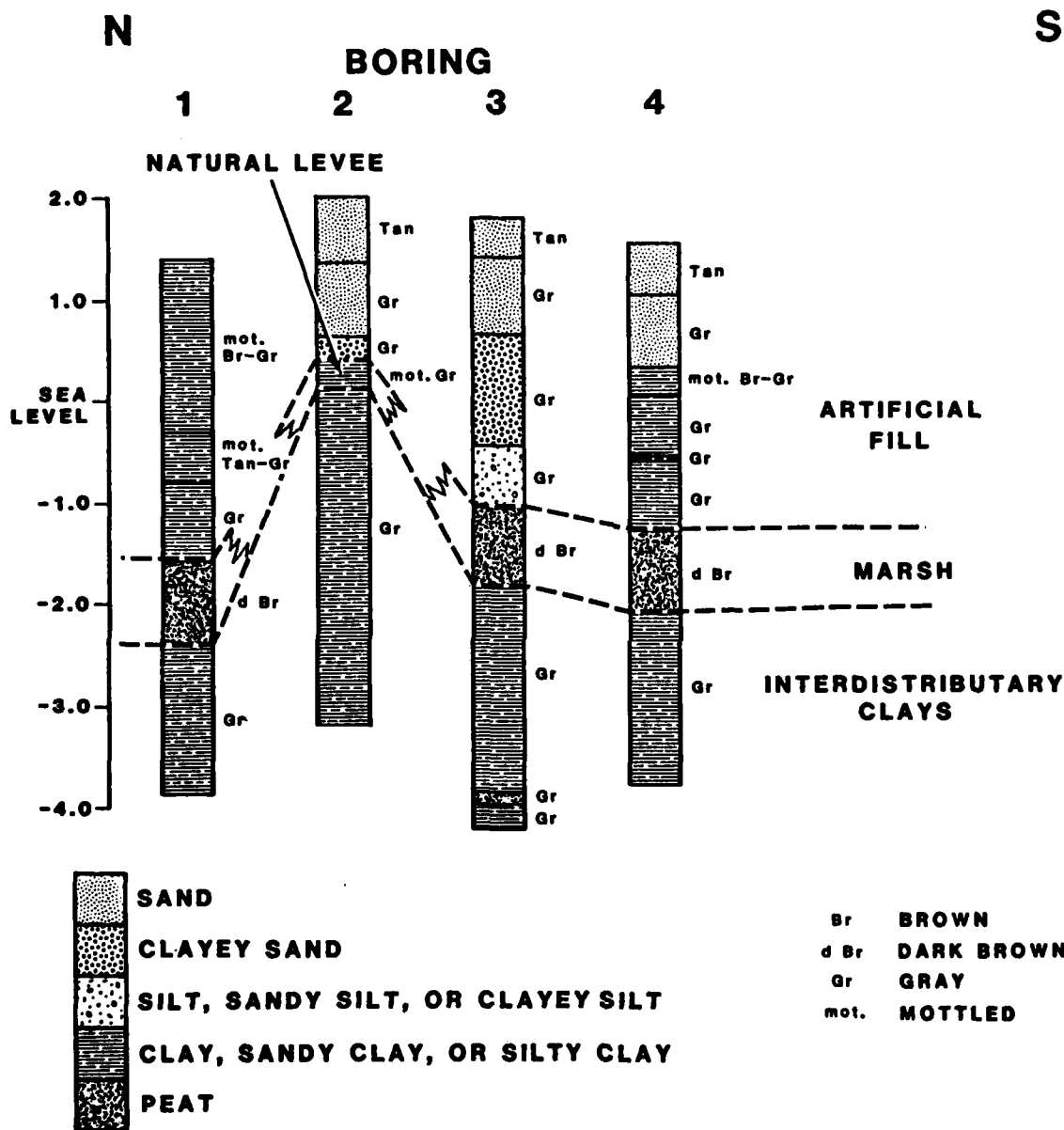


Figure 14. North-south profile of auger borings across study area (elevation in meters).

dredge spoil, pumped into the area since the 1940s. It was not possible to distinguish between the various episodes of spoil deposition known to have occurred.

Beneath the dredge spoil a lens of peat was found in each of the bore holes except for number 2. The peat contained roots, stemwood, and some larger wood fragments. The peat is interpreted as marsh or swamp deposits which formerly existed at the fringe or in the backswamp adjacent to the Bayou Sauvage levee.

