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PHASE 2 OF THE CULTURAL RESOURCES INVENTORY OF THE BONNET CARRE' SPILLWAY, ST. CHARLES PARISH, LOUISIANA

FINAL REPORT

April 15, 1988

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Bonnet Carre' Spillway	Floodgate	Mississippi River	St. Charles Parish
Crevasse	German Coast	Natural Levee	Tunity

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No. 20 **ABSTRACT**

This report documents the second phase of the cultural resources inventory of the Bonnet Carre' Spillway, St. Charles Parish, Louisiana. Investigations conducted during this project focused on the portion of the spillway north of U.S. Highway 61. Ten separate survey items were examined during these investigations. Three items, representing high probability areas for historic cultural resources, were examined by intensive pedestrian survey and shovel testing. Two survey items, representing high probability areas for prehistoric remains, were examined by deep auger testing. The remaining five items, representing previously disturbed areas or areas presently suffering disturbance, were examined through boat-based inspection of exposed banklines along these features. No archeological sites or significant historic resources were located during these investigations. The reported locations of three previously recorded sites near the project area, 16 SC 10, 16 SC 11, and 16 SC 12, were visited. Two of these sites, 16 SC 10 and 16 SC 12, could not be relocated.

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REPLY TO
ATTENTION OF

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 the second and final phase of the cultural resources inventory of the Bonnet Carre' Spillway. The Spillway is a feature of the comprehensive Mississippi River and Tributaries Flood Control project and is the largest parcel of fee-owned land in the New Orleans District.

We concur with the Contractor's findings and recommendations. Therefore, no further survey efforts are planned.

Michael E. Stout
Technical Representative

Howard R. Bush
Authorized Representative
of the Contracting Officer

Cletis R. Wagahoff
Chief, Planning Division

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Field investigations were conducted by Dr. Eric C. Poplin, Paul C. Armstrong, David Driver, Randy Primm, Tim Anderson, Percy Harrison, and John Turner. Archival research was conducted by Mr. Paul C. Armstrong. Ms. Carol J. Poplin contributed the discussions of previous investigations and prehistoric background to the project area. Ms. Poplin also assisted in the production of the draft report. Ms. Ana Chandler, Ms. Lyn O'Brien Dale, and Mr. Larry Tuohy also assisted in the production of the draft report. Dr. R. Christopher Goodwin conducted the final edit of the report. Mr. Hobert Creasy produced an excellent collection of graphic materials for inclusion in this report.

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CHAPTER I

INTRODUCTION

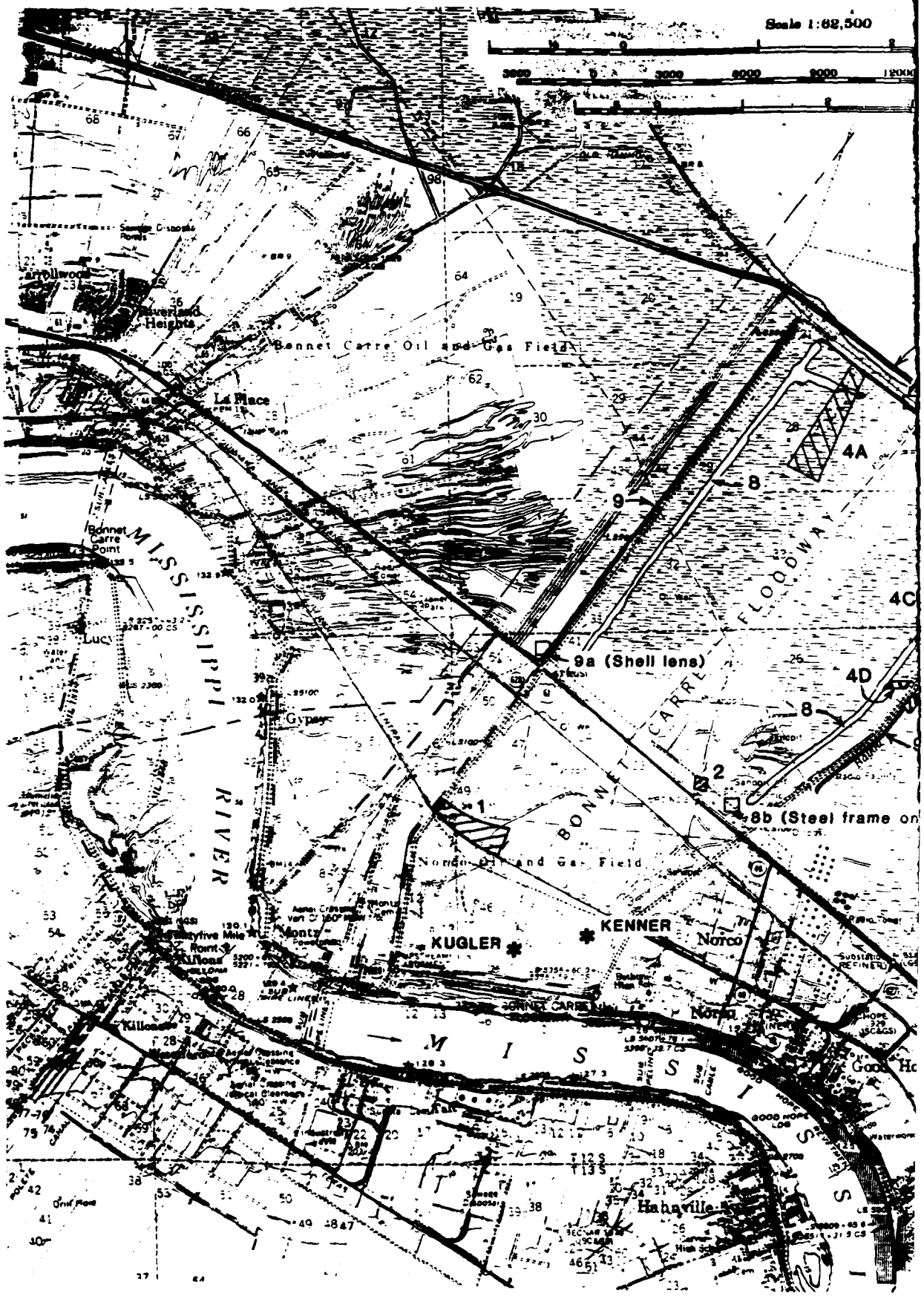
This report documents cultural resources investigations within the Bonnet Carre' Spillway, St. Charles Parish, Louisiana. This study was prepared for the U.S. Army Corps of Engineers, New Orleans District, pursuant to Delivery Order 10, Contract DACW29-85-D-0013. During the study reported herein, three levels of survey were carried out in ten different survey items within the northern portion of the Spillway. Pedestrian survey, deep auger testing, and boat-based bankline inspection were conducted at selected locales within the project area. In addition, three previously recorded archeological sites immediately outside the project area (16 SC 10, 16 SC 11, and 16 SC 12) were visited. These investigations were designed to identify and assess any significant cultural resources within the project area, and were important for interpretation of regional geomorphology. No significant cultural remains were encountered during these investigations.

Project Background

The Bonnet Carre' Spillway is designed to protect downstream areas, including the City of New Orleans, from flooding by the Mississippi River. The facility is located on the east (left descending) bank of the Mississippi River, near the town of Norco, Louisiana (Figure 1). The structure allows flood waters from the Mississippi River to discharge into Lake Pontchartrain, through a backswamp area that historically witnessed waters from a number of crevasses in the river's levees.

The Bonnet Carre' Spillway was authorized under the Jadwin Plan, approved by the U.S. Congress in the Flood Control Act of 1928. It was constructed between 1929 and 1931. Guide levees, extending from the Mississippi River to Lake Pontchartrain, were completed in 1932. Highway, railroad, and utilities crossings were completed in 1936. The Spillway first was utilized for flood control in 1937. Subsequent openings include 1945, 1950, 1973, 1975, 1979, and 1983. Federally owned land within the Spillway occupies 7,624 acres (3,087 ha).

The Spillway currently is used as a recreational area. Fishing, crawfishing, boating, and hunting all are conducted within the Spillway. In addition, extensive sand dredging is carried out within the Spillway, to provide fill material for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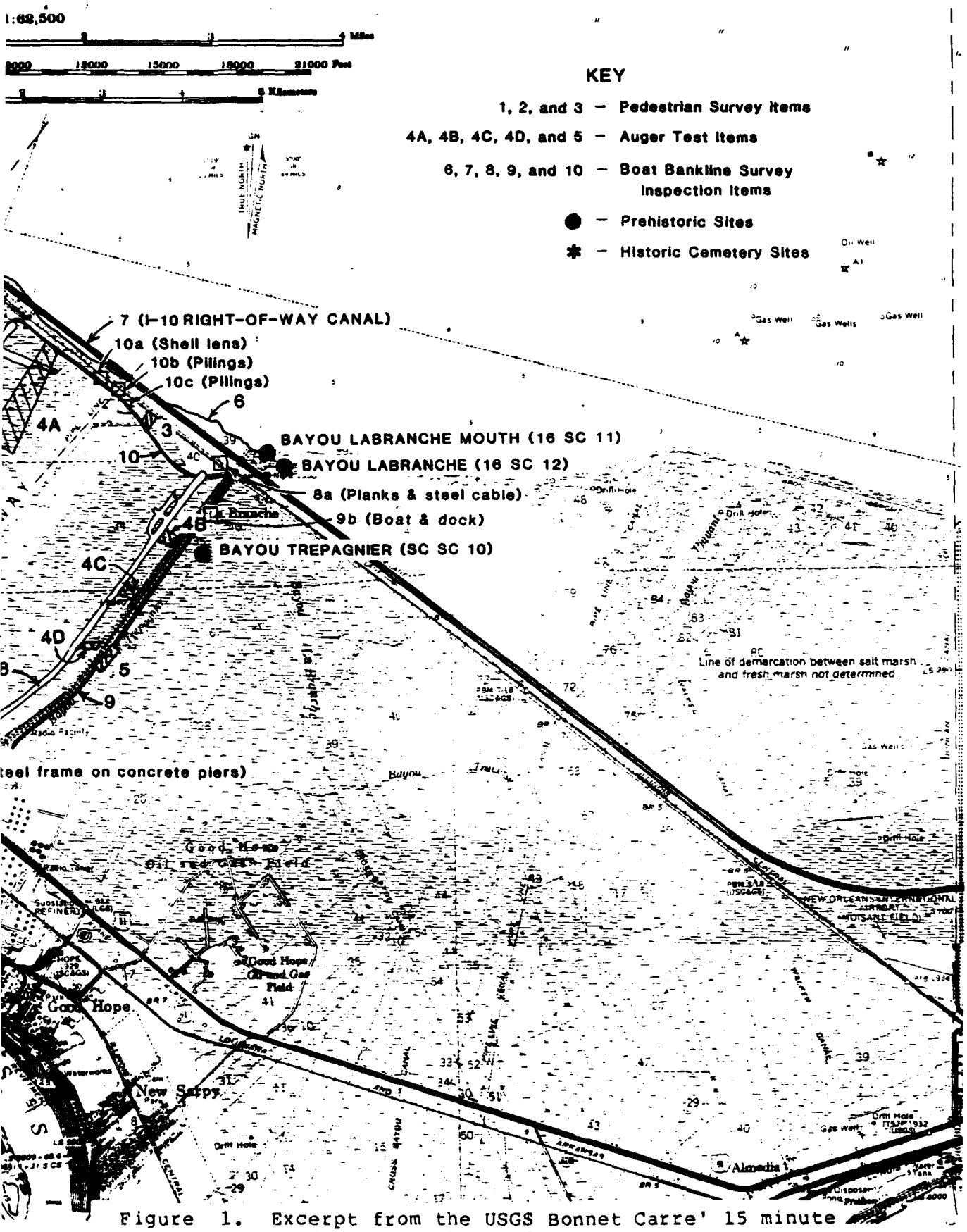


Figure 1. Excerpt from the USGS Bonnet Carre' 15 minute quad showing the study area, the survey Items, and the location of prehistoric and historic sites.

land development throughout southeastern Louisiana.

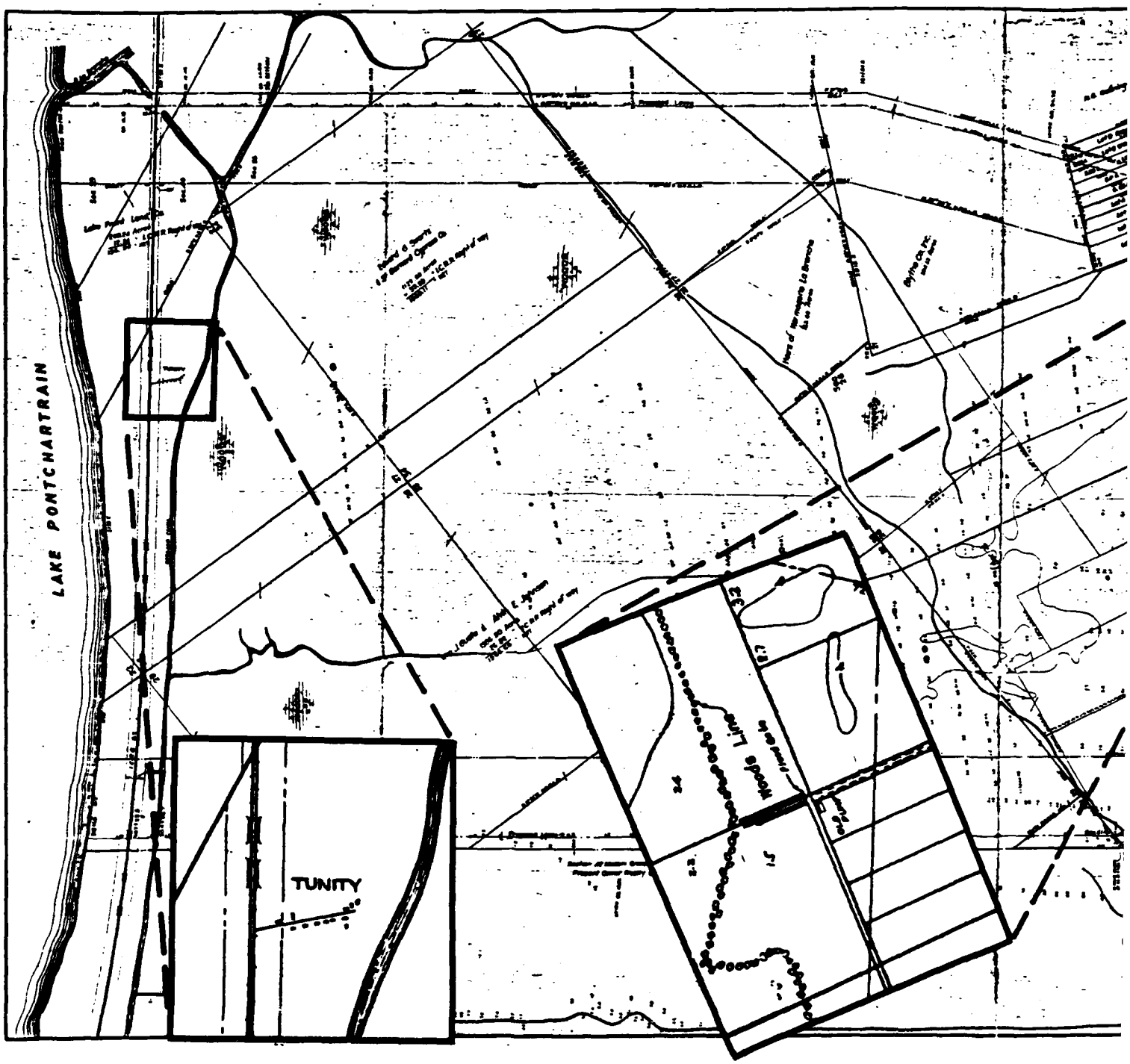
Historically, the Spillway was occupied by eighteenth and nineteenth century sugar plantations. Descendants of the former occupants of the plantations still owned the property at the time of Federal acquisition (Figure 2). Historic occupation of the Spillway area was focused on the Mississippi River natural levee ridge adjacent to the river (Yakubik et al. 1986). Prehistoric sites also have been discovered in the Bonnet Carre' region, between the river and Lake Pontchartrain.

Project Description

The current cultural resources investigation represents the second phase of U.S. Army Corps of Engineers' sponsored cultural resources inventory and assessment studies within the Spillway. The first phase of investigations, conducted by R. Christopher Goodwin & Associates, Inc., in 1986, intensively examined the southern portion of the Spillway, i.e., the area within 1,500 ft (455 m) of the Spillway structure on the bank of the Mississippi River. This area was considered to represent a high probability area for historic resources associated with occupations in the Spillway prior to Federal acquisition of the property. In addition, an assessment of the remainder of the Spillway was conducted to determine the nature of archeological resources that could be expected to exist within the entire Bonnet Carre' project area. High and low probability areas for the presence of archeological resources were defined, and recommendations concerning future investigations were offered (Yakubik et al. 1986).

Pursuant to the scope of services (Appendix 1), cultural resources investigations conducted during this project were designed to examine defined high probability areas and disturbance corridors in the lakeward portions of the Spillway. Ten survey items were selected for examination. Nine of these items lie north (lakeward) of U.S. Highway 61 (Airline Highway). The remaining item is located north of the Louisiana Arkansas Railroad crossing.

Three levels of investigations were applied within the ten selected items. Survey activities were scaled to the nature of archeological resources expected to be present, and to environmental conditions present within each item. Three items were defined as high probability areas for historic cultural resources. These areas, containing approximately 72.6 acres (29.4 ha), were selected for pedestrian survey; they were examined through a combination of surface inspection and subsurface shovel testing. Two



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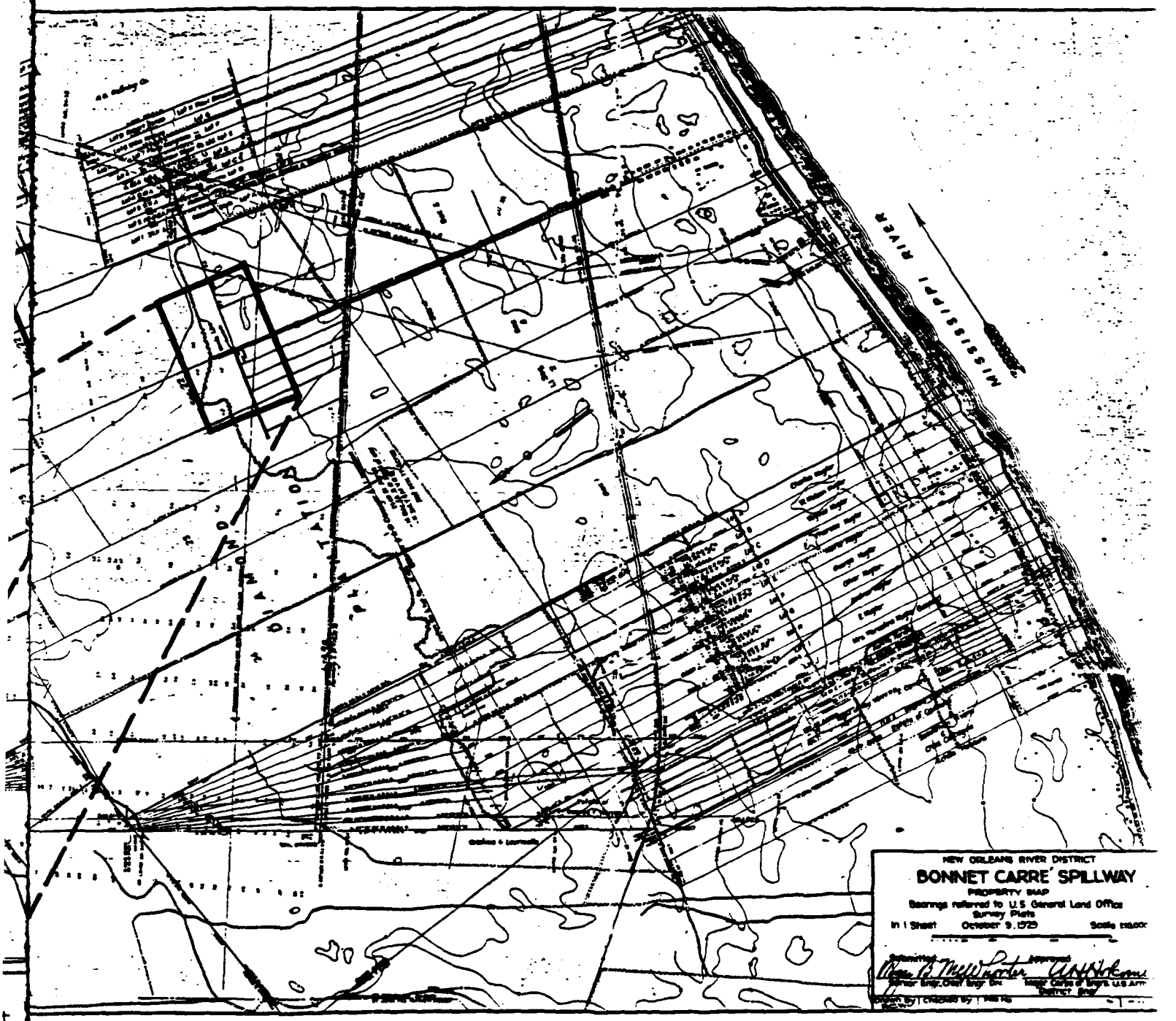

1929 Bonnet Carre' Spillway map
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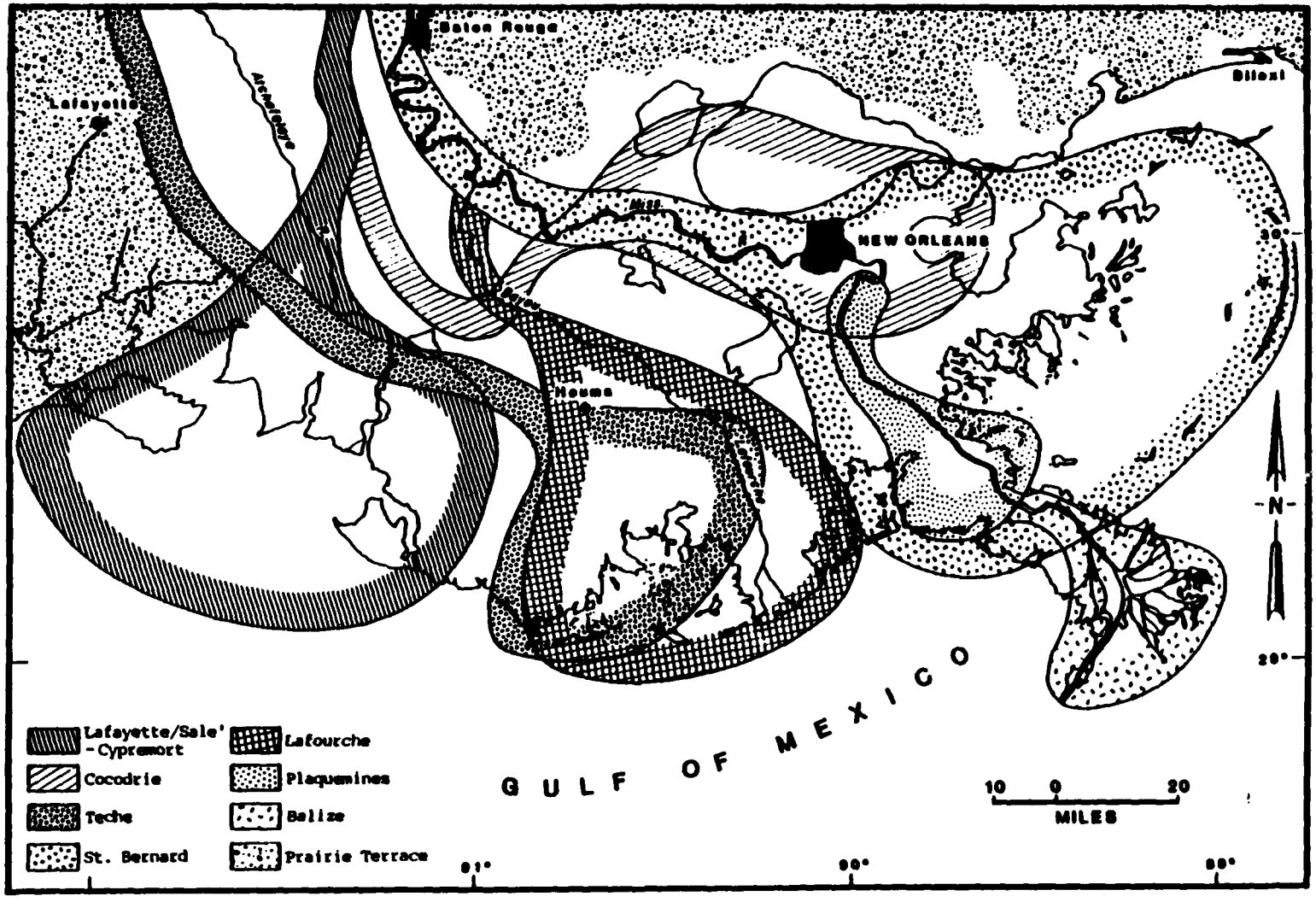


Figure 3. Major delta lobes of the Mississippi River (modified from Kolb and Van Lopik 1966).

items were defined as high probability areas for the location of prehistoric sites. These areas, representing four relict drainages within the floodway (5990 ft/1815 m in total), and one drainage outside the floodway (1250 ft/380 m in total), were selected for examination through deep auger testing. Auger tests, excavated to a minimum depth of 2 m, were placed along the banks of these drainages in an effort to locate deeply buried archeological sites. These locales were

In addition, five items were selected for examination by inspection of exposed banklines; this inspection was accomplished from hand-powered or motorized boats. These items all contained surface exposures as a result of past development activities, or from continued erosion along the Lake Pontchartrain shoreline. Exposures along banklines were expected to represent excellent opportunities for the discovery of buried cultural remains within the Spillway. The total length of banklines examined in all items was approximately 26 miles (42 km). All of these investigations were designed to identify and to provide an initial assessment of cultural resources within the northern portions of the Bonnet Carre' Spillway.

Format of This Report

Chapter II of this report presents a brief description of the Bonnet Carre' Spillway, and of each of the ten items selected for examination during these investigations. Following these descriptions, the geomorphic development of the region is discussed as it relates to the setting of the Spillway area. Historic episodes of crevasses in the Bonnet Carre' area, and subsequent flood control measures are reviewed. This chapter concludes with a brief description of the environmental setting of the northern portion of the Spillway.

Chapter III presents the cultural background of the Bonnet Carre' region. This background includes a review of previous investigations within the project area, a summary of adjacent archeological sites, a brief overview of the prehistoric cultural development of the region, and an overview of the historic development and land tenure within the Spillway along Lake Pontchartrain. Included in these cultural overviews are discussions of the nature of prehistoric and historic resources expected to exist within northern portion of the Spillway.

Chapter IV reviews the survey methodologies employed during the field investigations within the ten survey items. In addition, investigations carried out at adjacent known

archeological sites are summarized. Chapter V presents the results of archeological and historical investigations conducted during this project, with respect to each survey item. Chapter VI provides conclusions concerning each of the survey items and each previously reported archeological site that was examined during these investigations. Finally, recommendations are made concerning the need for future archeological treatment or investigation of cultural remains within the project area.

CHAPTER II

ENVIRONMENTAL SETTING

A Description of the Project Area

This second phase of cultural resources inventory of the Bonnet Carre' Spillway examined ten separate items within or near the Spillway right-of-way (Figure 1). The Bonnet Carre' Spillway occupies 7,624 acres (3,087 ha) of land in St. Charles Parish, Louisiana. The mouth of the Spillway lies on the east (left descending) bank of the Mississippi River, between River Miles 127 and 129 Above Head of Passes. The Spillway is approximately 7,700 ft (2,333 m) wide; it stretches northeastward 5.7 miles (3.6 km), from its mouth on the river to its outlet on Lake Pontchartrain. The width of the Spillway flares to approximately 12,400 ft (3,758 m) where it enters the lake.

The Spillway is defined by two guide levees. These levees stretch from the river to the lake along the lower (east or downriver) and upper (west or upriver) sides of the floodway. The floodway is crossed by three modern roads and three railroad lines. Louisiana Highway 48 (River Road) crosses the floodway near the control structures on the Mississippi River. U.S. Highway 61 (US 61), Airline Highway, crosses the floodway approximately halfway between the river and Lake Pontchartrain. Interstate Highway 10 (I-10) crosses the floodway near its outlet on the lake. The Illinois Central Railroad maintains two lines across the floodway. One is located immediately south of the I-10 crossing, near Lake Pontchartrain; the other crosses the floodway approximately halfway between the river and US 61. The Louisiana Arkansas Railroad maintains a line just south of US 61. All of these features are shown on Figure 1.

The surface of the floodway slopes gradually from its mouth on the river to Lake Pontchartrain. Elevations in the area south of US 61 generally range from five to ten feet above NGVD. North of US 61, elevations range from zero to five feet above NGVD. Ridge and swale features are present in the southern half of Spillway. Most of the low rises and shallow depressions probably have resulted from scouring and deposition related to the use of the floodway since 1932. The guide levees rise approximately 20-30 ft above the surface of the floodway (25-30 ft above NGVD).

Nine of the ten items selected for examination during these investigations lie in the northern half of the Spillway, i.e., lakeward of US 61. The remaining item lies to the north (lakeward) of the Illinois Central Railroad

line nearest the river. These ten items are:

1. possible railroad loading facility adjacent to upper guide levee and Louisiana Arkansas Railroad line (64 acres/26 ha);

2. old pump with floodgates, near US 61 and east guide levee (2.5 acres/1 ha);

3. Tunity area, near center of floodway, south of Illinois Central Railroad line at lake (7.5 acres/3 ha);

4. natural drainages - possible relict distributaries (5,990 ft/1815 m);

5. interface of Bayou Trepagnier and lower guide levee (1,250 ft/380 m);

6. shoreline of Lake Pontchartrain (2.25 mi/3.6 km);

7. I-10 right-of-way corridor (2.1 mi/ 3.4 km);

8. levee borrow canals inside of levees (14 mi/22.4 km);

9. drainage canals outside guide levees (5.7 mi/9.1 km); and,

10. historic canal parallel to lakeshore (2 mi/3.2 km).

All of the survey items are shown in Figure 1.

The ten survey items can be broken down into three groups. Items 1-3 consist of potential historic sites identified from the U.S. Army Corps of Engineers property map of 1929 (Figure 2). Items 4 and 5 represent high probability areas for buried prehistoric sites, defined on the basis of the presence of natural drainages at these locales. These drainages were identified from the 1929 property map, and shown on a recent aerial infrared photography of the project area. Items 6-10 represent areas that have experienced subsurface impacts as a result of dredging or natural erosion and offer bankline exposures with the potential for discovery of buried cultural remains in the Spillway.
Item 1 is an irregularly shaped tract adjacent to the upper guide levee at its intersection with the Louisiana Arkansas Railroad line. The tract extends eastward from the levee

along the railroad for approximately 960 m (3,200 ft). It extends towards the lake approximately 400 m (1,300 ft) at its eastern edge, and for approximately 200 m (660 ft) along the toe of the upper guide levee. This area presently contains a portion of the levee borrow canal, and numerous sand borrow pits. The area is forested with small willows, hackberries, cottonwoods, and oaks. Much of the western half of the tract is, or has been inundated, due both to the borrowing of sand, and to beaver dams within the borrow pits and swales. Numerous channels and downed willows in this portion of the tract indicate that the area supports a fairly dense beaver population. The northern edge of the tract also is partially inundated and covered with water hyacinth and other marsh plants. The eastern portion of the tract has been cleared recently, with the small trees pushed down by bulldozers or similar tracked vehicles. Surface visibility within the cleared portions of the tract is excellent. In the wooded areas, surface visibility varies from totally obscured to excellent. All soils encountered in the tract are sands or sandy loams.

Item 2 is the former location of a pump and floodgate (Figure 2). It occupies an area of approximately 100 square meters (330 ft x 330 ft), around the intersection of two former drainage canals. The canals effectively separate the tract into four quadrants. The western quadrants contain borrow areas; the southwestern quadrant is totally inundated. The eastern half of the track presently is wooded with willows and hackberry. Small spoil banks run parallel to the banks of both canals. Surface visibility throughout the tract is limited. Soils encountered within the tract includes sandy loams, clayey loams, and clays.

Item 3 is the former location of Tunity, a cluster of thirteen structures shown on the 1929 property map (Figure 2). This tract extends from the historic canal that parallels the lakeshore northward for approximately 200 m (660 ft). The tract is approximately 120 m (400 ft) wide. The southern half of the tract is wooded with hackberry. The northern half of the tract is inundated, and contains cypress stands and marsh grasses. The area near the railroad trestle consists of a series of drainage ditches created by the construction of the railroad and of a high voltage powerline that crosses the Spillway. Soils in the southern portion of the tract consist primarily of clay loams. Soils in the northern half are super-saturated; spoil banks along the drainage ditches contain clayey loams and clays.

Item 4 consists of four separate drainages identified on the 1929 property map, or using recent aerial infrared photographs. Three of these drainages are located adjacent to the lower guide levee, between US 61 and Lake

Pontchartrain. The fourth drainage lies in the northwestern corner of the floodway, extending from the historic canal parallel to the lakeshore inland for approximately 1,000 m (3,300 ft). All of these tracts are forested in mature stands of hackberry, tupelo, hickory, maple, and oak. Cypress stands are present near the borrow channels, and along the drainages. Surface visibility throughout these tracts is limited. Soils encountered include sandy clay loams and sandy clays.

The intersection of Bayou Trepagnier and the lower guide levee lies between the outside drainage canal and the present course of the bayou. This tract is located approximately halfway between US 61 and the Lake Pontchartrain shoreline, immediately outside of the lower guide levee. It follows approximately 600 m (2,000 ft) along Bayou Trepagnier. This tract is forested like the drainages just described for Item 4; the soils were sandy clay loams, sandy clays, and one area of very sandy deposits.

The Lake Pontchartrain shoreline consists of the present beach and marsh along the lake between the upper and lower guide levees. The area is covered with cypress trees and stumps, or marsh grasses.

The I-10 right-of-way parallels the Causeway that carries the modern highway across the west end of Lake Pontchartrain and the adjacent swamps and marshes. Along the borrow channels beneath the structure, the area is forested with hackberry, tupelo, and cypress. Much of the area is inundated and marshy. It is used for recreational activities, and as an access route to Lake Pontchartrain from boat landings within the floodway.

Borrow canals run parallel to the upper and lower guide levees inside the floodway. These canals are quite large; both are at least 100 m (330 ft) wide, and extend from US 61 to the I-10 corridor. The lower canal is purported to be in excess of 50 ft (15 m) deep. The edges of these canals are covered by extensive spoil banks, along which hackberry, sycamore, and oak trees are present. Lower areas are forested with tupelo and cypress. Cleared areas are covered with weeds and grasses. Some areas of marsh extend from the canals towards the guide levees. These canals are used extensively for sport fishing and boating.

Drainage canals are parallel to the cutside toes of the guide levees, i.e., in the areas protected from the floodway. These canals are approximately 15-40 m wide, and extremely variable in depth. Both extend from US 61 to the lake. These drainage canals often contain extensive debris, such as cypress stumps and large logs, that may derive from the

cypress logging industry in the area. These canals have limited use as recreational areas.

An historic canal runs across the northern edge of the floodway, approximately parallel to the lakeshore. This canal is approximately 30-60 m (100-200 ft) wide. Its banks generally are forested with hackberry, tupelo, or cypress. Some areas are open and covered in grasses and weeds, or marsh. The northern bank of the canal is generally a little higher than the southern bank. This suggests that spoil from the canal may have been deposited on its northern edge. This canal presently is used by many fishermen to provide access to Lake Pontchartrain from landings within the floodway.

Regional Geomorphic Development

Introduction

The Bonnet Carre' Spillway area in St. Charles Parish, Louisiana, is alkaline loamy floodplain land (USDA 1987), that lies between the Mississippi River and the southwestern shore of Lake Pontchartrain (Figure 1). As part of the greater Mississippi Deltaic Plain Region, the Spillway area developed from geomorphic processes characteristic of an alluvial environment. The area has experienced depositional processes associated with the formations of Mississippi River deltas and Lake Pontchartrain.

Before historic occupation and modification of the Spillway area, it was mostly a cypress backswamp. A natural levee ridge was present along the Mississippi River. This higher elevation towards the river provided a natural drainage for overflow from the Mississippi River to lower elevations along Lake Pontchartrain. The Bonnet Carre' Crevasses were created when the water level of the Mississippi River exceeded the height of the natural levee ridge. The velocity and turbulence of the flood waters cut channels into the natural levee that diverted part of the flow from the Mississippi River. The overflow from the four historic Bonnet Carre Crevasses between 1849 and 1882 (Saucier 1962:56), and the seven openings of the Spillway since 1937, have distributed tons of alluvial sands and silts that have accumulated in splays as far as Lake Pontchartrain (Figure 1). Many of the Bonnet Carre' crevasse splays still are visible near the present floodway.

Over 90 per cent of the total water input into the region is accounted for by the Mississippi River, and approximately 95 per cent of that flow, with its suspended load of sediment, is discharged directly into the Gulf of Mexico. Prior to the 1930s, however, overbank flooding and

crevasse channels deposited millions of tons of silt in the Barataria and Pontchartrain Basins. At present, flood waters are entrained by the modern levee system. The only areas directly affected today by high waters are the lowermost Atchafalaya and modern delta, except when the Bonnet Carre' Spillway is opened to divert water into Lake Pontchartrain. When it is opened, diverted waters affect both the Pontchartrain and Mississippi Sound systems (Bahr et al. 1983).

The interaction between river and lake is not a recent development. Approximately 5,000 years ago, riverine delta growth carried sediment into the Gulf of Mexico resulting in the formation of the Pontchartrain Basin and Lake Pontchartrain. A brief overview of this development is provided below. In addition, both the role of the project area in crevasse formation, and present environments within the Bonnet Carre' Spillway, are discussed.

The Development of the Pontchartrain Basin

The project area lies on the southwestern margin of the Pontchartrain Basin, a nearly enclosed lowland abutting the Mississippi Deltaic Plain. This basin is bounded to the north and west by older Prairie Terrace uplands. Alluvial deposits associated with former deltas of the Mississippi River form the southern and eastern margins of the basin (Saucier 1962:1).

The Prairie Terrace represents a broad deltaic plain that formed during the late Pleistocene epoch. This terrace apparently developed during a period of valley aggradation associated with the Sangamonian Interglacial Stage, between 80,000 and 200,000 years B.P. (Saucier 1974:16). Sediments within the Prairie Terrace are typically light gray, light brown, or yellowish-orange in color; grain sizes vary from fine sands to silts and clays (Cullinan 1969:38-39).

More recent alluvial materials were deposited in the basin during two episodes of Mississippi River Delta formation. During the last 8,000 to 10,000 years, the modern river has experienced at least seven episodes of delta formation. The earliest delta complex, called the Lafayette/Sale-Cypremort, formed between 8,000 and 6,000 B.P. (Smith et al. 1986:38). This delta deposited materials in the modern Atchafalaya Bay region (Figure 3). A shift in the course of the river resulted in the formation of the next delta. This outlet, the Cocodrie delta complex, deposited materials into the southern and southwestern margins of the Lake Pontchartrain Basin (Figure 3), between 5,000 and 3,500 B.P. (Gagliano et al. 1975:41). Between 5,800 and 3,500

B.P., the Teche delta complex also developed (Smith et al. 1986:38). Its outlet formed in the modern Terrebonne region of southern Louisiana (Figure 3). The subsequent episode of delta formation occurred between 3,500 and 2,000 B.P. (Smith et al. 1986:38-40). This delta complex, the St. Bernard, once again deposited materials throughout the southern portions of the basin. The deposits effectively replaced or covered alluvial materials associated with the earlier Cocodrie delta complex. The majority of the alluvial deposits within the modern basin are derived from the St. Bernard deltaic episode (Saucier 1962:70). Between 2,000 and 1,000 B.P., the LaFourche delta formed along the modern course of Bayou LaFourche (Smith et al. 1986:44-45). Around 1,000-1,200 B.P., the Plaquemines delta began to form, approximately along the modern course of the river (Smith et al. 1986:44-45). The modern delta complex, the Balize, began to develop approximately 550 years ago (Smith et al. 1986:44-45). This delta extends southeastward from the older Plaquemines delta (Figure 3). Minor quantities of alluvial materials associated with both of these delta complexes have been deposited in the basin as a result of crevasse development in the Bonnet Carre' region.

The present northern boundary of the Pontchartrain Basin, at the edge of the Pleistocene Prairie Terrace, was the shoreline of the Gulf of Mexico at the time of sea level stabilization, i.e., between 4,000 and 7,000 B.P. At that time, the eastern and southeastern limits of the basin were represented by a series of sand barrier trends. The western boundary of the basin, including the project area, was defined by alluvial deposits associated with the earliest course/delta of the Mississippi River (Saucier 1962).

A massive barrier spit formed at the mouth of the Pearl River. This created a brackish embayment near the eastern end of modern Lake Pontchartrain. When deposition by the St. Bernard-Mississippi River closed off the embayment (ca. 3,500 - 2,000 years B.P.), Lake Pontchartrain was formed. When the river subsequently changed its course by abandoning the St. Bernard delta, and establishing the Lafourche delta (c.a. 2,000 years B.P.), the St. Bernard delta lobe deteriorated. As a result, waters from the Gulf of Mexico waters intruded into the lake. The brackish water clam Rangia cuneata, formed shell beaches around the edge of the expanding lake. The Plaquemines and Balize Mississippi River courses also deposited sediments and fresh water to the east and south of lake. The result was the closure of the bay from the gulf.

The Bonnet Carre' Crevasse in Historic Times

Periodic flooding is a natural process of any river-

dominated delta system. The breaching of natural levees and crevasse development undoubtedly have occurred within the Bonnet Carre' region since the abandonment of the St. Bernard delta complex. Historic accounts of the crevasse cover the period from 1750 to 1927 (Gunter 1953). While all of the known flood episodes are related to the Balize delta of the river, similar events probably occurred during the occupation of earlier river courses.

One historic Bonnet Carre' crevasse occurred in 1850. In January, 1852, it was described in a report by the Secretary of War to the Senate concerning the inundations of the Mississippi River. According to this report, the Bonnet Carre' crevasse discharged water equal to 149,600 cubic feet per second (cfs), during the flood of 1850. However, the crevasse did not destroy any farmland:

> The crevasse at Bonnet Carre' discharged into Lake Pontchartrain about the one-tenth part of the high-water burden of the Mississippi, for many consecutive days during the great flood of 1850, when the water of overflow rushed down a plane descending about fifteen feet in 4.5 miles; and yet the velocity and force of the torrent were not sufficient to tear up the natural soil to any considerable extent. No channel was excavated. The furrows left by the plough and the roots of the crop remained on the field where it had been swept by the water, after the flood had subsided (Secretary of War 1852).

In 1867, Humphreys and Abbot compiled flood statistics in a report entitled, Report upon The Physics and Hydraulics of the Mississippi River. According to this report, the levee break for the Bonnet Carre' crevasse from December 30 to July 1, 1850, widened from 1,200 ft, to 6,900 ft across, with a mean high water mark calculated at 5.5 ft. During the 1858 flood, the Bonnet Carre' Crevasse reached a maximum width of 1,050 ft, and a maximum depth of eleven feet (Humphreys and Abbot 1867:143). The Bonnet Carre' Crevasse continued to be one of the most active outlets for the Mississippi River's overflow below St. John the Baptist Parish until the completion of the Spillway in 1931. Hardee (1876) described the crevasse of 1874:

> The present crevasse, which was caused in the spring of 1874 by a breach in the levee at Bonnet Carre' bend, about 35 miles above the city (New Orleans), is now 1,370 feet in

> width, in a direct line across the gap, and as the discharge of water courses towards Lake Pontchartrain, 5 miles distant, it widens in a fan-like shape so that by the time it reaches the shore of the lake the flow of water has attained a breadth of more than 22 miles...(Hardee 1876:112).

Bouchereau reported the Bonnet Crevasse to be 900 ft wide in 1882 (Bouchereau 1882:xiii).

The average crevasse along the river between 1849 and 1927 breached the artificial levees for a distance of 500 to 1,000 ft; scoured to a depth of about 12 ft; and discharged at an average maximum velocity of about 65,000 cfs The Bonnet Carre' crevasse was one of four crevasses that exceeded 100,000 cfs (Saucier 1962). According to Saucier (1962), it was the development of man-made levees that contributed to the increased intensity of crevasse overflow:

> Construction of artificial levees along the Mississippi River resulted in a decrease in the number of crevasses, but greatly increased their intensity and altered their characteristics (Saucier 1962:86-88).

The normal cycle of crevasse formation under natural conditions includes scour of the levee bank during the early stage of flood, overtopping and breaking of levees during peak flood, a gradual sealing of the break in the levees, and the filling of the channel as floodwaters subside.

The crevassing of the high artificial flood-control levees is a different matter. Here, the floodwaters are released after they have gained considerable artificial head, and the breaking of the levee is like the breaking of a dam (Harrison 1961). The construction of levees along the Mississippi River raised the height of the average flood crest elevations five feet on the river in the vicinity of New Orleans between the 1830s and the 1920s (Elliott 1932). The increased gradient between the levee crest and the backswamp elevation propelled the crevasse waters to overflow with increased severity.

Flood Control and the Bonnet Carre' Crevasse

From the first colonization efforts of the lower Mississippi Valley by the French in the early 1700s, the building of levees and the protection against river flooding was the responsibility of the individual property owner.

Dumont wrote in 1728 that there were five settlements "extending for 30 miles above New Orleans, who were obliged to construct levees of earth for their protection" (Harrison 1961:54). The practice of having riparian owners build their own levees was established with little or no provisions concerning uniformity of dimensions or other specifications. Before 1816, each planter decided the size and type of his own levee under the informal inspection of the parish surveyor.

The first comprehensive levee and road law in Louisiana was enacted on March 18, 1816 (Acts of Louisiana 1816:106). The great floods of 1828 and 1844 prompted further flood control legislation. In 1836, Louisiana decided to close some of the larger outlets above Baton Rouge; Bruin's Bayou, Alligator Bayou, Bayou Vidal, and Providence Bayou. With the development of State bureaus and departments charged with the responsibility for flood control, drainage, and other public works, the interest in flood control by planters, public officials, and engineers began in earnest. The high waters of 1828, 1832, 1836, 1840, and 1844 demonstrated that levees would need to be well located and carefully built if they were to protect the lands of the lower Mississippi Valley.