As noted earlier, it was anticipated that the extreme back slope of the Bayou Sauvage levee or crevasse splay, levee deposits would be encountered in the study area. Only in bore hole number 2 were possible natural levee deposits found. These exist as a 30-cm-thick stratum of very slightly oxidized and mottled gray clay (Figure 14). These lay directly beneath the spoil deposits; no peat lens was encountered in this auger hole. A tentative interpretation is that this auger hole encountered the bank of one of the small crevasse splay streams which emanated from the flanks of the levee of Bayou Sauvage and flowed southeastward to Bayou Bienvenue. The lack of a peat lens above the natural levee deposit suggests minimal subsidence and marsh development prior to being covered by dredge spoil. The lowest deposits in all bore holes is a fine, gray clay or silty clay interpreted as interdistributary (backswamp or bay) clays.

The rather significant difference in elevation between the top of the identified interdistributary clays in auger hole number 2 and the other holes is not totally understood. The most reasonable explanation is that structural stability is provided in the area of natural levee clays, while the peat and clays in adjacent areas have undergone significant compression due to the massive amount of spoil deposited on them.

The east-west profile (Figure 15) depicts a similar stratigraphy. In this case the dredge spoil deposits thicken significantly to the east reaching a thickness of 5.2 m. A lens of peat underlies the spoil deposits in all but two of the auger holes, numbers 9 and 29. In auger hole number 29 the hole was not deep enough to reach peat. Auger hole number 9 reflects stratigraphy similar to that found in auger hole number 2. No peat lens exists, and at 1.8 m below surface a stratum of natural levee clays 0.9 m thick was located.

Gray clays identified as interdistributary deposits were encountered as the basal sediments in auger holes 7, 9, 12 and 17; the remaining holes were of insufficient depth to reach these deposits.

The natural levee clay deposit found in bore hole number 9 is presumably associated with a small crevasse channel, possibly the same channel encountered in bore hole Number 2. The basal sands also encountered in bore hole number 9 are consistent with basal deposits of swift-flowing streams such as would be expected in a crevasse channel. The fact that natural levee deposits are above them suggests some shifting of the channel course. Assuming the natural levee deposits in bore hole numbers 2 and 9 are associated with the same channel, then a southeastward flowing stream is indicated. This corresponds to the stream alignments depicted crossing the study area on the historic maps discussed earlier (Figures 5, 6, and 7). The fact that evidence of this channel was not encountered in other bore holes is presumably due to its small size.

No cultural material which could be related to prehistoric occupation of the area was encountered. As a result, the proposed excavation phase of the project was not initiated.

CHAPTER 5: SUMMARY AND RECOMMENDATIONS

The augering program conducted in this study failed to locate any evidence of the Paris Road site. The geological data collected does substantiate assumptions put forth concerning the environmental setting at the time of prehistoric occupation and the subsequent change which occurred.

It seems probable that the Paris Road site was located on the levees of a small crevasse splay channel coming off of a Bayou Sauvage cutbank. The channel may have been the one(s) encountered in the augering or an adjacent and similar one. The site itself may have been relatively small and, thus, easily missed with the auger spacings utilized. A Tchefuncte-aged shell midden which likely serves as an analogy to the Paris Road site is the Turtle Bayou site (16 OR 39) located on the Turtle Bayou distributary off the north side of Bayou Sauvage only about 11 km northeast of the study area (Kelley and Weinstein 1982). The Turtle Bayou site consists of two small Rangia shell middens, 30 m long and 5 to 15 m wide, arranged along the narrow natural levees of the bayou. The size and linear arrangement corresponds to what is known about the Paris Road deposit.

It is likely that much, if not all, of the Paris Road site was destroyed or extensively disturbed when dredged in 1964. Even if portions of the site remain intact, an extensive augering effort would be required to locate it because of its probable small size. Such an effort would be time-consuming and expensive. Additionally, the present depth of the site, should it still exist, would make it extremely difficult to excavate. This depth also removes the site from the possibility of impact by the proposed levee construction project.

The results of this study in conjunction with the nature of the work planned for the area indicate that no cultural resources will be adversely affected by the proposed levee construction. No additional cultural resources investigations are recommended.

REFERENCES

- Alperin, Lynn M.
1983 History of the Gulf Intracoastal Waterway. U. S. Army Engineer Water Resources Support Center, Institute for Water Resources.
- Byrd, Kathleen M.
1974 Tchefuncte subsistence patterns, Morton Shell Mound, Iberia Parish, Louisiana. Unpublished Master's thesis, Louisiana State University, Baton Rouge.
- 1976 Tchefuncte subsistence: Information obtained from the excavation of the Morton Shell Mound, Iberia Parish, Louisiana. Southeastern Archaeological Conference Bulletin 19:70-75.
- Castille, George J. and Sally K. Evans Reeves
1981 Cultural resources survey of the Almonaster-Michoud Industrial District. Coastal Environments, Inc. Report prepared for the Economic Development Agency.
- Coast and Geodetic Survey
1934 Chef Menteur Pass, Lake Pontchartrain, Louisiana. Air photo compilation No. T-5305. Map on file at Cartographic Information Center, Department of Geography and Anthropology, Louisiana State University, Baton Rouge.
- 1935 Mississippi River, Chalmette to Lake Borgne, Louisiana. Air photo compilation No. T-5306. Map on file at Cartographic Information Center, Department of Geography and Anthropology, Louisiana State University, Baton Rouge.
- Coastal Environments, Inc.
1977 Cultural resources evaluation of the northern Gulf of Mexico continental shelf. U. S. Department of the Interior, National Park Service, Office of Archeology and Historic Preservation, Cultural Resource Management Studies, Washington, D. C.
- Czajkowski, J. Richard
1934 Preliminary report of archaeological investigations in Orleans Parish. Louisiana Conservation Review 4:12-18.
- Division of State Lands
1873a Official Plat Map, Township 12S, Range 12E, Southeastern District, Louisiana. On file at the Division of State Lands, Baton Rouge.
- 1873b Official Plat Map, Township 12S, Range 13E, Southeastern District, Louisiana. On file at the Division of State Lands, Baton Rouge.
- Duhe, Brian J.
1976 Preliminary evidence of seasonal fishing activity at Bayou Jasmine. Louisiana Archaeology 3:33-74.

Duhe, Brian J.

- 1981 A study of prehistoric Coles Creek-Plaquemine cultural and technological adaptations in the Upper Barataria Basin. Southeastern Archaeological Conference Bulletin 24:34-36.

Durnford, Elias

- 1771 Map of the Amite and Comite Rivers. Louisiana State University, School of Geoscience Map Library, Baton Rouge.

Fisk, H. N.

- 1944 Geological investigation of the alluvial valley of the Lower Mississippi River. Mississippi River Commission, Vicksburg.

Ford, James A. and George I. Quimby, Jr.

- 1945 The Tchefuncte culture, an early occupation of the Lower Mississippi Valley. Society for American Archaeology, Memoir 2.

Frazier, David E.

- 1967 Recent deltaic deposits of the Mississippi River. Transactions, Gulf Coast Association of Geological Societies 17:287-315.

- 1974 Depositional episodes: Their relationship to the Quaternary stratigraphic framework in the northwestern portion of the Gulf Basin. Bureau of Economic Geology, Geology Circular 74(1).

Gagliano, Sherwood M.

- 1963 A survey of preceramic occupations in portions of south Louisiana and Mississippi. Florida Anthropologist 16:105-132.

- 1967a Occupation sequence at Avery Island. Louisiana State University, Coastal Studies Institute, Report 22.

- 1967b Late Archaic-Early Formative relationships in south Louisiana. Proceedings of the Southeastern Archaeological Conference, Bulletin 6.

- 1980 Cultural Resources Surveys in the Pearl River Mouth Area. Coastal Environments, Inc. Report prepared for the New Orleans District, U. S. Army Corps of Engineers.

Gagliano, Sherwood M. and C. H. Webb

- 1970 Archaic-Poverty Point transition at the Pearl River mouth. Southeastern Archaeological Conference Bulletin 12:47-72.

Gagliano, Sherwood M., P. Culley, D. Earle, Jr., P. Light, A. Rowland, R. Schlemon and J. L. van Beek

- 1973 Environmental atlas and multi-use management plan for south central Louisiana. Louisiana State University, Center for Wetland Resources, Louisiana State University, Technical Report.