The debate over flood control intensified after the massive flood of 1844. A report by the Secretary of War to the U.S. Senate in 1852 offered three flood control remedies for the Mississippi River area below Baton Rouge. One of the propositions was to make the Bonnet Carre' crevasse an outlet for river overflow. Charles Ellet Jr., the major author of the report by the Secretary of War, did not favor this solution for three reasons:

> 1st. That the point where the outlet is proposed to be made, is too near the gulf to afford relief to any great extent of river coast;
>
> 2nd. That the deposits which will be discharged by the Mississippi into Lake Pontchartrain, will at first impair, and ultimately destroy, the navigation of the Lake, which must always be of great value to New Orleans;
>
> 3rd. That the water withdrawn from the river will so raise the surface of the lake as to inundate the swamps on its coast, and in the rear of New Orleans; rendering it necessary to enclose the city on all sides within a levee, and rely altogether on the draining pump to relieve it from the surface and sewerage water (Secretary of War 1852).

The report went on to state:

> All that is necessary to be done to relieve the Mississippi at this point [Bonnet Carre'] of a portion of its surplus water is to cut two trenches from the river to the Lake, and use the material taken from them to form two parallel levees, at the distance of four thousand of five thousand feet asunder, and then remove the artificial embankments on the borders of the river, and let the Mississippi flow down the intervening plane to the lake.
>
> Yet the objections already enumerated are so serious that a resort to this measure, so simple and so certain to produce prompt but limited results, cannot be recommended here. At least, it cannot be recommended as a permanent improvement and a reliable plan, though it may ultimately by adopted, should events arise to justify it, as a temporary expedient (Secretary of War 1852).

Largely as a result of the Humphreys and Abbot (1867) report, the use of enlarged and well constructed levees became the accepted policy of flood control, compared to the outlets and cutoffs proposed by proponents like Ellet.

The understanding of the magnitude of flood control on the lower Mississippi River delta also had begun to change after the Federal Swamp Acts of 1849 and 1850. State and Federal agencies started to take an active role in developing strategies and in providing money for flood control. Individual riparian holders were no longer solely responsible for maintaining their levees. Because of governmental participation, "the years from 1850 to 1880 saw a great increase in knowledge of the topography and hydrology of the Mississippi Alluvial Valley" (Harrison 1961:67). State and Federal flood control legislation included land reclamation and drainage improvement. In 1867, the Louisiana Board of Levee Commissioners was appointed, followed by the Board of Public Works, and then by the Louisiana Levee Company for "the reclamation and protection from overflow of the alluvial lands" (Acts of Louisiana 1867:58). In 1879, the Mississippi River Commission was created for the purposes of regulating local levee districts. The first Federal flood control act was passed in 1879. By the time the 1917 and 1928 Federal flood control acts were passed, most flood control activities by the local levee boards were assumed by the U. S. Army Corps of Engineers.

Under the Wilson Act of 1927, the U. S. Army Corps of Engineers appointed a board of officers that selected the Bonnet Carre' site for a Spillway location. In 1928, Congress adopted the Jadwin Plan. This plan authorized surveys of the old Bonnet Carre' Crevasse, and of the straight reach of the Mississippi River below Gypsy Point. The site below Gypsy Point was selected, and Spillway development began in earnest in December, 1928 (Hudson 1928).

The Bonnet Carre' Spillway was designed to divert 250,000 cfs into Lake Pontchartrain. The major portion of the Mississippi River overflow (up to 3,000,000 cfs) was designed to be diverted at the Old River and/or Morganza Spillways into the Atchafalaya River floodway. These larger upriver diversions were set up to allow the Bonnet Carre' Spillway to assume the excess downriver water, thereby safely protecting the area below the Spillway, including New Orleans.

The Spillway was designed to prevent the rising river from exceeding twenty feet N.G.V.D. at the Carrollton gauge in New Orleans. In January, 1937, six years after the completion of the Spillway, flood heights between Cairo and Memphis indicated the necessity of opening the Spillway for the first time to prevent the Carrollton gauge from exceeding twenty feet. The first opening of the Spillway was completed successfully by March 7, 1937; 210,000 cfs pouring through 285 bays during maximum flow, maintaining the water level at the Carrollton gauge at nineteen feet during crest stage (Hudson 1928).

After the initial opening of the Spillway, data were collected to determine the effectiveness of the operation and the environmental impact. Scouring of any consequence was confined to the lakeshore portion of the floodway, where overfall into the lake had worn back the bankline. A canal and dike were proposed to divert the flow from the area where erosion had been most severe (Figure 4). Most of the river sediments deposited in the Spillway were in the area that lay between the control weir and US 61. As a result of this depositional pattern, grading and the clearing of the undergrowth was ordered to improve flow (Figure 4).

According to Hudson (1928) and Markam (1937), the water level in Lake Pontchartrain returned to normal levels within two months of the Spillway closure. The environmental effects of reduced salinity and increased sedimentation on Lake Pontchartrain are still being studied (Bahr et al. 1983).

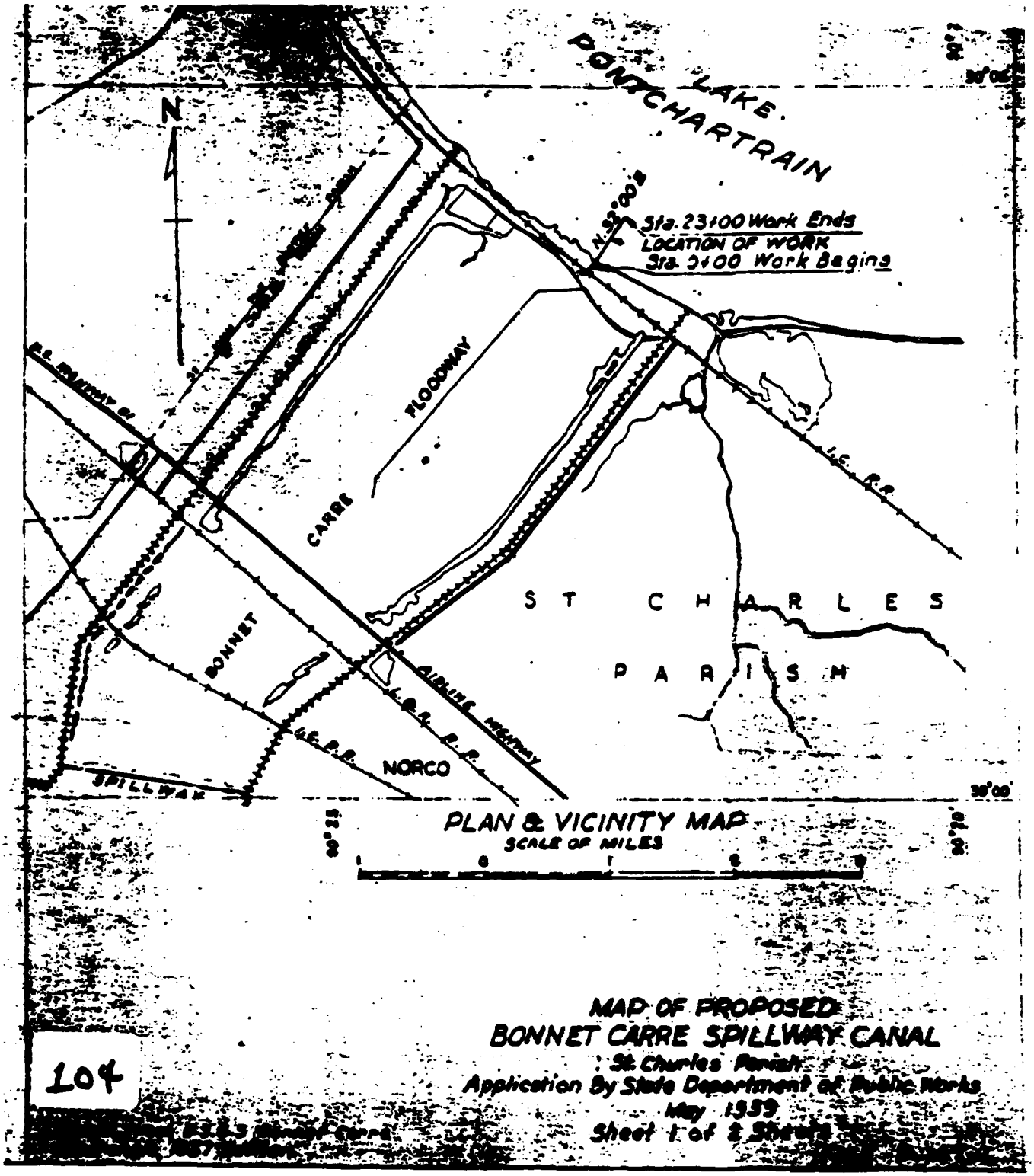


Figure 4. The 1959 Department of Transportation map of the proposed Bonnet Carre' Spillway canal.

Backswamp Environments

As noted above, the project area lies within the backswamp of the Mississippi River floodplain. These backswamps grade into the shore of Lake Pontchartrain. Deposits within the backswamps consist of Holocene Mississippi River alluvium. At the lakeside area of the floodway, borings indicate a stratification of lacustrine marshes, consisting of fat clays throughout (U.S. Army Corps of Engineers 1983).

Under natural conditions, backswamps are typically poorly drained, tree-covered areas bounded by levee ridges or by Pleistocene upland surfaces (Smith et al. 1986:23). Soils within backswamps are generally fine-grained. Soils in better drained areas should possess lighter colors, mottling, and little organic content. Those in wetter areas may present darker colors and dense organic remains, possibly including peat deposits (Smith et al. 1986:25).

Within the Bonnet Carre' floodway, these backswamp deposits may be interdigitated with and/or overlain by sediments derived from the historic crevasses or from the utilization of the Spillway. These deposits will tend to be coarser in nature than those associated with typical backswamp depositional environments (Smith et al. 1986:13-14). In addition, older distributary channel and levee deposits, associated with the St. Bernard delta complex, may be present beneath or among the backswamp and crevasse deposits. Distributary channels could be expected to contain fine-grained sediments resulting from the filling of the channel after abandonment. Levees along these former watercourses should contain coarser materials, similar to those resulting from crevasse channels and splays (Saucier 1974:10).

Backswamps typically support bottomland forests characteristic of primary stage ecological succession (Bahr et al. 1983:43-44). Drier areas will contain red maple (Acer rubrum var. drummondii), oaks (Quercus spp.), black willow (Salix nigra), cottonwood (Populus spp.), elm (Ulmus americana), box elder (Acer negundo), dogwood (Cornus drummondii), persimmon (Diospyros virginiana), ash (Fraxinus spp.), privet (Forestiera acuminata), and hackberry (Celtis laevigata). Wetter areas will contain baldcypress (Taxodium distichum) and tupelo (Nyassa aquatica,) mixed with the previously listed species. Poison ivy (Rhus radicans), trumpet vine (Gelsemium sempervirens), greenbriar (Smilax spp.), peppervine (Ampelopsis spp.), and Virginia creeper (Parthenocissus quinquefolia) commonly are present in open areas.

The northernmost (lakeward) portion of the Spillway supports a marshland floral community that includes marsh grasses, sedges, and forbs (South Central Planning and Development Commission 1978). Areas near the lake support dense stands of cypress. Prior to logging activities, habitats of this nature commonly were found near Lake Pontchartrain. An undergrowth of marsh plants including pailletine, delta potato, cutgrass, and lizard tail (*Saururus cernuus*) is typical of this environment. Standing water allows the growth of floating vegetation, including duckweed (*Lemna* spp. and *Spirodela polyrrhiza*), and American frogbit (*Limnobium spongia*).

CHAPTER III

THE CULTURAL SETTING

Previous Investigations

This chapter reviews previous archeological investigations conducted within or near the present study area. A number of nearby prehistoric and historic sites have been recorded previously and are recorded with the Louisiana Division of Archeology. No previously recorded sites lie within the present project area; however, three prehistoric sites (16 SC 10, 16 SC 11, and 16 SC 12) are located immediately outside of the lower boundary of the Bonnet Carre' Spillway, to the north of Item 4B (Figure 1). Prehistoric sites in the vicinity of the Spillway tend to be located near or on the shores of Lake Pontchartrain; historic sites are concentrated along the natural levee of the Mississippi River. The present project area does not extend as far as the river.

Roger Saucier (1962) presented one of the earliest studies describing the nature and distribution of sites in the changing Mississippi Delta. That report focused on the geomorphic development of the Pontchartrain Basin. In an effort to date geological formations, Saucier examined the distribution of prehistoric sites throughout the basin. Sites of known age were correlated with landforms, in order to develop a chronology of basin formation. Saucier (1962) primarily applied the works of Ford and Quimby (1945); Ford and Webb (1956); Kniffen (1936); and, McIntire (1954), for information concerning the geographic and temporal distribution of sites in the basin. Radiocarbon dates from sites and from peat samples also were used in the dating process.

Coastal Environments conducted two archeological investigations in the project area. The first of these occurred in 1977, when sherds were recovered. During the second survey in 1980, faunal, historic, and possible human remains were collected (Weinstein et al. 1977, 1980).

In 1982, New World Research, Inc., conducted archeological investigations along portions of the proposed Lake Pontchartrain and Vicinity Hurricane Protection project for the New Orleans District, Corps of Engineers. A cultural resources survey included both terrestrial survey and offshore magnetometer and sub-bottom inspection. Pedestrian survey failed to locate any previously unknown sites. Two isolated finds were noted; known sites 16 OR 12, 16 OR 28, and 16 JE 4 were relocated and updated (New World Research,

Inc., 1983:13). Offshore testing located a number of anomalies; several were recommended for consideration for further study.

Most recently, R. Christopher Goodwin & Associates, Inc., conducted Phase I of the cultural resources survey of the Bonnet Carre' Spillway (Yakubik et al. 1986). During that effort, intensive pedestrian survey of a high probability corridor adjacent to the Mississippi River was undertaken. The survey was augmented by systematic subsurface testing, and a magnetometer survey was conducted in order to locate a previously known cemetery. In addition, the contractor provided the New Orleans District with an assessment of the nature of archeological resources in the remainder of the Spillway. The purpose of the assessment was to predict the number and types of archeological sites that may exist within the Spillway, and to determine high and low probability areas (Yakubik et al. 1968:363).

Five archeological sites were located during these investigations. Two sites (16 SC 53 and 16 SC 54) were surface scatters of artifacts. A third site (16 SC 52) represented the partial foundation of Roseland Plantation sugar house. In addition, Kenner and Kugler cemeteries (16 OR 50 and 16 OR 51) were located (Yakubik et al. 1986:325-326). No further work was recommended for sites 16 SC 53, 16 SC 54, and 16 SC 52. The cemetery sites were considered significant, applying the National Register of Historic Places criteria A and D, because of their association with an important ethnic and cultural group, and because of their potential to yield significant data concerning the demography, health, nutrition, and mortuary practices of a single population (Yakubik et al. 1986:329-330).

Previously Documented Prehistoric Sites

Three previously identified prehistoric sites lie immediately outside of the lower boundary of the Bonnet Carre' Spillway, lakeside of Item 4B. Sites 16 SC 11 and 16 SC 12 are located on the shores of Lake Pontchartrain. Site 16 SC 10 lies to the south of the lake on the east bank of Bayou Trepagnier. All three sites consist almost entirely of *Rangia cuneata* shell middens with varying amounts of artifactual remains. Ceramic analyses have indicated that these sites were occupied during the Tchefuncte and Marksville periods.

Bayou Trepagnier (16 SC 10). The Bayou Trepagnier site is situated on the west bank of Bayou Trepagnier, approximately .9 miles southwest of Bayou Labranche at Lake Pontchartrain. The site, discovered during subsurface

dredging by the Shell Oil Company in 1951, consists of a buried midden composed of Rangia cuneata shells. Shell extended to a depth of approximately 13 feet below the surface. McIntire (1958) assigned the site to the Tchefuncte period on the basis of ceramic classification; Phillips (1970) subsequently assigned it to the Pontchartrain Basin phase of the Tchefuncte culture. In addition, ceramic remains provided evidence of a Marksville period component.

Bayou Labranche Mouth (16 SC 11). The Bayou Labranche Mouth site is located at the confluence of Bayou Labranche and Lake Pontchartrain, on the lower side of the Bonnet Carre' Spillway in an area of retreating shoreline. The site consists of an accumulation of wave-washed shell that forms a ridge and beach. Phillips (1970) used Saucier's (1962) ceramic collection from this site to create the Labranche phase, an early Marksville occupation. Weinstein et al. (1977, 1980) collected additional sherds from this site, and they reanalyzed Saucier's data. They noted that the ceramic paste of all of the sherds was more consolidated and less chalky than is usual in early Marksville plainware. However, they suggested that the great distance between the Labranche phase and the Marksville phase core area could account for the difference in ceramic tradition (Weinstein et al. 1977). A 1980 survey of the site collected faunal and possible human remains, sandstone lithics, and historic glass and ceramics (Weinstein et al. 1980). The historic remains indicate that a camp or hunter's cabin may have been located at the site during the nineteenth and early twentieth centuries. Since this site consists of a shell scatter along the Lake Pontchartrain Shoreline, it is threatened by erosion. The site was relocated during these investigations and site update documentation completed.

Bayou Labranche (16 SC 12). The Bayou Labranche site is a small buried shell midden located on Bayou Labranche, approximately .25 miles upstream from the confluence of the bayou and Lake Pontchartrain. The site was discovered during 1951 dredging operations in Bayou Labranche. Rangia cuneata shell and several sherds originally were uncovered. Subsequent boring at the site determined that shell extended to an approximate depth of ten feet. No collection was made at the time of initial discovery; heavy undergrowth on the spoil bank prevented collection during a 1976 cultural resources survey by Coastal Environments, Inc. (Weinstein et al. 1980). It is thought that this site, like others in the area, contains both Tchefuncte and Marksville components (Weinstein et al. 1980). The site was relocated during these investigations, and update documentation was undertaken. Generally, the site was determined to be in a relatively stable state of preservation.

Previously Documented Historic Sites

A number of historic sites and historic standing structures dating from the eighteenth and nineteenth centuries are located in the vicinity of the Bonnet Carre' project study area [e.g., Destrehan Plantation (16 SC 18), Little Red Church (16 SC 23), and Ormond Plantation (16 SC 24)]. Only one historic site, the Schloesser Cemetery Site (16 SJB 3), is located near the shores of Lake Pontchartrain. As noted above, five other sites located during the Goodwin & Associates, Inc. survey of 1986 are outside the present study area but within the boundaries of the Bonnet Carre' Spillway. They are: 16 SC 50, 16 SC 51, 16 SC 52, 16 SC 53, and 16 SC 54.

Schloesser Cemetery (16 SJB 3). The Schloesser Cemetery is located approximately 2.5 miles northwest of the Spillway along Lake Pontchartrain, and 50 feet west of the Illinois Central Railroad tracks at Freniere. Historic maps show that houses were located at the site during the nineteenth century. The earliest graves at the site date from the 1830s. Early township surveys indicate that the shell bank on which the site was located was known as "Freniere Ridge" (State Site Files). In 1957, Sherwood Gagliano and Roger Saucier made a small surface collection at the site; historic artifacts and Pontchartrain Check-Stamped ceramic sherds were recovered.

Prehistoric Background

The following review of the prehistoric cultural sequence presents a general outline that is applicable to cultural resources of the region containing the Bonnet Carre' Spillway. As noted above, prehistoric sites in the vicinity of the Spillway are concentrated along the shoreline of Lake Pontchartrain, and not in the riverine reach along the natural levee. However, as is discussed in the closing paragraphs of this chapter, contact period villages were located close to the river in the vicinity of the study area. Two major themes have characterized research into the prehistory of this region: investigation of time-space systematics of archeological cultures, and relationships between culture history and geomorphic processes.

Ecological factors appear to be a major factor influencing settlement patterns in and around the Lake Pontchartrain Basin. New World Research, Inc. (1983) have suggested a settlement model directly linked to the movement of brackish marshes and availability of *Rangia cuneata* clams. Marshes are formed during the development of the delta system

where the fresh water encroaches on saline environments, and again when the river abandons its course and the delta begins to deteriorate by subsidence and erosion. Noting that the apparent abandonment of prehistoric sites around 100 B.C. corresponded to the growth of the St. Bernard delta system and an associated influx of freshwater into the lake, New World Research, Inc. (1983) hypothesized an associated reduction in Rangia. This may have resulted in a movement of Tchefuncte and emerging Marksville peoples south and southeast, into the expanding delta system. With the retreat of the delta system, people again moved back into the area of initial delta growth. Renewed habitation would have coincided with renewed Rangia resources. Alternatively, there may have been a shift in subsistence pattern.

The earliest expected prehistoric sites in the region surrounding the Bonnet Carre' Spillway are associated with the Poverty Point and Tchefuncte cultures. The Bayou Jasmine site, an earth and shell midden located at the west end of Lake Pontchartrain, indicates Poverty Point and Tchefuncte period occupations. This phase is characterized by bone points and tools and Poverty Point objects. Collections from the site subsequently were made by a number of investigators; prehistoric ceramics indicate Tchefuncte and Poverty Point period occupations. Radiocarbon dates establish the Bayou Jasmine phase as being older (ca. 1750 B.C.) than previously dated Poverty Point sites. The Bayou Jasmine phase is suggested as a separate phase of the Poverty Point horizon (Gagliano and Saucier 1963). Although the Bayou Jasmine site has been excavated, no detailed report on its archeological setting and content has been produced.

During the Tchefuncte period, lifeways characteristic of the earlier Archaic period (hunting, fishing, and gathering) apparently persisted in southern Louisiana (ca. 500 B.C.-A.D. 100). However, during the Tchefuncte period, pottery became important in prehistoric Louisiana. Increasing amounts of pottery with rocker stamped decoration and tetrapodal supports were made. Tchefuncte pottery apparently derived from the earlier ceramic complexes at Stallings Island, Georgia; Orange in North Florida; and, from the Poverty Point culture. Ford (1969:193) speculated that commonalities in ceramics across the Gulf South states during this period were caused by the breakdown of ethnic barriers due to the powerful influence of the arrival of maize (corn) agriculture.

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

Ellis, Delhi, Motley, Pontchartrain, Macon, and Epps. Over fifty shell middens and a number of conical mound sites of the Tchefuncte culture are known from the coastal area of south Louisiana (Gagliano et al. 1979). Generally, these occur in the Lake Pontchartrain Basin and on the chenier plain around Grand Lake.

Work by Ford and Quimby (1945) characterized the Pontchartrain variant of Tchefuncte. This variant has been summarized further by Ford (1969), and by Phillips (1970). Pontchartrain sites are characterized by the presence of Tchefuncte Plain var. Mandeville, Tchefuncte Incised var. Sanders, and Tchefuncte Stamped var. Tchefuncte (Gagliano 1967). Sites appear to be associated primarily with the margins of Pleistocene terraces, relict beaches, and with distributary natural levees in association with swamps and marshes. Subsistence remains indicate an emphasis on Rangia clam utilization.

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. They were thought to have entered the Southeast from Mexico. The presence of rocker stamped pottery, burial mounds, and of some other individual traits, also are similar to the Hopewellian development (500 B.C. to 300 A.D.).

The subsequent Marksville period (100 B.C. to 300 A.D.) to a large degree is a localized hybrid manifestation of the Hopewellian culture climax that preceded it in the Midwest. The type site is located at Marksville, 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. The economic base of the Marksville culture seems to have been a further modification of the Poverty Point-Tchefuncte continuum, albeit prior emphasis on the importance of hunting, fishing, and gathering aspects of subsistence in relation to agriculture may have been overstated. 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, particularly elaborately decorated ceramics, were manufactured especially for inclusion in burials.

Marksville ceramics were well-made, with decorations that include U-stamped incised lines, zoned dentate stamping, zoned rocker stamping (both plain and dentate), the raptorial bird motif, and flower-like designs. The cross-hatched rim

is particularly characteristic of Marksville pottery, and may relate this complex to other early cultural climaxes in the Circum-Caribbean are. Plain utilitarian wares also were produced. Bracelets, celts, and perforated pearl beads have been recovered from Marksville contexts.

During the early part of the Marksville period, salinity levels in Lake Pontchartrain dropped significantly due to an influx of freshwater. Correspondingly, Rangia populations were affected and may have moved south along the St. Bernard delta. As noted above, New World Research Inc. (1983) suggested that evidence of only limited, small Marksville populations in the Pontchartrain Basin may be due to this decrease in the availability of Rangia clams.

The next cultural period identified for South Louisiana is the Troyville or Baytown period (300-700 A.D.). Within the Pontchartrain Basin, prehistoric populations are more evident around the beginning of the Troyville period. This transitional period followed the decline of the Hopewellian Marksville culture, and it is poorly understood. 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 included shell hoes and grinding stones. Within the Pontchartrain basin, however, the basic pattern of hunting-gathering-fishing continued.

The subsequent Coles Creek period (700-1200 A.D.) 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 Mississippi tradition, and its emphasis on temple mound and plaza construction suggests Mesoamerican influence. 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 still were 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.

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 plain wares, such as Anna Burnished Plain and Addis Plain, were well-made. Diagnostic Plaquemine projectile points are small and stemmed with incurved sides.

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 shell tempered pottery. A distinctive mortuary cult or complex, known 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.

During the contact period, a number of groups including the Acolapissa, Pascagoula, Quinipissa, and Washa were referred to as "wandering tribes" by Iberville. Although locational instability probably predated the arrival of Europeans, the causes of a complex series of short-distance population movements are unknown. Transient alliances were common, and at times two or more ethnically distinguishable groups occupied a single settlement (Davis 1984). Raiding and warfare also were observed by early European explorers and settlers (Giardino 1984).

In 1682, LaSalle recorded the existence of a Quinipissa village beside the Mississippi River, probably in the area of present day Good Hope and Destrehan. In 1700, Iberville and Sauvole reported that the village, consisting of seven or eight cabins located on a portage from Lake Pontchartrain to the Mississippi River west of modern New Orleans, was abandoned. The Colapissa Indians may have been the same group as the Quinipissa; after about 1718, they were living in the area of LaPlace. These groups probably were agriculturalists related to more sedentary Muskhogean peoples

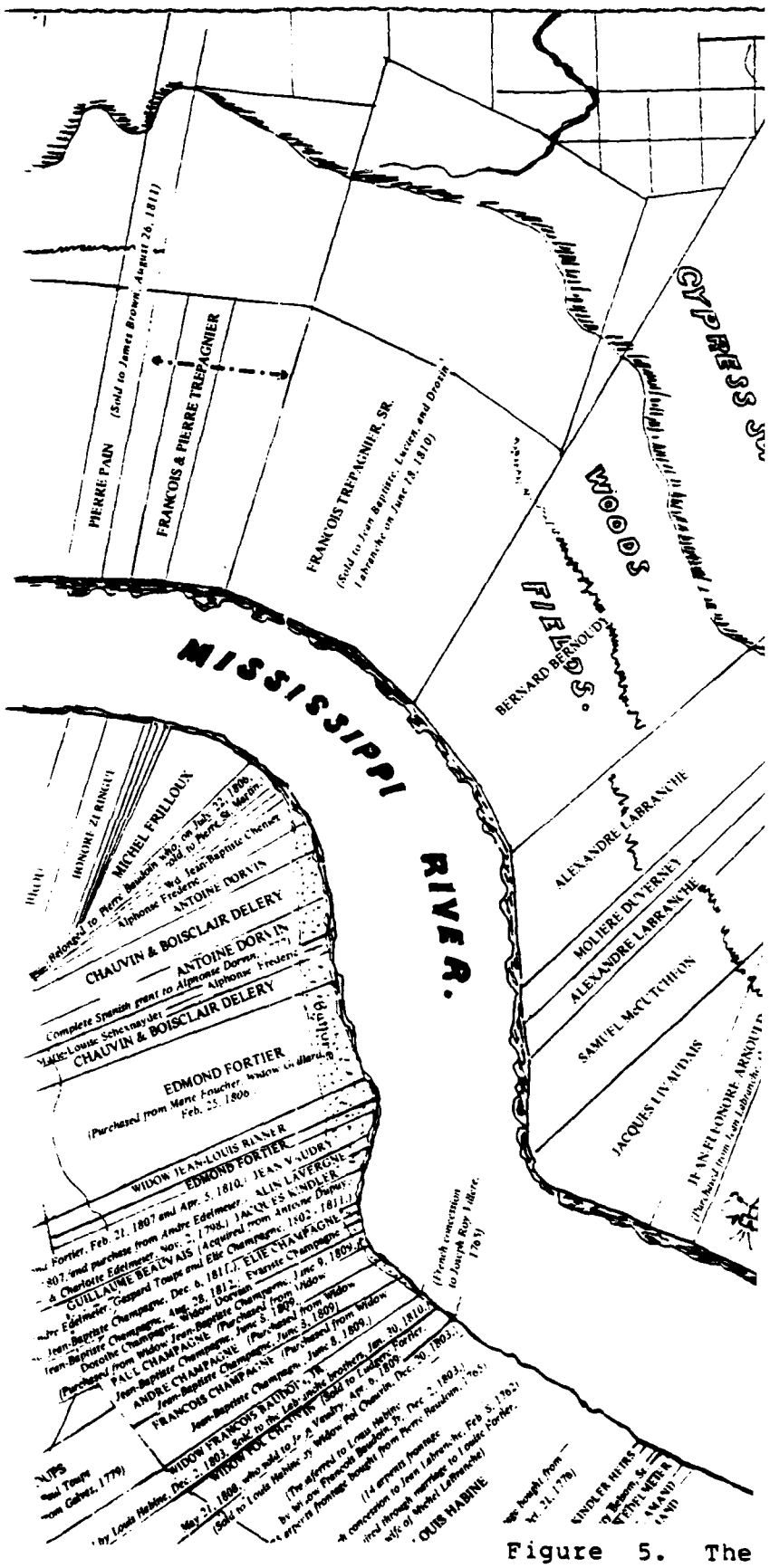
residing farther east.

Historic Background

Introduction

The fertile alluvial lands along the Mississippi River in the area of the Bonnet Carre' Spillway were settled for cultivation as early as 1730. The general area that became St. Charles Parish was known as "La Cote des Allemands," the German Coast, because the first settlers were German-speaking people from the Palatinate, Alsace, and Lorraine regions of the Rhine Valley. During the colonial period, German and French families owned large tracts of land running perpendicular to the Mississippi River. Some of the colonial tracts reached Lake Pontchartrain and included portions of the study area. Shortly after the Louisiana Purchase, the position of the lake and the winding river in St. Charles Parish caused title problems for claimants to the U.S. Government for properties on this portion of the east bank. Some tracts overlapped in the backacreage near Lake Pontchartrain (Figure 5). Indeed, some of the tracts that extend to the lakeshore in the study area have frontage property on the river as far away as the present towns of St. Rose and Montz.

The following discussion provides a brief historical overview, and then reviews land tenure in the Spillway area. Archival research was conducted in St. Charles Parish, in New Orleans, and in Baton Rouge. At the St. Charles Parish Courthouse in Hahnville, primary data collected included conveyance and mortgage acts, and survey plats. Additional published information was collected at the St. Charles Parish Libraries in Luling, Hahnville, and Destrehan. In New Orleans, archival sources such as historical maps, sugar and rice reports, land claims from the American State papers, etc., and published secondary sources were examined at the Louisiana Collection, the Special Collections, and at the U. S. Government Documents Vault at the Howard Tilton Memorial Library, Tulane University, and at the New Orleans Public Library. Additional historical data were obtained from Real Estate Division, New Orleans District, U. S. Army Corps of Engineers. In Baton Rouge, the Office of Public Works; the Department of Transportation and Development; the Department of Culture, Recreation, and Tourism, Division of Archaeology; and the Department of Natural Resources, Division of State Lands, all were venues of research. The Illinois Central Gulf Railroad archives in Chicago also was consulted.



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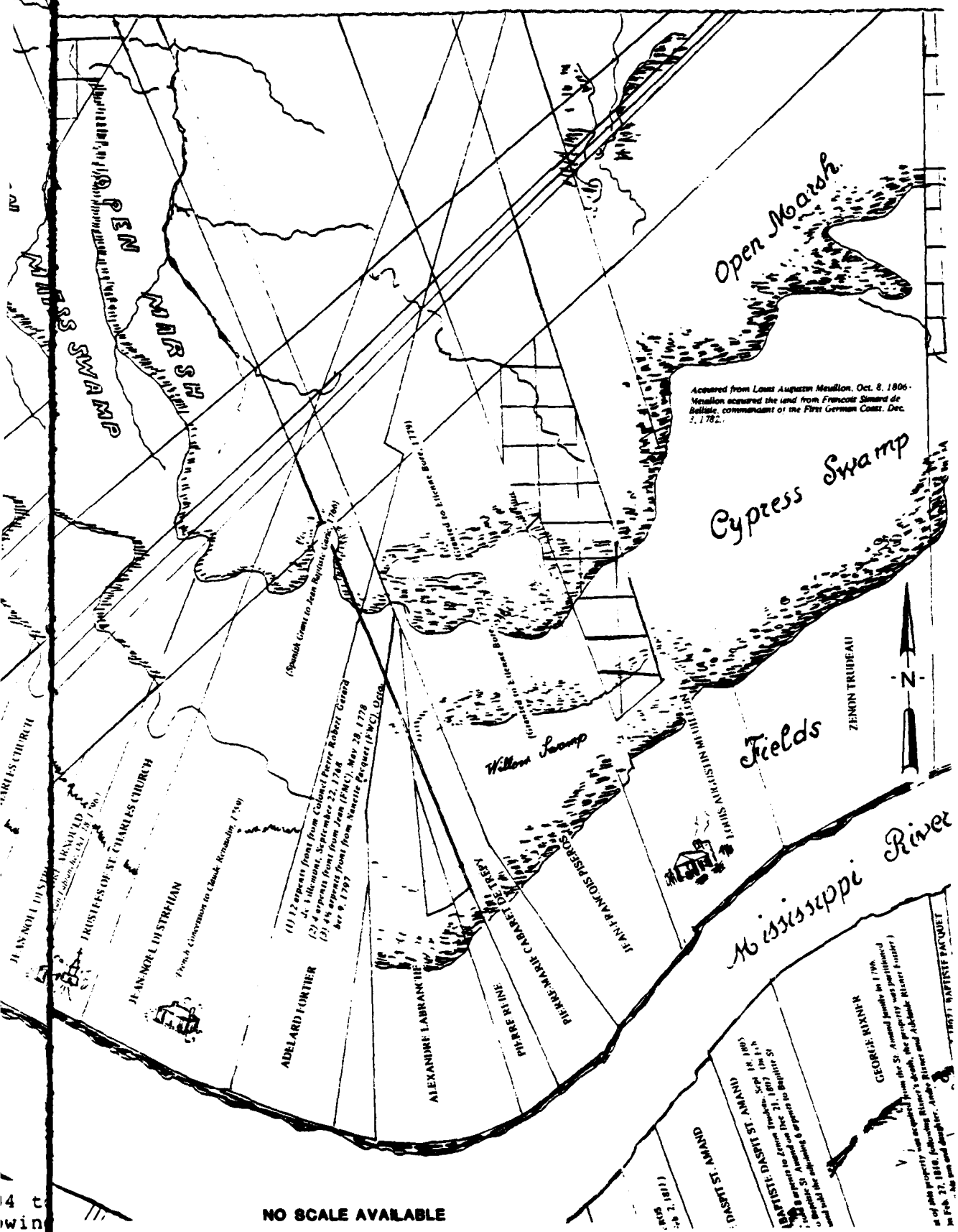

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The French Colonial Period

The first successful claim to the Lower Mississippi Valley by a colonial European power was made by LaSalle for France in 1673. In February of 1699, Pierre Le Moyne, Sieur d'Iberville, a Canadian nobleman, landed off Ship Island in Mobile Bay. In the spring of that year, Iberville entered the mouth of the Mississippi River, and reclaimed the river and its valley in the name of Louis XV, King of France. Iberville realized then that the future of the first colonies in the Lower Mississippi Valley would depend on the success of cultivating the delta. Unfortunately, "the first settlers did not want to work [because] the people expected to find gold, silver, and pearls as the Spaniards had done in Mexico" (Deiler 1975:9). Antoine Crozat established the first trade and concession patent in the Lower Mississippi Valley for the French crown in 1712. Crozat also expected immediate mercantile profits from mining and trading. Instead of bringing homesteaders and slaves, the first settlers to the Gulf Coast were mostly ex-convicts, prostitutes, and opportunists.

By 1717, Crozat's failed venture was replaced by a patent for the Company of the West. The lack of supplies and money, and especially mismanagement by the Company of the West, did little to improve conditions at the first settlements. In 1719, Scotsman John Law took over the Company of the West and established another trade and concession contract in the name of the Company of the Indies. It was under Law's patent that the first successful agriculture was established on delta land concessions along the Mississippi River. Law's agreement with the Duc d'Orleans, the Regent for Louis XV, was to bring 3,000 white settlers and 6,000 black slaves to Louisiana to promote agriculture and trade. Law accomplished some of these aims by attracting thousands of Rhine Valley refugees who sought peace and prosperity in the New World. Law's company brought German settlers first to Arkansas, and eventually to the study area above New Orleans.

La Cote des Allemands. Attracted by the incredible advertisements propagated by Law's Company of the West, thousands of German speaking people decided to leave their war-torn Rhine Valley homeland and settle in the French territories across the Atlantic. Deiler (1975) reprinted excerpts from one of Law's pamphlets distributed in the Rhineland in 1720. The following passage from that pamphlet accentuates the type of propaganda that attracted Rhinelanders who were desperate for a new start to Louisiana:

> The land is filled with gold, silver, copper, and lead mines. If one wishes to

> hunt for mines, he need only go into the country of the Natchitoches. There we will surely draw pieces of silver mines out of the earth. After these mines we will hunt for herbs and plants for the apothecaries. The savages will make them known to us. Soon we shall find healing remedies for the most dangerous wounds, yes, also, so they say, infallible ones for the fruits of love (Deiler 1975:13).

Between 1719 and 1721, at least 9,000 German settlers attempted to embark from French ports for the Gulf Coast. Out of this number, Deiler calculated that only 6,000 actually sailed across the Atlantic, and only 2,000 of these survived to reach the colonies (Deiler 1975:17).

The very first Germans to settle along the Mississippi River above New Orleans were families who arrived aboard Les Deux Freres at Biloxi in 1719. Unlike the majority of Germans who eventually settled the German Coast after the failure of Law's Arkansas concession in 1722, these first German families were not engagees (Deiler 1975:50,51). An unsigned addenda attached to the census of 1721 entitled, Census of inhabitants and concessionaires of New Orleans and surrounding places, translated by Dr. Jay K. Kitchy (1930), describes the first German Coast settlements:

> The German families which may comprise about 330 persons of all sexes and ages are ; twelve leagues above New Orleans to the left on going up the river on a very good soil where formerly there were wild fields which are easy to clear. The Germans are divided into three "bourgs," the land of which is of very great extent, has never been flooded. As these people are very industrious it is hoped that this year they will have an abundant harvest and that they will succeed in coming years in making good settlements in the colony (Beer 1930:224,225).

The most reliable descriptions of the first German villages were compiled in two census taken in 1724. One was entitled Census of the German Village Hoffen dated November 12, 1724; the other, Census of inhabitants from New Orleans to Ouacha or the German Village, was dated December 20, 1724. Both describe two German villages located approximately ten leagues (thirty miles) above New Orleans on the right bank of the Mississippi, one and one-half miles inland from the river. The first German village was settled by twenty-one

families, apparently those who were aboard Les Deux Freres (Deiler 1975). Both it and a second village were destroyed by the great hurricane of September, 1721.

By 1722, Law's Arkansas River settlement, like the disastrous initial beach villages at Biloxi and Mobile Bay, had failed. The description in the 1721 census addenda hints of hard conditions at the Arkansas settlement:

> The concession of Mr. Law is parcelled out in the Arkansas country where there are eighty whites who are working there.... The land of the Arkansas country is good although there was a very small harvest last year (Beer 1930:223-224).

There were more than eighty white settlers in Arkansas. It is likely that the "eighty whites" in the census did not include engagees or children. By 1722, the Arkansas settlement was abandoned, and more than 170 of these refugees arrived in New Orleans (Deiler 1975:38). A financially shrewd Governor Bienville convinced these hardy survivors to settle the fertile lands above the city instead of returning to Europe. The German engagees from Arkansas settled along the natural high levees on the right bank of the Mississippi River, establishing the three bourgs also described in the 1724 census: Hoffen, Mariental, and Augsburg. The two original German coast settlements, known together as "Karlstein," had been abandoned.

Census data from the 1720s and 1730s indicate that most of the sixty households of the German Coast settlements quickly adapted to the environment. The 1724 census noted:

> All these German families in the present census raise large quantities of beans and mallows, and do much gardening, which adds to their provisions and enables them to fatten their animals, of which they raise many. They also work to build levees in front of their places.... their small frontage on the river brings them so close together that they look like villages.... They would consider themselves very happy to get one or two negroes, according to the land they have, and we would soon find them to be overseers.... They could also feed their negroes very well on account of the great quantity of vegetables they raise. They could also sell a great deal to the large planters, and these, assured of a regular supply, could give more attention

> to the raising of indigo, the cutting of timber, and to other things suitable for exportation to France (Deiler 1975:90-91).

By 1731, the small German farmsteads included a chapel and cemetery. Deiler reminds us of the effort that was required from these pioneers to survive:

> The census of 1731 shows that, ten years after the arrival of the Germans, there were no horses nor oxen to draw them.... No draught animals, no plows, no cows, no wagons to haul the products.... The only agricultural implements furnished were pickaxe, hoe, and spade (Deiler 1975:58).

Despite the climate, flooding, disease, and hostile Native Americans, the German Coast settlements not only survived but prospered. By 1731, the settlement had expanded to the left bank of the river (Maduell 1972:146-147; Deiler 1975:7677), and the initial "Red Church" of St. Charles Borromeo was established in present Destrehan in 1740. The left bank was considered dangerous because of raiding Native Americans. As a result, a small fort with one gun en barbette was placed on the left or east bank (Figure 6). Pittman, writing in 1770, described both the church and the fort:

> At the German settlements, on the west side of the river, is a church served by the Capuchins; and a small stockaded front of the center of the settlements on the east side of the river; an officer and twelve soldiers are kept there for the police of that quarter. This post was originally erected as an asylum for the inhabitants who first settled there, and were much molested by the Choctaws and Chickasaws, who in alliance carried on a war against the settlers on the Mississippi (Pittman 1973:22,23, sic throughout).

Through the remainder of the French colonial period, additional German, French, and Acadian immigrants settled along what was to become known as the Cote d'or, or Golden Coast.

The produce from the fertile Golden Coast was very important to the entire economy of the New Orleans colony. Jeffreys, writing at the end of the French Colonial period, described the economy of the German colonists:

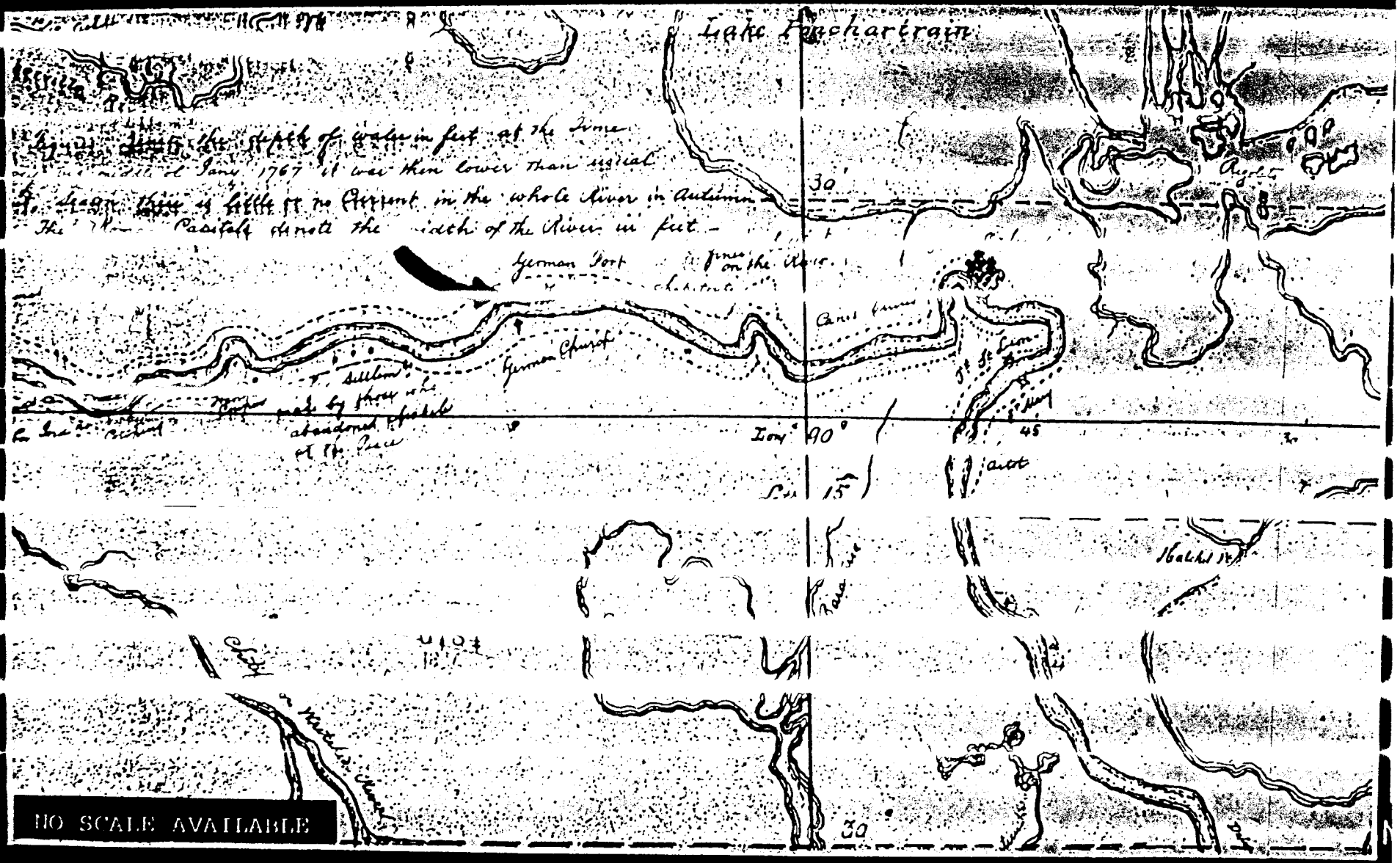


Figure 6. Excerpt from a 1767 map of Louisiana, showing the German Fort (Map Division, Library of Congress).