- Gagliano, Sherwood M., Richard A. Weinstein and Eileen K. Burden
1975 Archaeological investigations along the Gulf Intracoastal Waterway: Coastal Louisiana area. Coastal Environments, Inc. Report prepared for the U. S. Army Corps of Engineers, New Orleans District.
- 1978 Preliminary study of the cultural resources of the St. Bernard Parish Wetlands, Louisiana: An approach to management. Coastal Environments, Inc., Baton Rouge.
- Gagliano, Sherwood M., Richard A. Weinstein, Eileen K. Burden, Katherine L. Brooks and Wayne P. Glander
1979 Cultural resources survey of the Barataria, Segnette and Rigaud Waterways, Jefferson Parish, Louisiana. Coastal Environments, Inc. Report prepared for the U. S. Army Corps of Engineers, New Orleans District.
- Gertjerjansen, Doyle J.
1982 Laboratory simulation of Tchefuncte period ceramic vessels from the Pontchartrain Basin. Paper presented at the 8th annual meeting of the Louisiana Archaeological Society, Thibodeaux, Louisiana.
- Gibson, Jon L.
1974 The Tchefuncte culture in the Bayou Vermilion basin, south-central Louisiana: A developmental case study. Bulletin of the Texas Archaeological Society 45:67-95.
- Kelley, David B. and Richard A. Weinstein
1982. Cultural resources assessment of drainage areas II and III-A, New Orleans East, Louisiana. MS on file, Coastal Environments, Inc., Baton Rouge.
- King, Grace
1971 Creole Families of New Orleans. Claitor's Publishing Company, Baton Rouge.
- Kniffen, Fred B.
1936 A preliminary report on the mounds and middens of Plaquemines and St. Bernard Parishes, Lower Mississippi River delta. Louisiana Geological Survey, Geological Bulletin 8:407-422.
- Kolb, C. R. and J. R. Van Lopik
1958 Geology of the Mississippi Deltaic Plain, southeastern Louisiana. U.S. Army Corps of Engineers, Waterways Experiment Station, Technical Report 3-483.
- Latour, A. LaCarriere
1964 Historical memoir of the war in West Florida and Louisiana 1814-1815. A facsimile reproduction of the 1816 Edition. University of Florida Press, Gainesville.
- McIntire, William G.
1958 Prehistoric Indian settlements of the changing Mississippi River delta. Louisiana State University, Coastal Studies Series 1.

Morehead, James

- 1980 Lithic analysis. In Oak Island archaeology: Prehistoric estuarine adaptations in the Mississippi River delta, by J. Richard Shenkel. MS on file, Jean Lafitte National Historical Park, New Orleans.

Neuman, Robert W.

- 1977 An archaeological assessment of coastal Louisiana. Melanges 11.

Neuman, Robert W. and A. Frank Servello

- 1976 Atchafalaya Basin archaeological survey. Louisiana State University Laboratory of Archaeology. Report submitted to the U. S. Army Corps of Engineers, New Orleans District.

New World Research

- 1982 Cultural resources survey of terrestrial and off-shore locations, Lake Pontchartrain and vicinity Hurricane Protection Project, Louisiana. New World Research, Inc. Report submitted to the U. S. Army Corps of Engineers, New Orleans District.

Phillips, A. C. and F. G. Jonah

- 1909 Standard map of New Orleans and adjacent territory. Map on file at Division of Public Works, Louisiana Department of Transportation and Development, Baton Rouge.

Phillips, Philip

- 1970 Archaeological survey in the Lower Yazoo Basin, Mississippi, 1949-1955. Papers of the Peabody Museum of Archaeology and Ethnology 60.

Rivet, Philip G.

- 1973 Tchefuncte ceramic typology: A reappraisal. Unpublished Master's thesis, Louisiana State University, Baton Rouge.

Roberts, W. Adolphe

- 1946 Lake Pontchartrain. Bobbs-Merrill Company, New York.

Russell, R. J.

- 1936 Physiography of the Lower Mississippi River delta. Louisiana Geological Survey, Bulletin 8.

Samuel, Ray

- 1959 ...to a point called Chef Menteur...: the story of the property known today as New Orleans East, Inc. New Orleans East, Inc. New Orleans, Louisiana.

Saucier, Roger T.