> Ten leagues before the stream reaches New Orleans is the settlement of the Germans, who after the disgrace of Mr. Law, abandoned his plantation at Arkansas, and obtained leave of the council to settle in this country. Here, by means of their application and industry, they have got extremely well cultivated plantations, and are purveyors of the capital, whether they bring, weekly, cabbages, salads, fruits, greens, and pulse of all sorts, as well as vast quantities of wildfowl, salt pork, and many excellent sorts of fish. They load their vessels on the Friday evening, towards sunset, and then placing themselves two together in a pirogue, to be carried down by the current of the river, without ever using their oars, arrive early on Saturday evening at New Orleans, where they hold their market, whilst the morning lasts, along the bank of the river, selling their commodities for ready money. After this is done, and when they have provided themselves with what necessities they want, they embark again on their return, rowing their pirogues up the river against the stream and reach their plantations in the evening with provisions, or the money arising from the produce of their labors (*Jeffreys 1761:147*, sic throughout).

Figure 7 shows the German Coast settlements on both banks of the Mississippi River in 1760. Through the remainder of the French regime in Louisiana, the colonists continued to establish an agricultural base while the political atmosphere in France became more desperate. Although the Louisiana territory was politically strategic to the French in their war with England, the French could not afford the large, unprofitable colony.

The news that France ceded the Louisiana territory to Spain in the secret Treaty of Fountainbleau in 1762 reached the colony in 1764. The Louisiana colonists, especially the large plantation owners above New Orleans, became militant in their attempts to keep the colony under the dominion of France. When Don Antonio Ulloa arrived in 1766, he did so with little Spanish military support. Ulloa was forced to withdraw from the Louisiana colony by Lafreniere and a local militia comprised of Germans, French, and Acadians (Gayarre 1903:Vol.II,124-243).

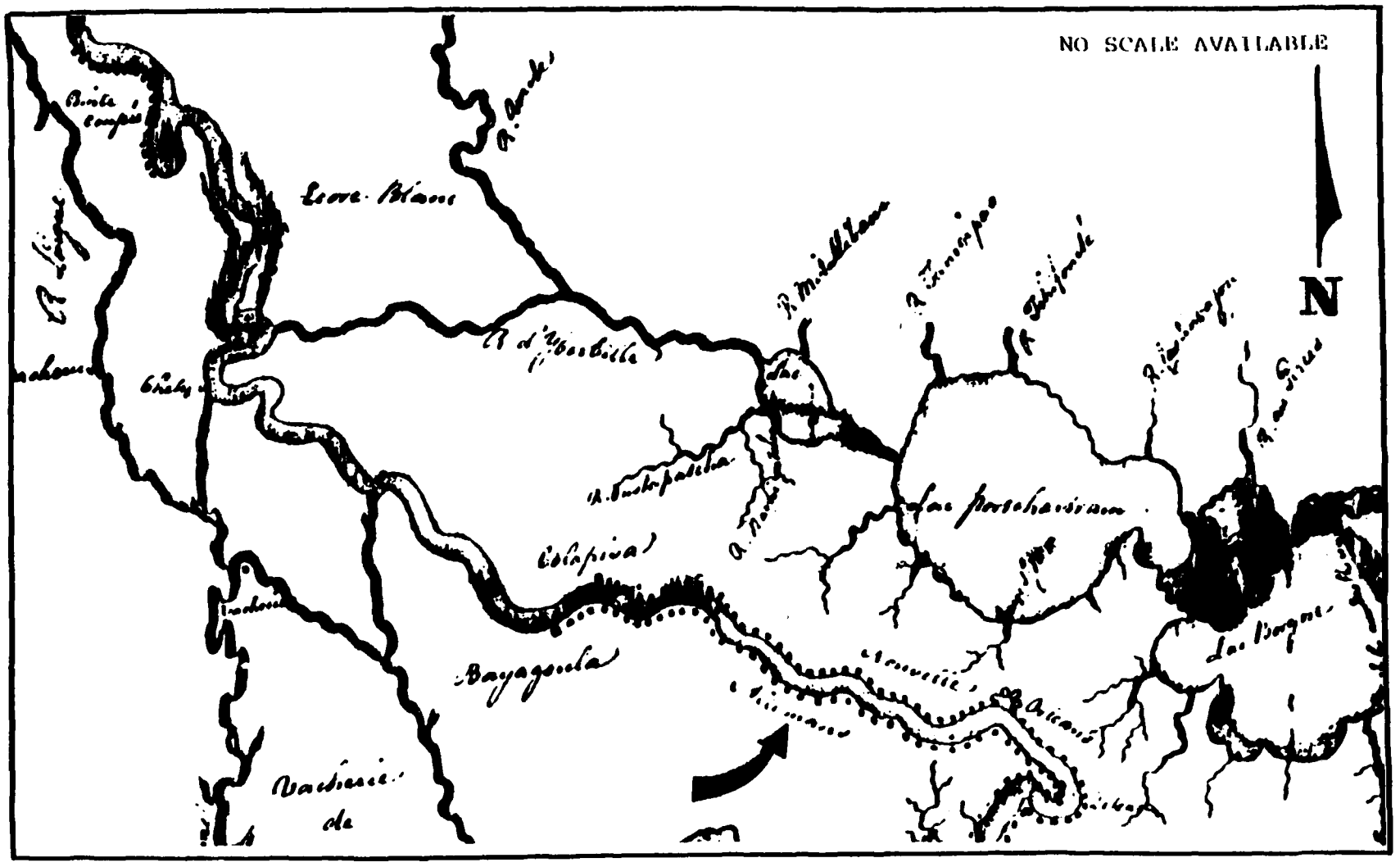


Figure 7. Excerpt from a 1760 map of Louisiana, showing settlement on both banks of the river (Map Division, Library of Congress).

In August, 1769, Don Alejandro O'Reilly arrived from Havana with a 21 ship flotilla carrying 2,654 Spanish soldiers. The arrival of O'Reilly marked the beginning of the Spanish regime in Louisiana. To show his strength, he immediately demanded the surrender of the revolutionary leaders. O'Reilly invited Lafreniere and his co-conspirators to a reception where they were promptly arrested. Lafreniere, Jean-Baptiste Noyen, Pierre Caresse, Pierre Marquis, and Joseph Milhet were executed by firing squad on October 25, 1769, at the military barracks in New Orleans (Gayarre 1903:Vol. II,314-343).

The Spanish Colonial Period

The arrival of the Spanish did little to change the agrarian society along the Mississippi River above and below New Orleans. In general, the economic and demographic patterns initiated during the French colonial period continued to develop under Spanish rule. However, commodities and trade patterns changed. The increasing failure of indigo was one development that changed agricultural patterns in the area during the late French and early Spanish periods. However, rice and vegetable agriculture continued to dominate the German Coast agriculture until the end of the Spanish occupation, when smaller landholders began consolidating with others to form large sugarcane plantations.

During the Spanish period, the port of New Orleans grew from the legal and illegal trade with Americans and English from the northern territories, and continued to be the major port of call for immigrant and slave ships. The German Coast was a choice destination for many of new arrivals. The 1770 census accounted for a drastic increase in the number of negro slaves and French landholders along the tracts of the lower German Coast of St. Charles Parish. The ratio of black slaves to whites (591 to 327, respectively) indicates that there were affluent planters along both sides of the river during this period. The 1783 census showed dramatic population increases for slaves, whites, and Free People of Color.

The 1770 census also reported that corn, beans, and rice continued to be the main cultigens raised in this stretch of the Mississippi River. C. C. Robins described rice agriculture on the German Coast during the Spanish period:

> The rice plantations which are operated mainly by the Germans, whom I mentioned earlier, along with a few others are watered in the same way by trenches cut in

> the levee, and they also can only be watered during the period of flood. The river spills into the fields but never drains them. In lower Egypt, the Egyptians water their fields during the flooding of the Nile, and a lack of flooding means failure in the harvest. Just so in Louisiana, a failure of the river to flood prevents the saw mills from turning and the rice fields from being flooded. Rice cultivation could be much extended in Louisiana (Robin 1966:112).

By the turn of the nineteenth century, the discovery that sugar production on a large scale could be successfully grown in southern Louisiana, and could compete with other foreign markets, changed the agriculture in St. Charles Parish. The establishment of the classic Mississippi River plantation culture, where numerous slaves worked large tracts of land, was fully evident in St. Charles Parish by the time of the Louisiana Purchase (deLaussat 1940).

The Antebellum Period

The new American Government was met with little opposition by the planters of the German Coast. Pierre St. Amant was appointed local representative for the region by Governor Claiborne. In 1807, the Louisiana Legislature passed an act dividing Orleans into nineteen parishes. The County of the German Coast was divided into St. John the Baptist and St. Charles Parishes. Americans immediately began to settle in St. Charles Parish, attracted to the opportunities offered by the new sugar industry. The alluvial soils along the river below Baton Rouge were well suited for cane cultivation. As early as 1792, it was realized that sugar cane was profitable on a large scale. The planters of St. Charles Parish invested in large scale sugar plantation agriculture, and by 1860, 56 per cent of the parish land was growing sugarcane. The growth of the sugarcane plantation economy resulted in the growth of the slave population in the Parish. In 1860, St. Charles Parish had 3,719 slaves, compared to 900 whites, and 200 Free People of Color (Pritchard 1938:1114).

The Civil War and Aftermath

The Civil War's destruction of the slave based agricultural economy in St. Charles Parish did not end without conflict or strife. According to Yoes (1973), after Federal troops captured Boutte Station and Bayou des

Allemands in 1862, militia regiments from St. Charles, Rapides, and Terrebonne parishes, and a battalion of Texas Rangers under the command of General John C. Pratt, recaptured Boutte Station. Confederate Major James A. McWaters of the Rapides militia proceeded to advance to the Hahnville courthouse. At the courthouse, Federal troops forced their retreat (Yoes 1973:83-85).

The early surrender of New Orleans and the surrounding parishes encouraged the recruitment of the large slave populace by the occupying Union forces. By the time the Louisiana Legislature ratified the abolition of slavery in 1864, many Blacks from St. Charles Parish already were enlisted in the Union Army (Yakubik et al. 1986).

After the war, a critical labor shortage encumbered the recovery of the sugar industry in the parish. Many former slaves sought freedom in the northern states. After the failure of bringing Chinese labor to the sugar parishes of Louisiana, the Louisiana Immigration and Homestead Company was established in 1870 to attract European agricultural laborers (Bouchereau 1871; Giordano 1978). Among this foreign labor pool, the Italian immigrant farmer proved to be a most effective worker (Scarpaci 1972).

Despite the improved labor conditions, the recovery of the sugar industry was slow. The panic of 1873 further depressed sugar prices; coupled with inundation of the cane fields, and the lack of capital to finance new ventures, the sugar cane industry was in need of reorganization. The "Central Factory System" was initiated, whereby private sugar mills would refine the cane for the surrounding planters. This type of cooperative agriculture increased profits on the refining end, and supported the labor costs.

Twentieth Century Development in the Study Area

The agriculture in St. Charles Parish slowly diversified towards the end of the nineteenth century. The once dominant sugar cane still was grown, but the production of rice, and truck farming produce increased. Lumbering became a major industry in St. Charles Parish towards the turn of the nineteenth century. Within the study area, logging companies such as the Lotham Cypress Company and the St. Bernard Cypress Company took advantage of The Timber Act of 1879, and cut large cypress stands during the first decades of the twentieth century. Although most of the cypress was depleted in the parish by 1918, lumbering still was active in the study area as late as 1927. Even after most of the east bank's agricultural properties in St. Charles Parish were replaced by industrial facilities after World War II, portions of the spillway study area lakeward of

Airline Highway remained forested.

Land Tenure in the Study Area

Legal claims for all tracts of land were ordered by the U. S. Government soon after the Louisiana Purchase. Proof of French or Spanish grants or proof of continued habitation or cultivation for ten years prior to 1803 was necessary to prove ownership. In the following discussion, land tenure history is reviewed for each of the major items in the study area, beginning with the colonial ownership.

Item 1 Property. The Item 1 property was part of the backacreage fields of the colonial Delhommer tracts. It formed part of Hermitage Plantation during the later antebellum period. In 1830, Judge Pierre Adolphe Rost married Louise Oldile Destrehan, consolidating the Delhommer (L.O. Destrehan's first husband was F.J. Delhommer), Destrehan, and Rost claims. In 1878, son Emile Rost acquired the 34 arpent front Hermitage Plantation, including the Item 1 study property. Rost retained the lower, sixteen arpent front parcel (Sections 13, 14, 48 & 49, T12S R7E; and Sections 46 & 47, T12S R8E) until 1906, when he sold it to his overseer, George Kugler (COB N, Folio 355, St. Charles Parish). Figure 2 shows the subdivided Kugler tracks that include the Item 1 study area in 1929. During the nineteenth century, this area may have been planted in sugar or rice, as was the case at Hermitage Plantation. It is more likely, however, that this area was unimproved fields.

Item 2 Property. Item 2 was part of the colonial Trepagnier tracts. Francois Pierre Trepagnier and sons were granted the original claim in 1812. The Trepagniers maintained a 25 arpent front sugar estate until the Civil War, when the plantation foreclosed. L. Sellers purchased the estate at a Sheriff's auction in 1868.

The land exchanged hands several times during the postbellum decades. Meyer Weil acquired the property in 1886 (COB J, Folio 6, St. Charles Parish). Weil and his brothers consolidated the 20 arpent upriver Roseland Plantation with their holdings to form Diamond Plantation. Eventually, Diamond Plantation was sold to Leon Godchaux in 1897 (COB K, Folio 402, St. Charles Parish), and remained a large sugar estate as Godchaux Sugars, Inc. until 1926.

Figure 2 shows the Item 2 property in 1929. The map notes the structures at the end of the Diamond Plantation canal (running from the residential complex along the river) as "flood gate," and "old pump" (see blowup insert). These irrigation structures might have been used by Godchaux for

sugarcane, but they more likely were used for rice irrigation in the early postbellum decades. From 1868 to 1888, successful rice crops were grown on this property, especially by Weil in the years 1885-1888 (Bouchereau 1868-1888).

Items 3, 4B,4C, 4D and 5 Properties. Most of the backacreage property in the middle of the spillway corridor was not claimed (Figure 8). The later owners of the original Labranche Brothers tract eventually claimed the property that extended to the lake including the Item 3 study area. John Baptiste, Drausin, and Lucien Labranche claimed 29 arpents front of the Mississippi with a depth that extended only 40 arpents. The Labranche's maintained this property as a sugar estate eventually called Good Hope plantation until the Civil War. The plantation was foreclosed in 1872, and it eventually was acquired at a Sheriff's auction by Bernard Tremoulet on September 5, 1876 (COB E, Folio 154, St. Charles Parish).

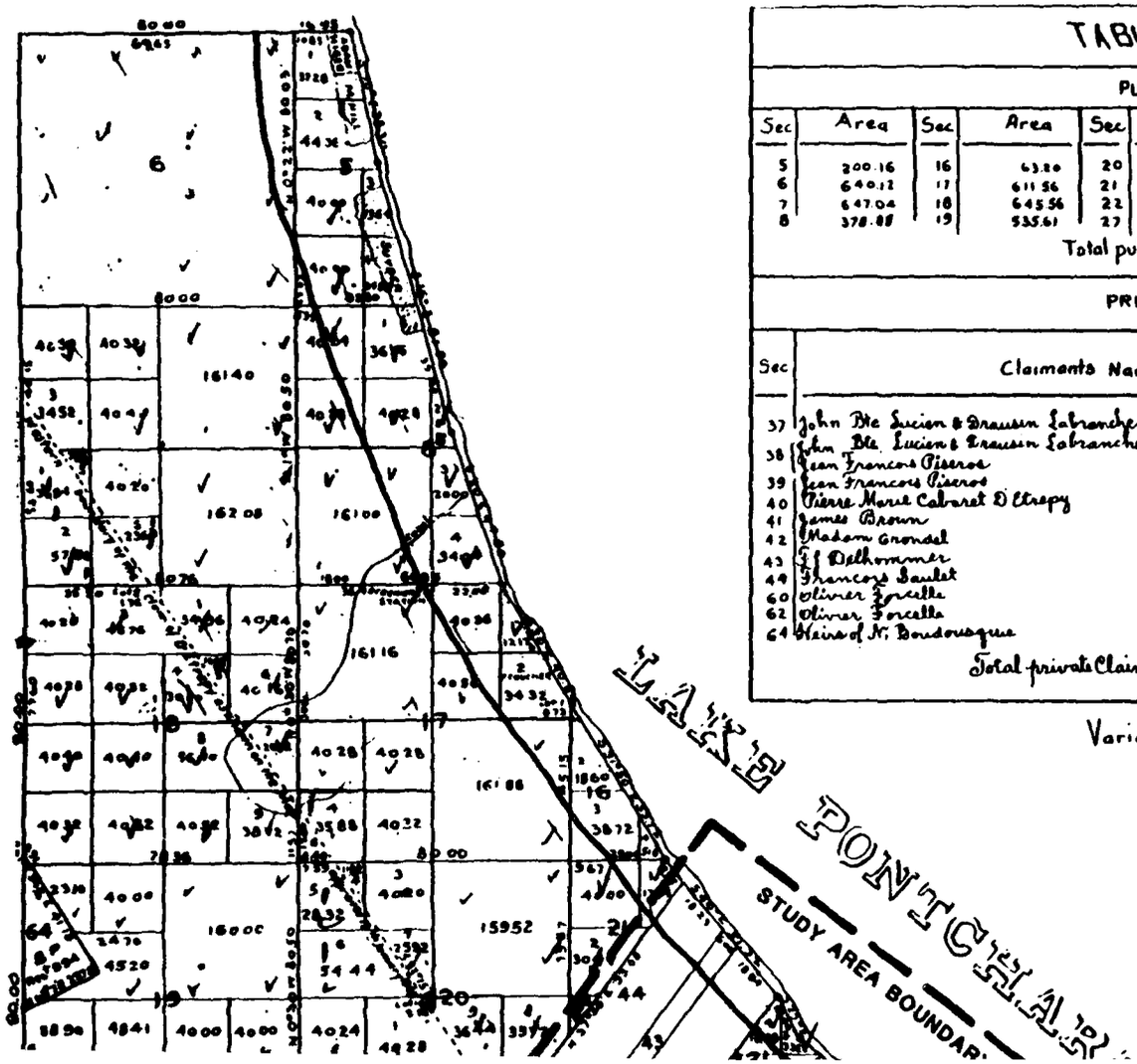
On August 3, 1876, Leon Sarpy purchased the 29 arpent front property from Bernard Temoulet including the wooded study item properties (COB E, Folio 174-7, St. Charles Parish). This sale measured the arpent depth for this property at 80, extending the original claim.

Leon Sarpy's heirs subdivided the Good Hope tracts after the judgement of Sarpy's succession in 1889. The Sarpy heirs sold and leased their holdings to various lumber companies between 1890 and 1926, including the Ruddock Cypress Company in 1891, The Prospect Planting Company in 1905, and the St. Bernard Cypress Company in 1913 (COB J, Folio 211; COB N, Folio 174; and COB Y, Folio 191, St. Charles Parish).

Eventually, Edward G. Swartz and the St. Bernard Cypress Company purchased most of the wooded study area property, including study Item 3. No record of any kind in the title abstracts for Section 27 of T11S R8E mention any camp or reference to "Tunity." The right-of-way easement by the Illinois Gulf Central Railroad also fails to include this settlement. Figure 2 shows (see blowup insert) the Tunity settlement extending from the railroad tracts, suggesting that Item 3 might have been a railroad camp. This could not be confirmed by the Illinois Gulf Central Railroad office in Chicago (Mr. Wallace, personal communications, 1987).

Henry L. Sarpy sold land to the Blythe Company in 1923 in Section 34 of T11S R8E (Items 4B & 4C), and in Section 27 of T12S R8E (Items 4D & 5) (COB W, Folio 124, St. Charles Parish). The Blythe Company was also a lumber corporation.

T. 11 S. R. 8 E. *South Eastern Dist.ct La. East of the Miss.i Rr.*



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PUBLIC LAND

Sec	Area	Sec	Area	Sec	Area	Sec	Area	Sec	Area
5	200.16	16	63.20	20	604.36	28	612.20	32	526.04
6	640.12	17	611.56	21	201.40	29	269.24	33	658.08
7	647.04	18	645.56	22	6.04	30	437.45	34	649.20
8	378.88	19	535.61	27	462.40	31	345.71	35	134.28

Total public Land 8628.53

PRIVATE CLAIMS.

Sec	Claimants Names	Report Name	Report Date	Report No	Area
37	John Bte Lucien & Drausin Labranche	Req.	1821	161	39.50
38	John Bte Lucien & Drausin Labranche	"	"	161	577.74
	Jean Francois Piseros	OB		88	
39	Jean Francois Piseros	"		88	487.65
40	Pierre Marie Cabaret D'Estrepy	"		3	271.92
41	James Brown	BP	Rect	2	0.12
42	Madam Grondel	Spanish	Filed		482.95
43	J. J. Delhommer	Req	1821	39	160.13
44	Francois Saulet	"	"	38	517.64
60	Olivier Forcelle	BP	Rect	940	88.80
62	Olivier Forcelle	"	"	938	156.53
64	Heirs of N. Boudousque	"	"	994	53.03

Total private Claims 2856.03 Total Township 11484.56 Acres

Variation by { Gillespie 7°45' & 7°47' East
Owen 8°30' East
Robinson 7°45' East }

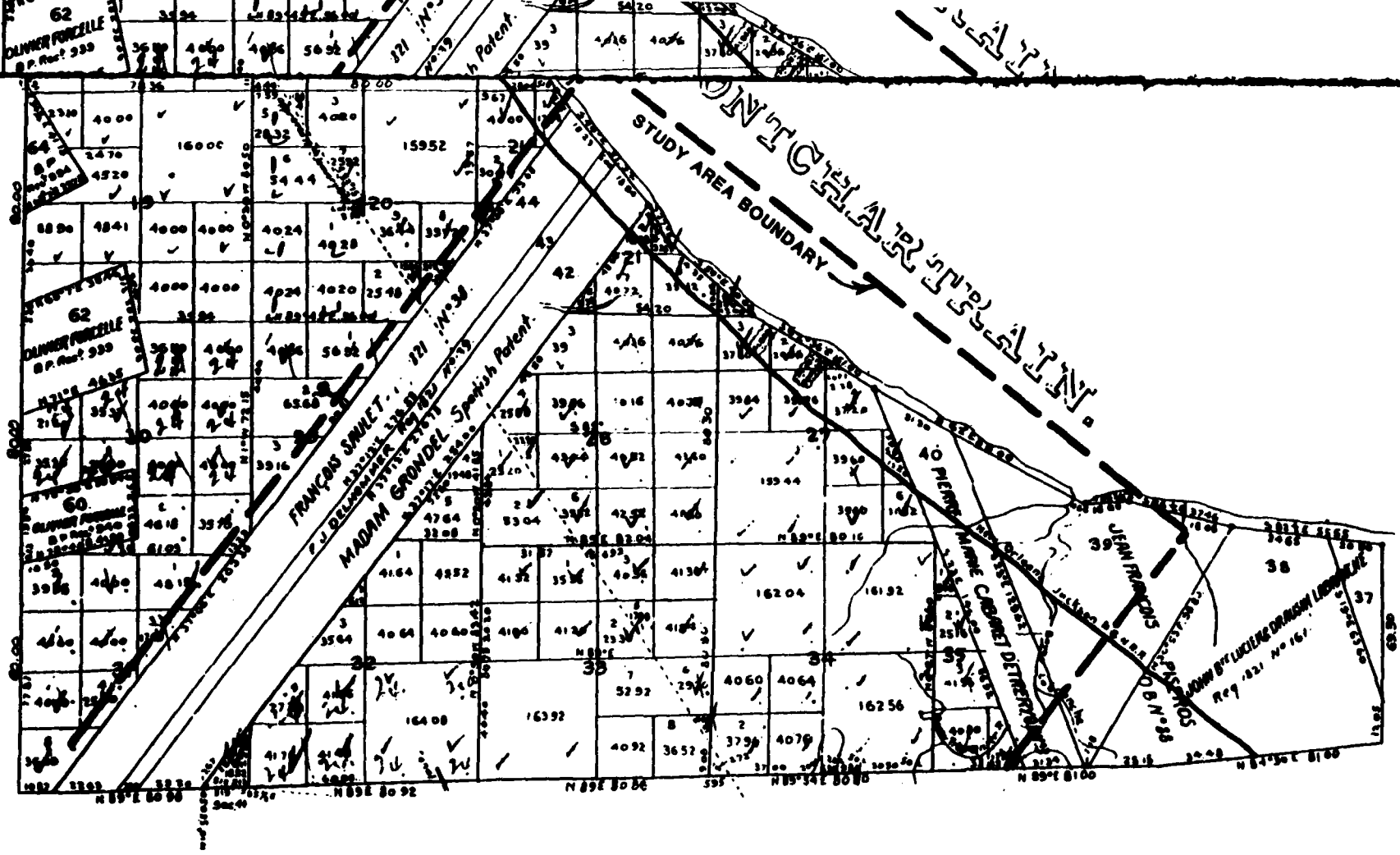


Figure 8. Excerpt from the United States land claims map for Township 11S Range 8E, showing landowners in the study area along Lake Pontchartrain.

The Blythe Company purchased the Goodhope Plantation subdivision lots A-G, containing approximately 2,652 acres.

Items 4A,6-10 Property. The western portions of the project area was acquired from the Sarpy heirs. William J. Guste and Alvin E. Johnson acquired the western lakeshore study area property including Sections 21, 22, 27, 28 (Item 4A), 33, and 34 of T11S, R8E for lumbering purposes. Portions of Items 7,8,9 and 10 are in these western lakeshore sections.

Items 6-10 also cover the eastern lakefront study area. Most of the original property owners of the eastern lakefront study area maintained frontage on the Mississippi River. As noted previously, the French land grant system granted tracts extending perpendicular from the river. With the curving Mississippi River below and Lake Pontchartrain above, some of the longer tracts converged with tracts extending from the river at a different angle. The tracts in Townships 11 and 12 East, Range 8 South were involved in numerous land claim conflicts during the early part of the nineteenth century.

Jean Francois Piseros and Francois Cabaret D'Etrepy owned tracts with frontages in Township 13S, Range 9E, that ended at the lake in the northeastern portion of the spillway study area in T12S, R8E. The Piseros and D'Etrepy tracts cover the easternmost lakeshore study areas of Items 6-10. Title research indicates that J. F. Piseros' conflicting claim was settled well after his death in 1813. His son, by the same name. received the final approval of claim from the U.S. Surveyor General in 1889. It reads:

> It appears that these conflicts were decided by the Register and Receiver of the U. S. Office, at New Orleans, acting as Commissioners under the 6th section of the Act of Congress, approved March 3rd, 1831; the said decision being dated August 30, 1887, June 28the, 1888, and April 29the, 1889 and the duplicates of same are on file among the aforesaid records of the late U. S. Survey General's office, La.
>
> It also appears that on July 19th, 1888, Certificates of location under Section 3 of the Act of Congress approved June 2nd, 1859, were issued by the U. S. Surveyor General in favor of the aforesaid claim of Jean Francois Piseros, for 623.80 acres, to cover loss, sustained by virtue of adverse decisions of the Register and Receivers of

the U. S. Land Office (Lowrie and Franklin 1834:Vol II,383).

The St. Charles land claim map (Figure 8) shows that a large portion of the lakefront study area was not petitioned by individuals as private claims. Half of the original 15 arpent front Piseros tract eventually was acquired by Louis Labranche by way of marriage to Piseros' daughter, Cephise Piseros, in 1815 (Original Acts of Labranche, Book 7, Folio 124, St. Charles Parish). Cephise's brother, Jean Francois Piseros (II) eventually sold his one half interest to Louis Labranche in 1831 (Book 6, Folio 352, St. Charles Parish Courthouse). Louis Labranche also acquired the adjacent fifteen arpent front downriver D'Etrepy tract from D'Etrepy's son, Alexandre Caberet in 1829 (Original Acts of J. M. Guiramond, Book 6, Folio 68, St. Charles Parish). On January 18, 1843, Louis Labranche died. His widow, Cephise Piseros Labranche, and her family maintained the 30 arpent front sugar plantation until after the Civil War.

The 30 arpent front Louis Labranche Plantation that extended to the easternmost lakefront study area was subdivided by Marcelite Montz, Widow of Lucien Cambre, on April 1, 1891 (COB I, Folio 501, St. Charles Parish). Prior to the Widow Cambre's acquisition of the plantation tract, it was bought and sold six times between 1866 and 1891. Felix Grima acquired the Louis Labranche Plantation from the Widow Piseros on November 24, 1866 (COB C, Folio 323, St. Charles Parish). He in turn sold it to Pedro and Maria Landreaux at a Sheriff Sale dated March 7, 1874 (COB D, Folio 525, St. Charles Parish). Norbert Louque bought the tract in 1877, only to sell it back to the Landreaux family later that year. Louque again bought the property, and the Landreaux's reacquired it in 1890, only to sell the property to the Widow Montz the same day (COB I, Folio 259; COB I, Folio 367, St. Charles Parish).

The Widow Montz subdivided the old 30 arpent front Louis Labranche Plantation tract to various owners after 1900. Many realty companies bought, sold and leased these subdivisions, like the North Louisiana Land Company in 1906, the Suburban Realty Company in 1909, the New Orleans Suburban Land Company in 1913, the Lakeside Live Stock Company in 1917, and the Lake Front Land Company in 1925 (COB N, Folio 440; COB O, Folio 428; COB R, Folio 278; COB T, Folio 283-7; COB X, Folio 535, St. Charles Parish).

Summary

Based on the land tenure data developed above, Item 1 was defined as a backacreage agricultural area used primarily

for the cultivation of sugarcane, rice, and/or truck farming produce. The Item 2 area was used for irrigation purposes. A flood gate and pump, located during the present study, were used at the Diamond Plantation for rice irrigation during the postbellum nineteenth century; it is possible that it also was operated during sugarcane cultivation in the early twentieth century. Item 3, the Tunity settlement, was an early twentieth century logging or railroad camp. There is no direct historical information that documents the nature of this settlement. Similarly, the natural drainages of Items 4 and 5 were owned by logging companies in the late nineteenth and early twentieth centuries. However, no historical evidence exists to suggest that these areas were used for logging. Bankline survey Items 6-10 also were located in wooded backswamp. The Item 6 Lake Pontchartrain shoreline was not used prior to the late nineteenth century when logging was in operation. No permanent settlements were located on the historic shoreline (which has since been eroded away by the intrusion of the lake waters), though it was used for occasional fishing and trapping activities. The I-10 right-of-way Item 7 canal was constructed after W. W. II, and is used as a fishing and trapping outlet to the lake. The Item 8 and 9 canals were dredged by the U. S. Army Corps of Engineers after 1929. The Item 10 canal was constructed between 1911 and 1929, possibly for logging purposes. The Tunity settlement was located lakeward of this canal.

CHAPTER IV

FIELD METHODS

Three distinct survey methods were employed to examine the ten items selected for survey. These three levels of examination were designed to permit the inspection of specific portions of the project area in an effort to locate or identify particular kinds of cultural resources. In addition, the reported locations of three previously identified prehistoric sites, 16 SC 10, 16 SC 11, and 16 SC 12, were visited, and the site forms for each were updated. The field methodologies employed during the examination of all survey items are summarized below.

Pedestrian Survey

Expected cultural resources in survey Items 1, 2, and 3 were shallow historic period sites. These survey areas, therefore, were examined through the pedestrian traverse of transects placed across each survey area. All transects were traversed on foot. Any surface exposures encountered along a transect were examined. Transects were spaced at 20 m intervals. Within Item 1, all transects were oriented north/south ($0^{o}/180^{o}$). All transects in Item 2 were oriented at $15^{o}/195^{o}$. Transects within Item 3 were oriented at $35^{o}/215^{o}$.

Shovel tests were excavated along each transect at 50 m intervals. Shovel tests were approximately 30 x 30 cm wide, and they were excavated 15 - 50 cm below the ground surface. Excavation below this depth was restricted by the presence of ground water. Any exposed cutbanks, e.g., along borrow pits/ditches, drainage ditches, etc., were inspected to provide additional subsurface exposures for examination. Soil descriptions were recorded for all shovel tests.

Deep Auger Testing

Auger tests were excavated in two survey items to attempt to identify deeply buried cultural resources. Items 4 and 5 were considered to represent potential areas for the location of deeply buried prehistoric resources. Item 4 contained four separate drainages within the floodway. Item 5 consisted of the interface between Bayou Trepagnier, a natural drainage outside the floodway, and a drainage canal adjacent to the protected toe of the lower guide levee.

All auger tests were excavated with a 2.5 in (6.5 cm)

Dutch auger. All tests were excavated to a minimum depth of 2 m below the ground surface. Tests were placed at 30 m intervals along the drainages, approximately 3-10 m from the bank of the drainage. Tests were placed on both banks of the drainages. Fill from all tests was examined for the presence or absence of cultural remains, e.g., ceramic remains, shell, or paleosols. Soil profiles were recorded at every fifth test along a drainage.

Bankline Inspections

Five items were selected for examination through a boat-based inspection of exposed banklines/beaches. These items were surveyed from a hand-powered canoe, or from a motorized flatboat. All exposed areas along the banks of the five items were inspected from the vessel. Periods of inspection were timed to coincide with periods of low water, e.g., low tide, as much as possible. Any suspicious remains, e.g., shell scatters, wooden features, etc., were examined to determine whether these remains represented historic resources.

Observed features were assessed through inspection, shovel/auger testing, or photography, as appropriate. Shovel/auger tests were excavated in all areas that contained surface exposures of Rangia shell. Large wooden features were probed to determine whether these remains were in situ, or represented flood debris. Other features were inspected for temporally diagnostic artifacts, e.g., nails, to assist in the determination of the age of the remains.

Previously Recorded Sites

Three locations were visited outside the project area to determine the current status of previously reported archeological sites. Only one of these three locales, 16 SC 11, was observed to contain cultural remains. No remains were observed or recovered at the reported locations of 16 SC 10 or 16 SC 12 despite inspections of exposed banklines and the excavation of shovel tests at both locales.

Investigations at 16 SC 11 included the inspection of the site surface, and the excavation of auger tests over the site area. All auger tests were excavated to approximately 1 m below the ground surface. Tests were placed along three rays, emanating from the center of the exposed shell scatter on the Lake Pontchartrain shoreline. East/west rays paralleled the Lake Pontchartrain shoreline. The other ray extended southward, perpendicular to the other alignments. Tests were placed at 15 m and 30 m from the center along each

ray. In addition, two shovels tests were excavated along the southern ray, 15 and 30 m from the center of the shell scatter. The auger tests were excavated through the bottom of these tests. The fill from all tests was inspected for artifactual remains.

CHAPTER V

RESULTS OF THE INVESTIGATIONS

The results of field investigations and of relevant archival research are presented below with respect to each survey item. In addition, the results of attempts to update the status of previously recorded prehistoric sites near the study area are summarized. The location of all survey items and known sites are shown in Figure 1.

Item 1

Item 1 was defined as a high probability area for historic cultural resources. This area was identified as a railroad loading facility on the 1929 property map of the spillway. It contains approximately 64 acres (26 ha), adjacent to the upper guide levee and to the Louisiana Arkansas Railroad. This area was examined through pedestrian survey and shovel testing (Figure 9).

This area has been employed extensively as a borrow for sand. All soils encountered within the tract were sands, sandy loams, or sandy clays. Ridge and swale topography within the tract has been exaggerated by the removal of alluvial materials from linear pits aligned perpendicular to the railroad right-of-way. Some of these excavations extend more than 2 m below the ground surface. In addition, several spoil piles in the eastern portion of the tract rise to approximately 3 m above the ground surface. The western portion of the tract also has been disturbed by the excavation of the borrow canal for the upper guide levee. Most of the depressions in the western half of the tract are filled with water.

Present use of the tract includes recreational activities, such as hunting, and refuse disposal. Several small vehicle tracks cross the tract from north/south. All are lined with piles of refuse. This refuse includes domestic garbage, construction refuse, vehicle parts, furniture, and tires. No evidence of historic, i.e., pre-World War II or pre-spillway, utilization of the tract was encountered during these investigations. The extensive disturbance of the area suggests that any remains that may have been present have been buried or destroyed by borrowing activities within the tract.

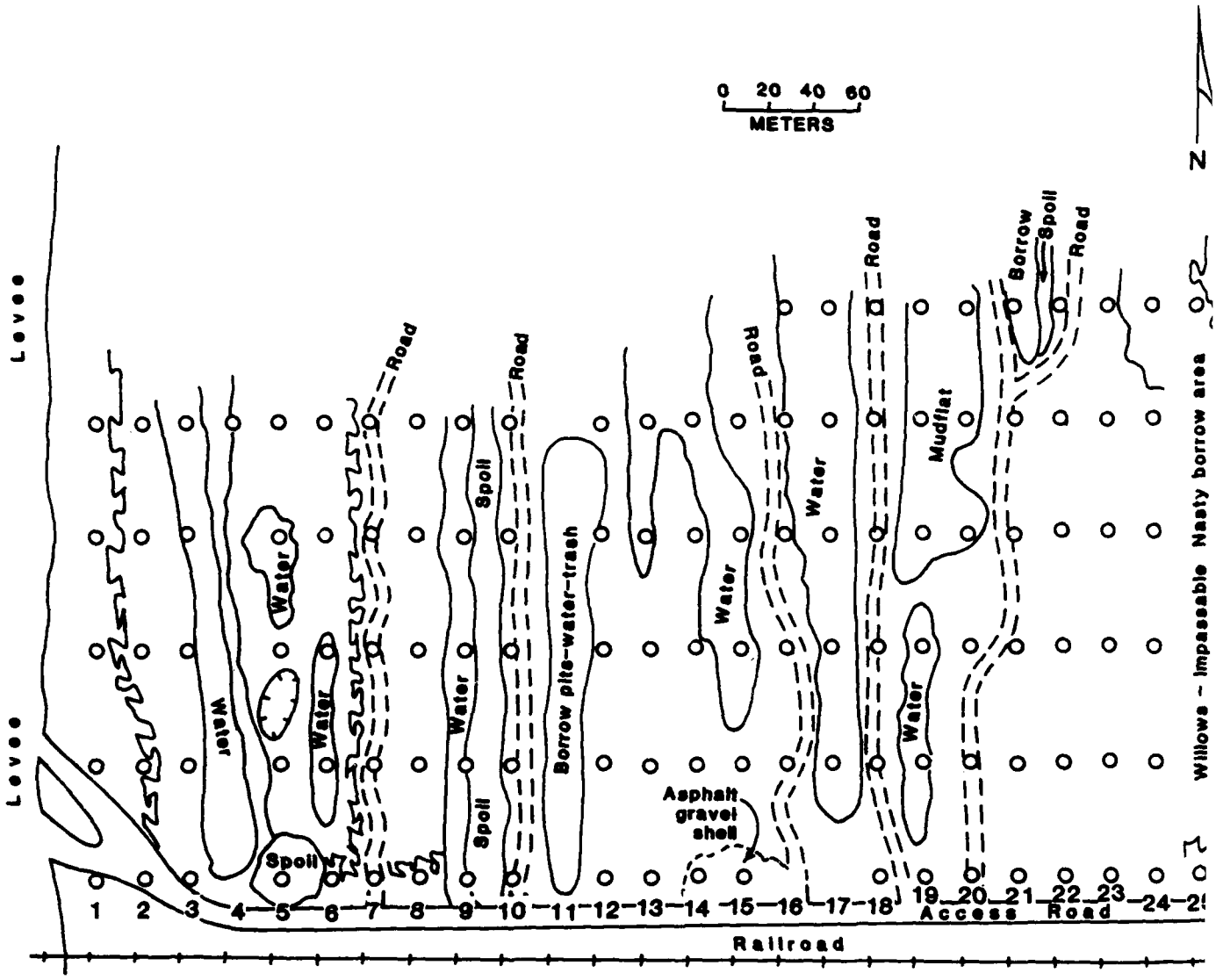
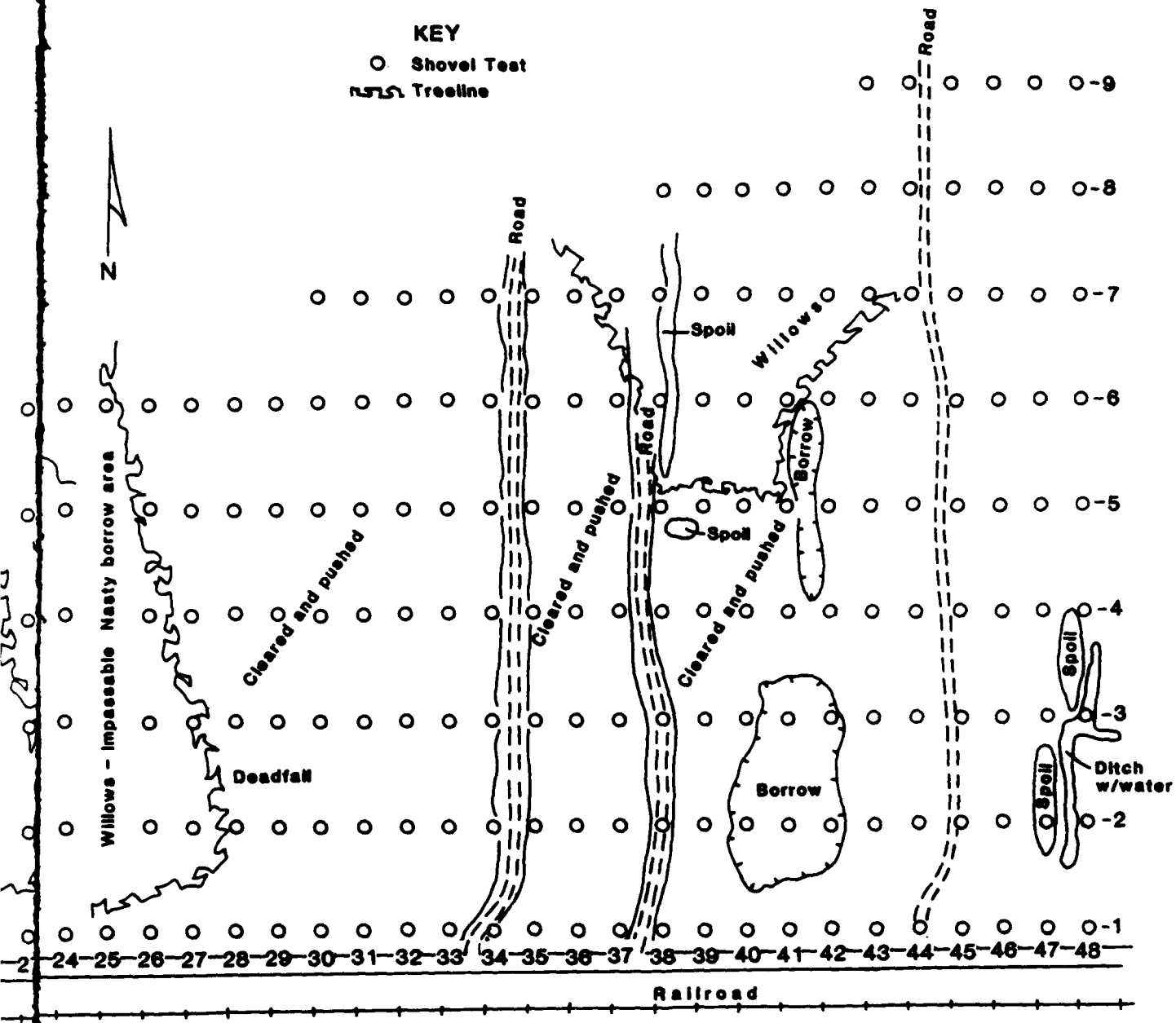


Figure 9. Plan view of Item
survey transects



Item 1, showing the location of
ects and shovel tests.

Item 2

Item 2 was defined as a high probability area for historic cultural resources. This tract was the approximate location of a pump and floodgate on the 1929 property map of the spillway. The tract contained approximately 2.5 acres (1 ha) adjacent to the intersection of two former drainage canals. The area was examined during pedestrian survey with shovel testing, and with boat-based inspection of exposed areas in the borrow pits (Figure 10).

Three cultural features were identified within the tract. None were considered to represent an archeological site. Adjacent to the north arm of the drainage canals were two concrete piers (Figure 10). These structures were trapezoidal in profile, with one on each side of the canal (Figure 11). No remains of a gate structure were attached or adjacent to these structures. In the canal at the foot of the piers, were groins of cypress planks (Figure 10). These planks probably served to deflect water into the center of the canal, and prevent the erosion of the canal bank behind the piers. Another pier, constructed of brick and concrete, was located on the south bank of the western canal, approximately 20 m west of the intersection of the canals. This structure also was trapezoidal in profile (Figure 12). A combination of older and modern bricks was included in the pier. No evidence of gate structures or of a pump were located on or adjacent to the structure.

A lens of Rangia shell was present in the borrowed area southwest of the intersection of the drainage canals (Figure 10). Auger testing in the lens revealed a shallow deposit, i.e., 10 cm or less. In addition, the shell was scattered along a linear ridge of the unborrowed material. No cultural remains were recovered from the shell. It appeared to represent fill placed adjacent to the borrow area to facilitate the movement or operation of machinery involved in borrowing.

All soils encountered in this tract consisted of light gray to light yellowish brown (2.5Y 7/2, 6/4) silty sands. These sands were densely packed. Silty spoil overlay these sands adjacent to the drainage canals through the tract. Water was encountered approximately 30-40 cm below the ground surface.