- 1963 Recent geomorphic history of the Lake Pontchartrain Basin, Louisiana. Louisiana State University, Coastal Studies Series 9.

Shenkel, J. Richard

- 1974 Big Oak and Little Oak Islands: Excavations and interpretations. Louisiana Archaeology 1:37-65.

-
- 1979 Tchefuncte site specialization. Paper presented at the 36th annual Southeastern Archaeological Conference, Atlanta.

Shenkel, J. Richard

1980 Oak Island archaeology: Prehistoric estuarine adaptations in the Mississippi River Delta. Ms. on file, Jean Lafitte National Historical Park, New Orleans.

Shenkel, J. Richard and Jon L. Gibson

1974 Big Oak Island: An historical perspective of changing site function. Louisiana Studies 8(2):173-186.

Shenkel, J. Richard and George Holley

1975 A Tchefuncte house. Southeastern Archaeological Conference Bulletin 18:226-242.

Swanton, John R.

1911 Indian tribes of the Lower Mississippi Valley and adjacent coast of the Gulf of Mexico. Smithsonian Institution, Bureau of American Ethnology, Bulletin 43.

Thomas, Prentice M.

1982 Archaeological investigations at the Linsley Site (16 OR 40). New World Research, Inc. Report prepared for the Port of New Orleans.

U.S. Army Corps of Engineers

1936 Chef Menteur, Louisiana, 1:62500. U.S. Army Corps of Engineers, Washington, D.C.

1958 Design Memorandum No. 1-B Channels Mile 39.01 to Mile 63.77. Plan, profile and soil borings. On file at U.S. Army Corps of Engineers, New Orleans District.

1969a Chef Menteur Quadrangle, Louisiana 1:62500. U.S. Army Engineer District, Vicksburg, Mississippi.

1969b St. Bernard Quadrangle, Louisiana 1:62500. U.S. Army Engineer District, Vicksburg, Mississippi.

U.S. Department of the Interior

1976 The National Register of Historic Places. William G. Murtag, Keeper of the National Register; Ronald M. Greenberg, Editor-in-Chief; Sarah A. Marusin, Editor. Washington, D. C.

U.S. Geological Survey

1892a Chef Menteur Sheet, Louisiana 1:62500. U.S. Geological Survey, Washington, D.C.

1892b St. Bernard Sheet, Louisiana 1:62500, partially revised 1910, reprinted 1921. U.S. Geological Survey, Washington, D.C.

- U.S. Geological Survey
1939 Chalmette Quadrangle, Louisiana 1:31680. U.S. Geological Survey, Washington, D.C.
- Webb, Clarence H.
1977 The Poverty Point culture. Geoscience and Man 17.
- Weinstein, Richard A.
1974 An archaeological survey of the Lower Amite River, Louisiana. Unpublished Master's thesis, Louisiana State University, Baton Rouge.
- 1982 Tchefuncte occupation in the Lower Mississippi Delta and adjacent coastal zone. Paper presented at the 3rd Mid-South Archaeological Conference, Memphis.
- Weinstein, Richard A., Eileen K. Burden and Kathy L. Brooks
1980 Cultural resources survey of Interstate Route I-510, Orleans Parish. Coastal Environments, Inc. Report prepared for the Louisiana Department of Transportation and Development, Baton Rouge.
- Weinstein, Richard A., Eileen K. Burden and Sherwood M. Gagliano
1977 Archaeological phases--coastal Louisiana. Paper presented at the 3rd annual meeting of the Louisiana Archaeological Society, New Orleans.
- Weinstein, Richard A. and Sherwood M. Gagliano
1983 Geomorphology and prehistoric settlement in the Lafourche region. Ms. on file, Coastal Environments, Inc., Baton Rouge.
- Weinstein, Richard A. and Philip G. Rivet
1978 Beau Mire: A late Tchula period site of the Tchefuncte culture, Ascension Parish, Louisiana. Department of Culture, Recreation and Tourism, Louisiana Archaeological Survey and Antiquities Commission, Anthropological Report 1.
- Wiseman, Diane E., R. A. Weinstein and K. G. McCloskey
1979 Cultural resources survey of the Mississippi River-Gulf Outlet, Orleans and St. Bernard Parishes. Coastal Environments, Inc. Report prepared for the U. S. Army Corps of Engineers, New Orleans District.

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