Item 3

Item 3 was the approximate location of the community of Tunity shown on the 1929 property map of the spillway (Figure 2). Like Items 1 and 2, this area was considered to have a

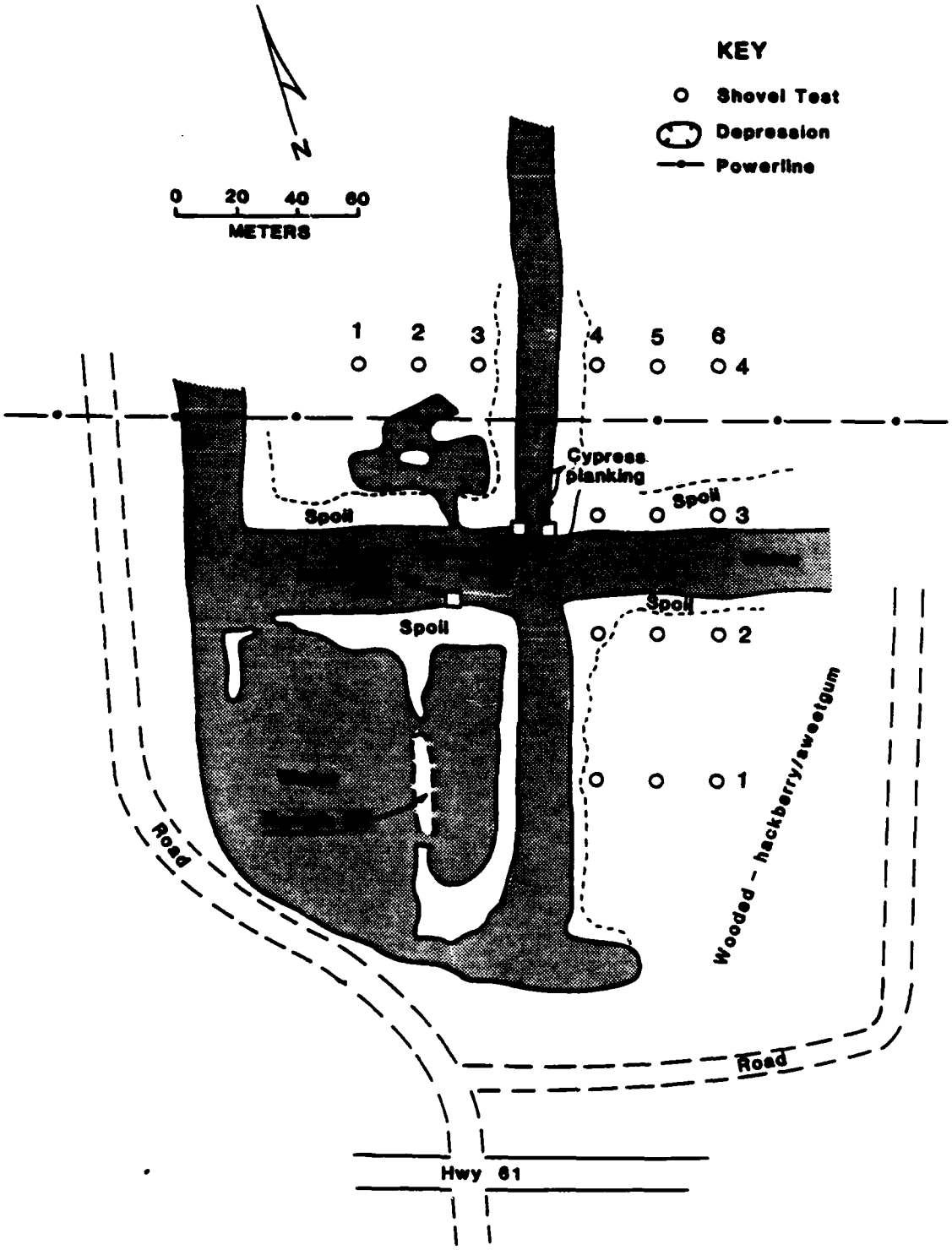


Figure 10. Plan view of Item 2, showing the location of cultural features, survey transects, and shovel tests.

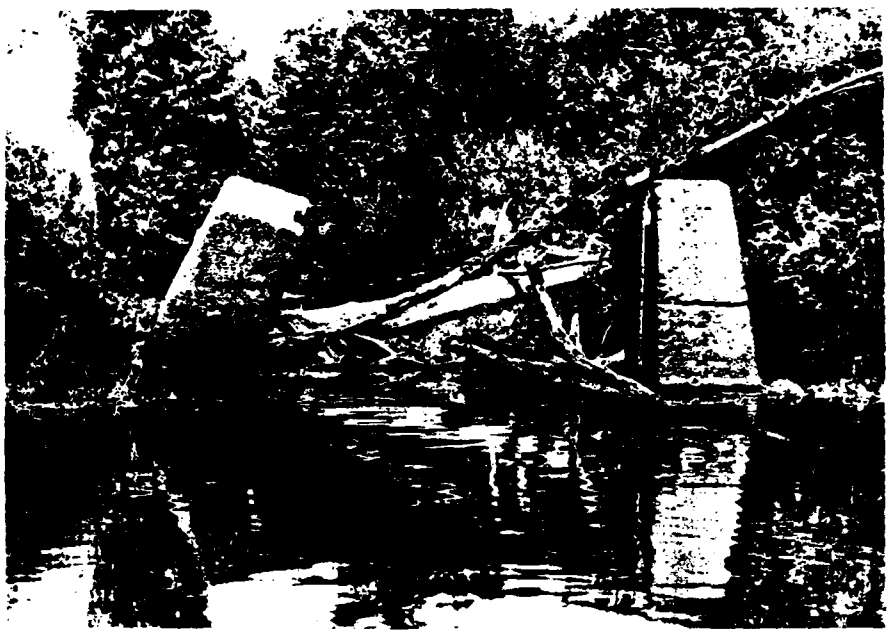


Figure 11. View of the concrete piers on drainage canal in Item 2.

Figure 12. View of the brick and concrete pier on drainage canal in Item 2.

high probability for containing historic cultural resources. The tract occupied approximately 7.4 acres (3 ha), between the historic canal parallel to the lakeshore and the Illinois Central Railroad line adjacent to I-10. The area is crossed at present by an overhead high voltage powerline (Figure 13).

The southern half of the tract was wooded and fairly dry. Soils near the canal consisted of light brownish gray to very dark grayish brown (10YR 6/2, 3/2) sandy loams. The hackberry canopy gradually changed into a cypress stand and marsh. Much of the northern half of the tract was inundated. Soils, where present or accessible, consisted of very dark grayish brown (10YR 3/2) clays and clayey spoil. This area also was disturbed by the construction of the powerline, and by maintenance of this line and the railroad trestle. Large ditches filled with water were present adjacent to the railroad (Figure 13).

No cultural remains, other than modern refuse or flood debris, were located within the tract. Much of the tract adjacent to the railroad and beneath the powerline have been disturbed heavily. Wooden pilings were observed and examined within the historic canal, adjacent to the southwest corner of the tract (Figure 14). These pilings were similar to other features observed at various points along the canal. All contained wire nails, suggestive of a recent, i.e., twentieth century, placement. Also, most of these nails were not corroded. Given the brackish nature of the water in the canal, extensive breakdown of metal artifacts that are periodically inundated and exposed could be expected. The reasonably sound condition of the metal nails suggests a recent utilization of these pilings. The possible function of these pilings will be discussed further below.

Item 4

Item 4 consisted of four separate drainages within the floodway. Each drainage was examined through the excavation of deep auger tests along the banks of the water course. These areas were defined as high probability areas for prehistoric cultural resources, due to their possible association with relict distributary channels within the project area.

Item 4A

This drainage lies in the northwestern corner of the project area. It extends from the historic canal parallel to the lakeshore, southward for approximately 1,000 m (3,300 ft) (Figure 1). Flow along the drainage is generally to the

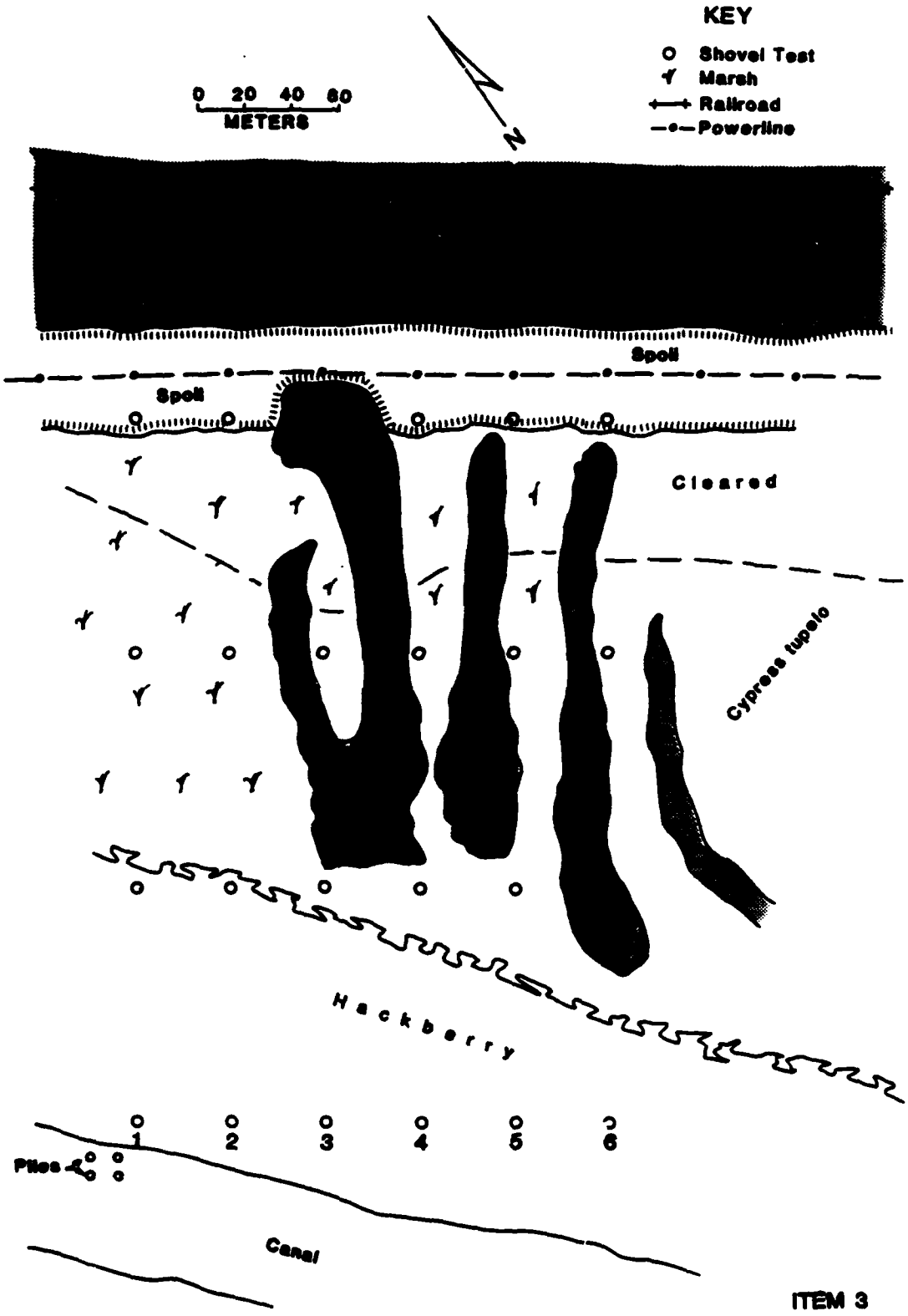


Figure 13. Plan view of Item 3, showing the location of survey transects and shovel tests.

Figure 14. View of pilings in historic canal, adjacent to Item 3.

north. Much of this area was inundated at the time of survey. However, the course of the drainage could be followed, and higher areas along its banks were examined. A total of 70 auger tests were excavated along this drainage (Figure 15).

No cultural resources, or deposits suggestive of cultural occupations, were encountered along this drainage. A fairly homogenous soil profile was documented. The upper 30-40 cm of deposits consisted of a dark brown silty clay loam (10YR 3/3). Beneath this stratum, a dark grayish brown clay was encountered (2.5Y 3/3). This clay extended to at least 220 cm below the ground surface (Figure 16). A summary of the auger tests recorded during these investigations is present in Appendix II. These deposits probably were deposited in a backswamp environment, due to the relatively fine grain size and to the homogenous nature of the sediments.

Item 4B

This drainage is located between the lower guide levee and the lower borrow canal. Flow at present is westward towards the borrow canal. The approximate distance between the levee and the canal is 250 m (825 ft). The drainage is bisected by a smaller borrow canal adjacent to the levee. A total of 14 auger tests were excavated along this drainage (Figure 17).

No cultural remains, other than modern refuse and flood debris, were observed or encountered during these investigations. In addition, no deposits suggestive of cultural occupations were encountered. A fairly uniform profile was encountered along the length of this drainage. The upper 25-65 cm of soil consisted of dark brown silty clays (10YR 3/3). Beneath this stratum, a dark gray clay (2.5Y 4/0) extended to over 2 m below the ground surface (Figure 18). The water table was encountered between 30 and 45 cm below the surface. The deposits encountered along this drainage suggest deposition in a backswamp environment. *Rangia* shells were observed along the bed of this drainage between the two borrow canals. The shell scatter contained live clams. No shell was present in the bank or beneath the bed of the stream. This area appears to be a living colony of *Rangia cuneata*.

Item 4C

This drainage lies approximately halfway between US 61 and Lake Pontchartrain. It extends between the lower guide

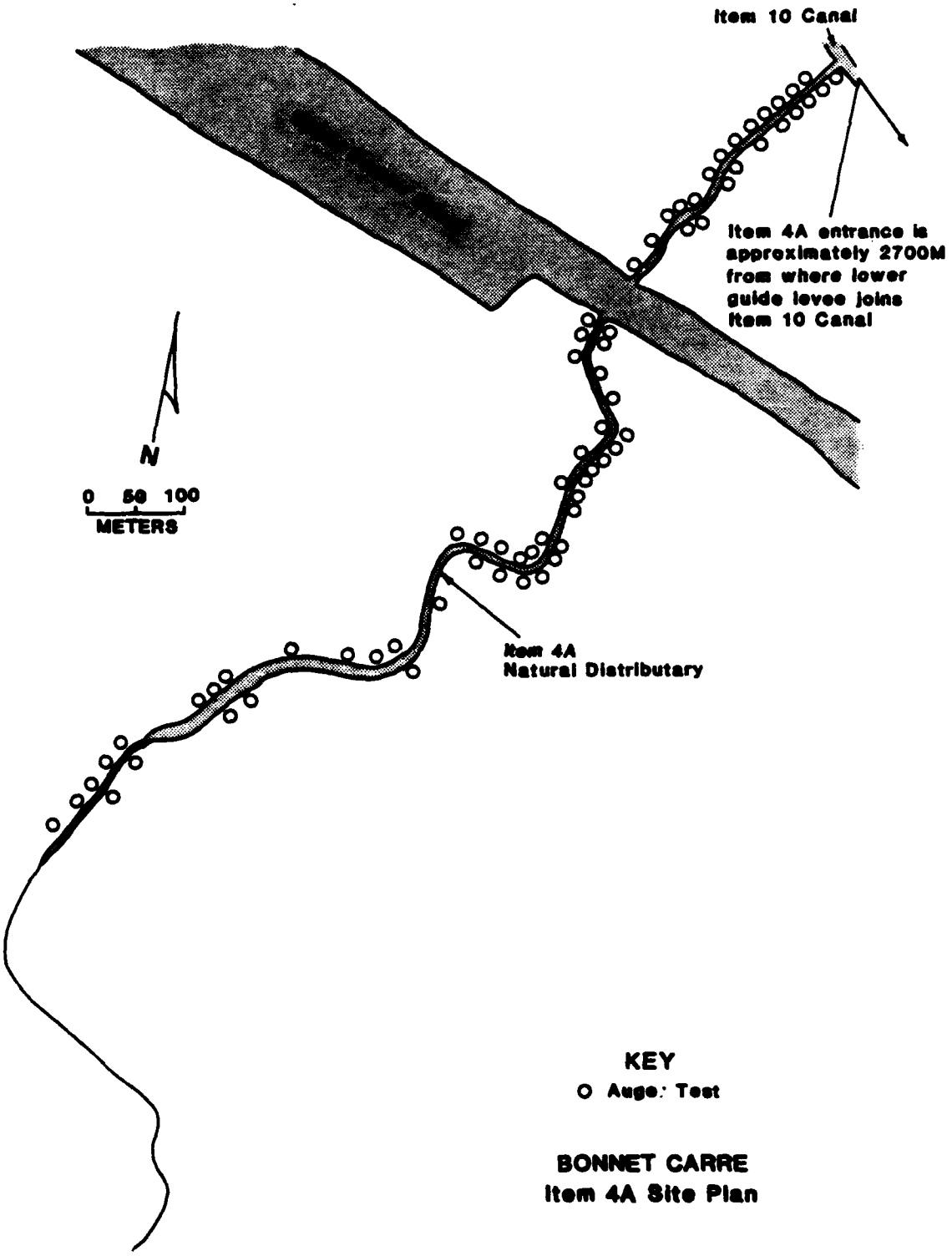


Figure 15. Plan view of Item 4A, showing the location of Dutch auger test holes along drainage.

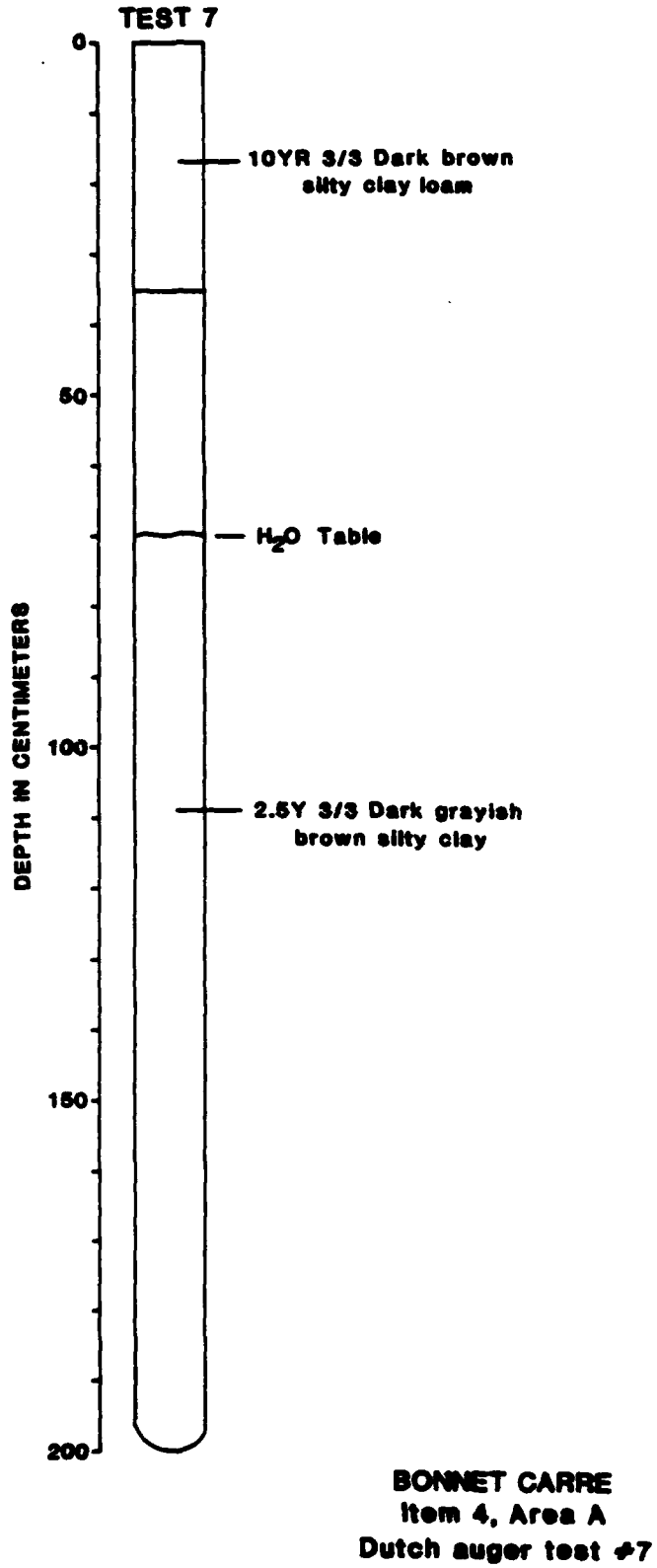


Figure 16. Auger test profile, Item 4A, Test 7.

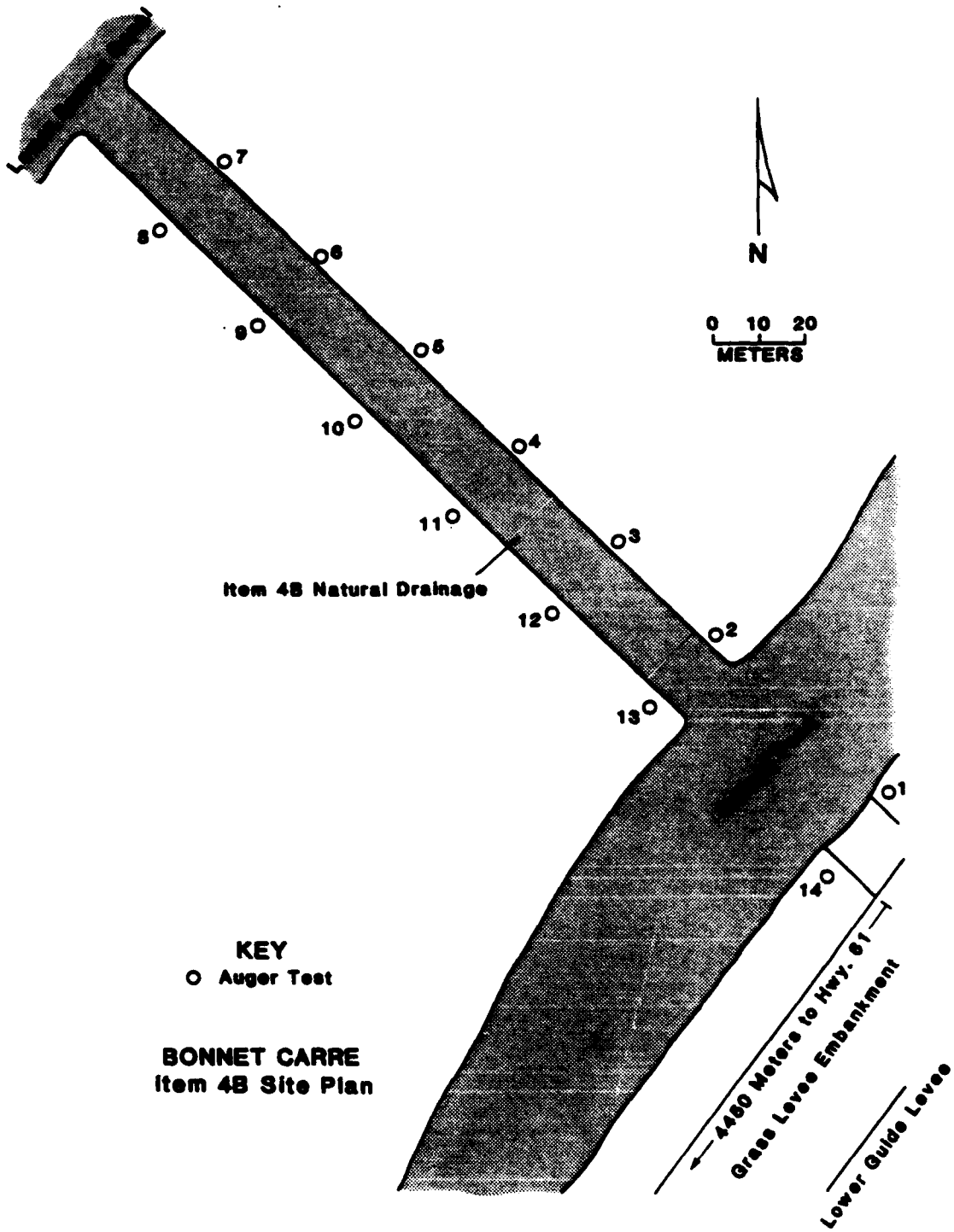


Figure 17. Plan view of Item 4B, showing the location of Dutch auger test holes along drainage.

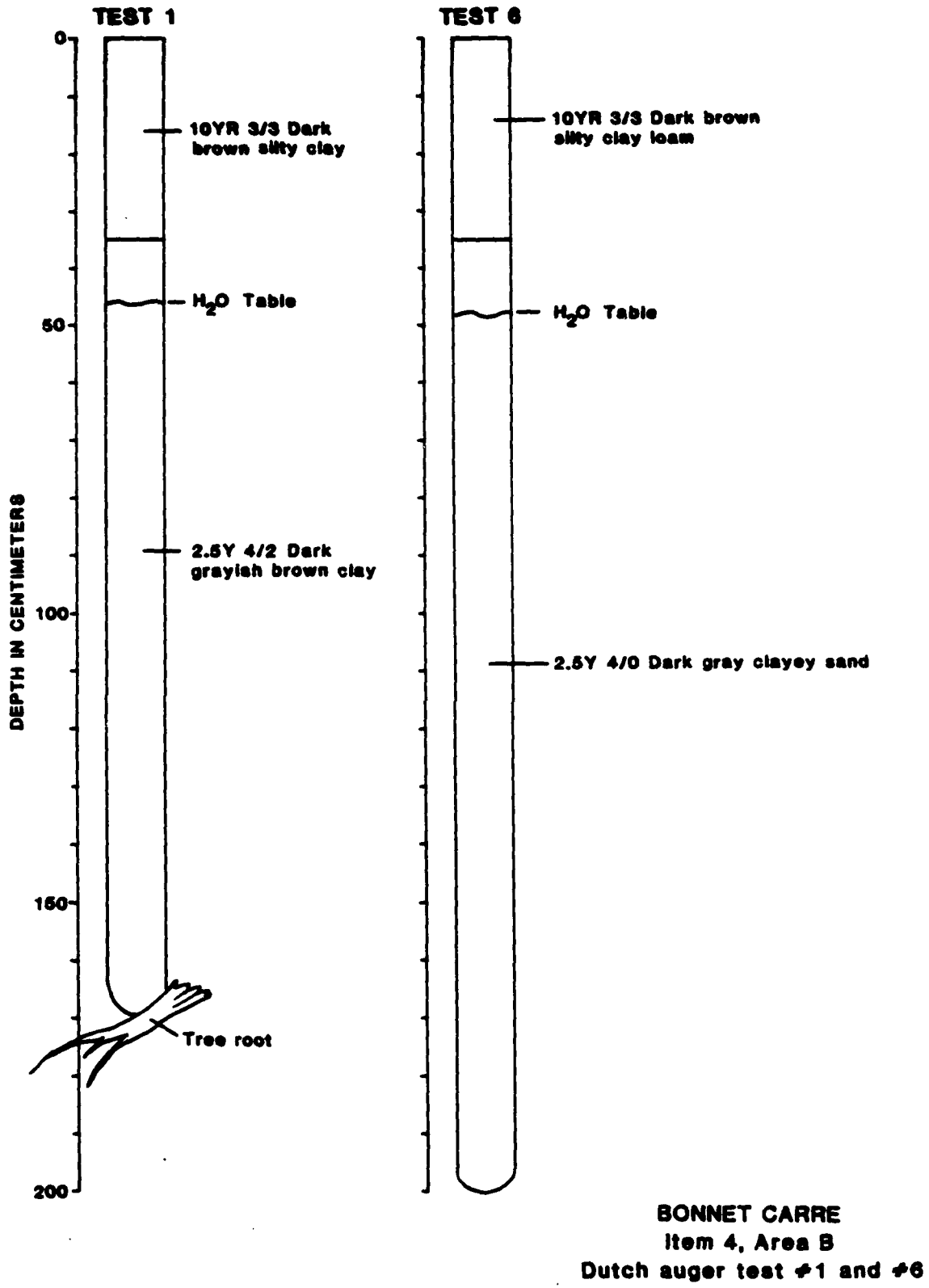


Figure 18. Auger test profiles, Item 4B, Tests 1 and 6.

levee and the lower borrow canal (Figure 1). Flow along the drainage is towards the levee. As with Item 4B, this drainage is bisected by a shallower borrow canal adjacent to the guide levee. On the map, this drainage was estimated to extend for approximately 260 m (850 ft). On the ground, this drainage can be followed for approximately 220 m (725 ft) upstream. Spoil deposits along the large lower borrow canal mask the drainage beyond that point. A total of 18 auger tests were excavated along this drainage (Figure 19).

No cultural resources, or deposits suggestive of cultural occupations, were encountered along this drainage. A uniform soil profile was encountered along the entire drainage. The upper 15-30 cm of deposits consisted of dark brown to very dark grayish brown (10YR 3/3, 3/2) clay loams. Beneath this stratum, a gray to dark grayish brown (2.5Y 4/0-10YR 4/2) silty clay extended for over 2 m below the ground surface (Figure 20). Water was encountered between 45 and 75 cm below the ground surface. These deposits also are suggestive of a backswamp depositional environment.

Item 4D

This drainage is located approximately halfway between Item 4C and US 61. It extends between the lower guide levee and the lower guide levee borrow canal. Flow along this drainage is towards the levee. Although this drainage extended for approximately 300 m on topographic maps of the area, it could only be traced for approximately 100 m (330 ft) along the modern ground surface. Spoil deposits from the borrow canal, and flattening of the landscape serve to mask the upper reaches of this drainage. A total of eight auger tests were excavated along this drainage (Figure 21).

No cultural remains, or deposits suggestive of cultural occupations, were located along this drainage. A uniform soil profile was encountered along the drainage. A dark brown (10YR 3/3) silty clay extended from the ground surface to 30-65 cm below the ground surface. Below this clay, a dark grayish brown (2.5Y4/2) silty clay was present to a minimum of 2 m below the ground surface (Figure 22). Water was encountered at approximately 80 cm below the ground surface. As with other deposits encountered in Item 4, these sediments are suggestive of a backswamp depositional environment.

Item 5

Item 5 is the interface between the lower guide levee drainage canal and Bayou Trepagnier. On the protected side

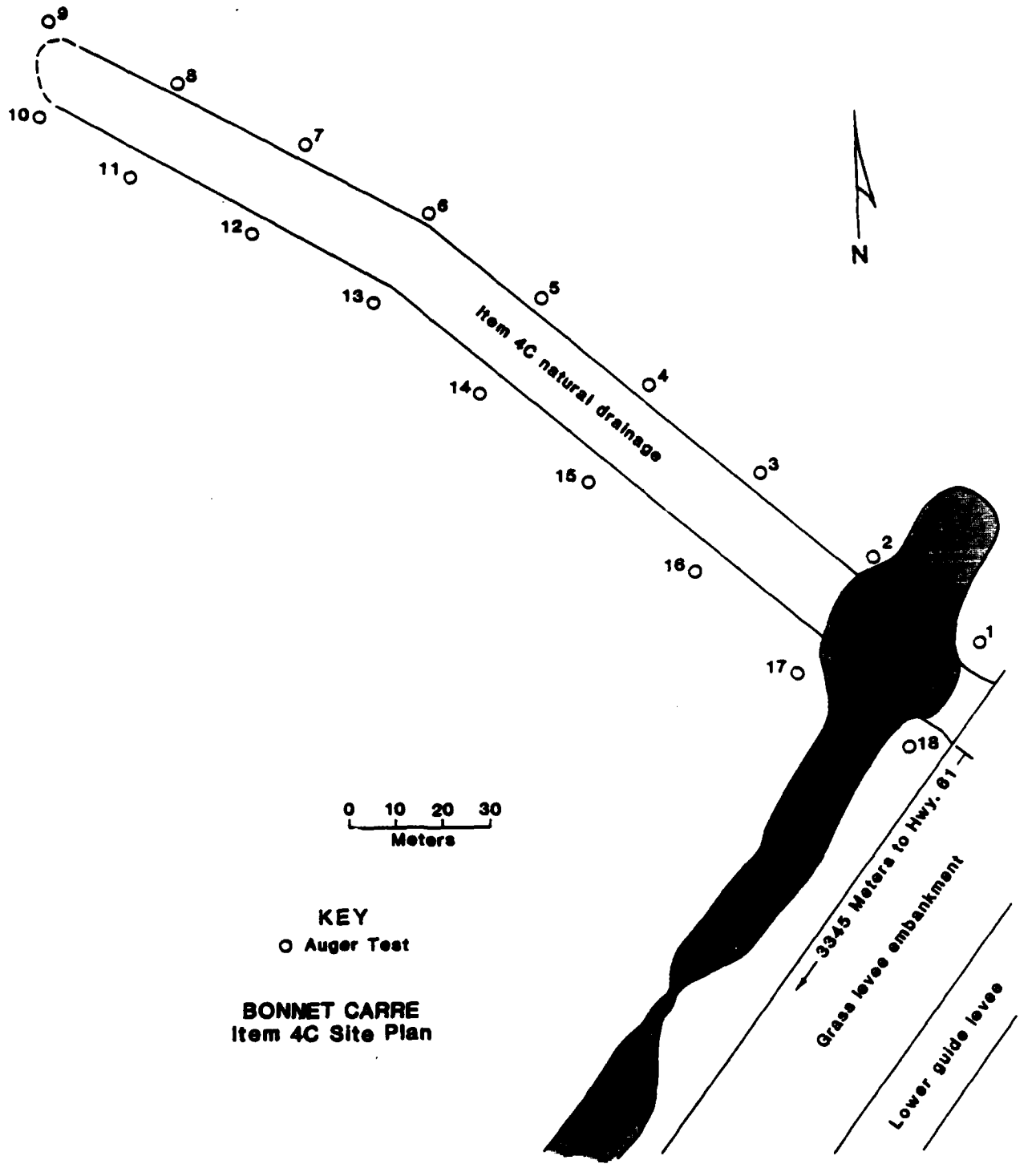


Figure 19. Plan view of Item 4C, showing the location of Dutch auger test holes along drainage.

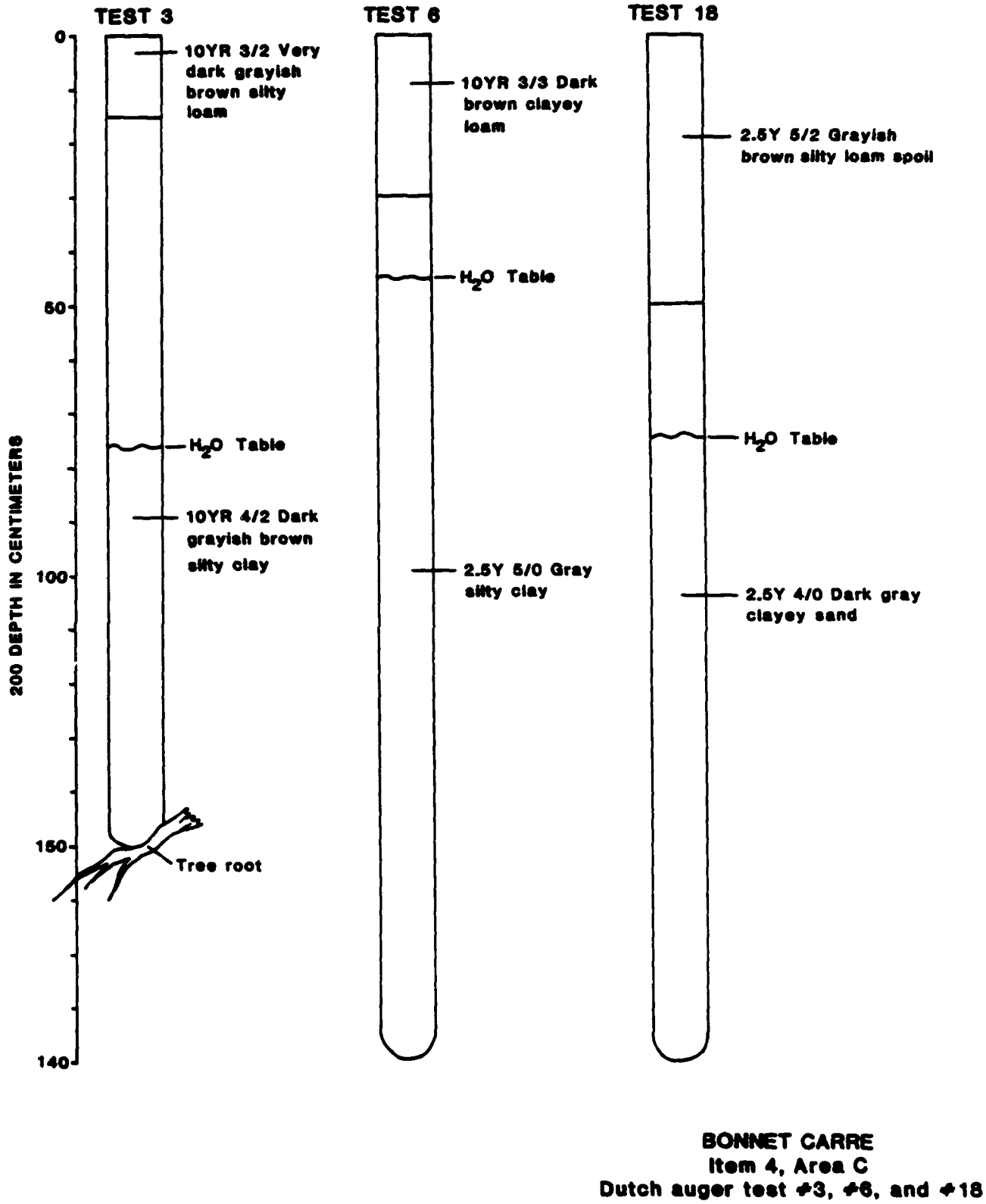


Figure 20. Auger test profiles, Item 4C, Tests 3, 6 and 18.

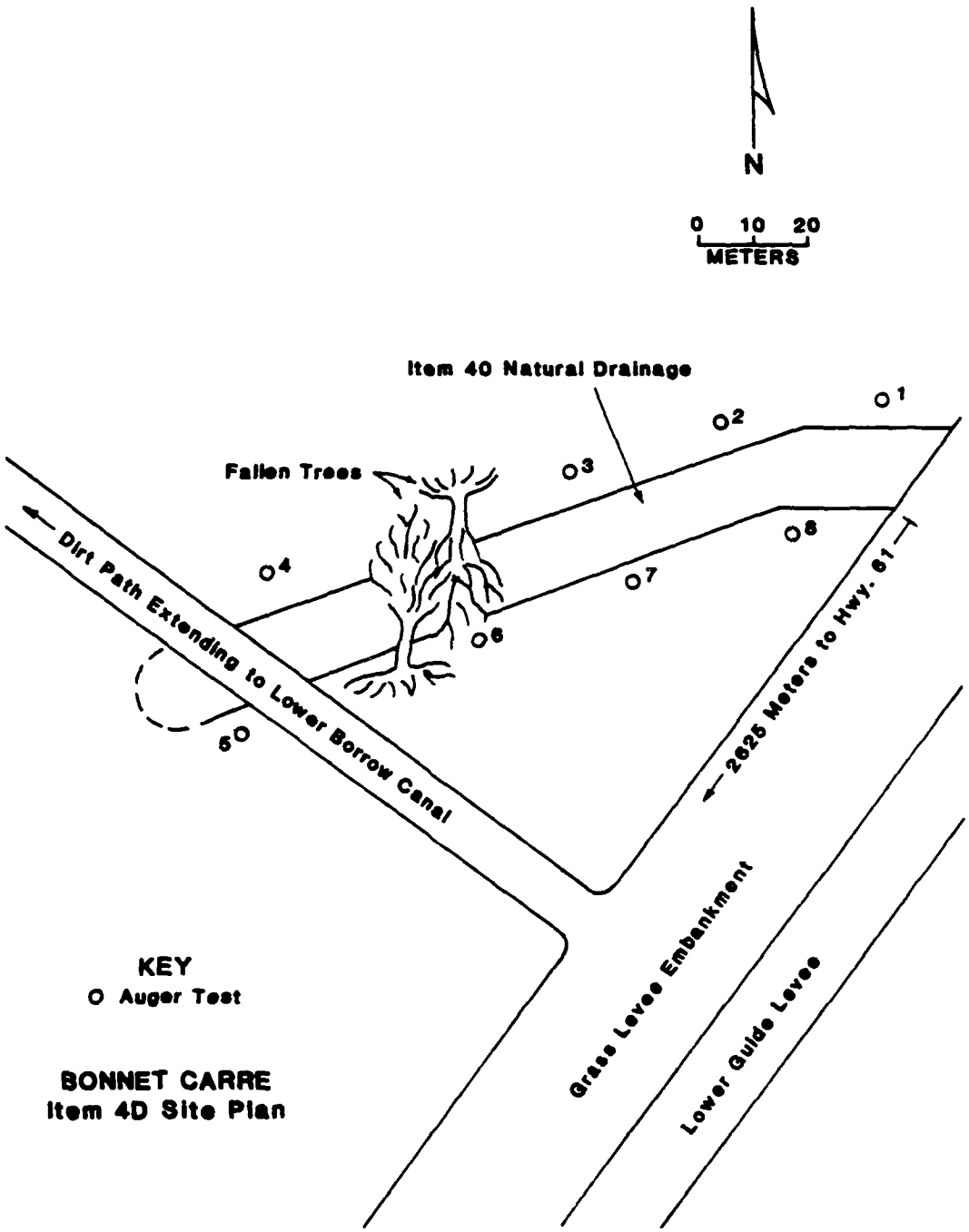
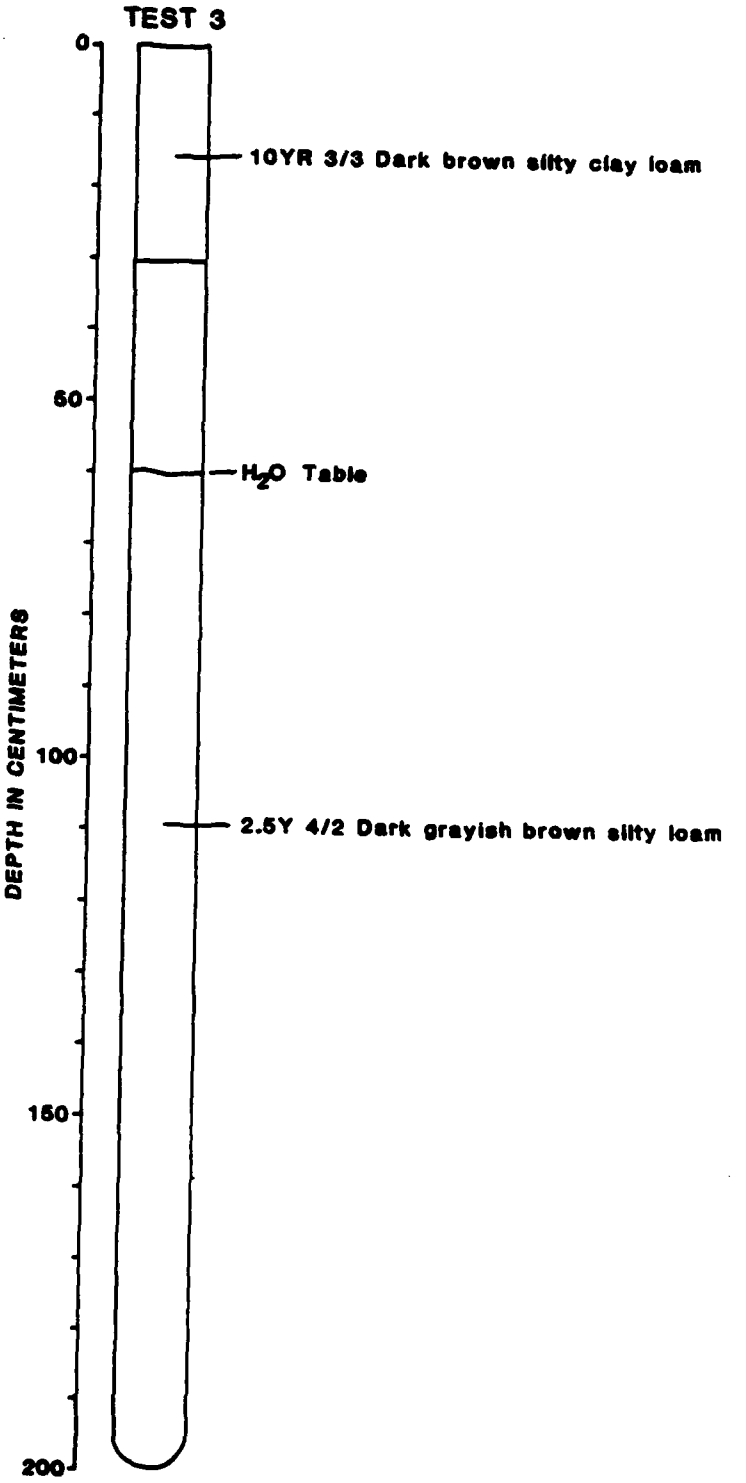


Figure 21. Plan view of Item 4D, showing the location of Dutch auger test holes along drainage.



BONNET CARRE
Item 4, Area D
Dutch auger test #3

Figure 22. Auger test profile, Item 4D, Test 3.

of the guide levee, downriver from Item 4D, Bayou Trepagnier meanders near the lower guide levee. This course of the bayou remains adjacent to the canal for approximately 380 m (1250 ft). The area between the two drainages is approximately 30-50 m (100-165 ft) wide. A total of 26 auger tests were excavated in the area between Bayou Trepagnier and the drainage canal (Figure 23).

No cultural remains, or deposits suggestive of cultural occupations, were encountered along this drainage. Except at one locale, a uniform soil profile was encountered along this drainage, suggestive of deposition within a backswamp environment. Generally, dark brown (10YR 3/3) silty clays were encountered between the ground surface and 35-55 cm below the surface. Below this clay, a dark grayish brown (2.5Y 4/2) clay extended to a minimum of 2 m below the surface (Figure 24). One auger test encountered an olive brown (2.5Y 4/4) sandy deposit buried beneath the upper silty clay stratum. It extended between 35 and 200 cm below the ground surface (Figure 24). This sand may represent a distributary levee, or an old crevasse splay. It contained decaying organic remains, as evidenced by the presence of sulphurous gases within the stratum.

Item 6

Approximately 2.25 miles (3.6 km) of the Lake Pontchartrain shoreline, between the upper and lower guide levees was inspected for cultural remains (Figure 1). No remains, other than modern refuse and flood debris, were observed along this shoreline.

Item 7

Approximately 2.1 miles (3.4 km) of bankline within the I-10 right-of-way corridor through the spillway was inspected for cultural remains (Figure 1). No remains, other than modern refuse and flood debris, were observed within this survey item.

Item 8

Approximately 14 miles (22.4 km) of exposed bankline along the upper and lower guide levee borrow canals were inspected for the presence of cultural remains (Figure 1). No remains, or deposits suggestive of cultural occupation, were observed in the upper borrow canal. Two cultural features (8a and 8b) were observed along the lower canal (Figure 1). Neither were determined to represent

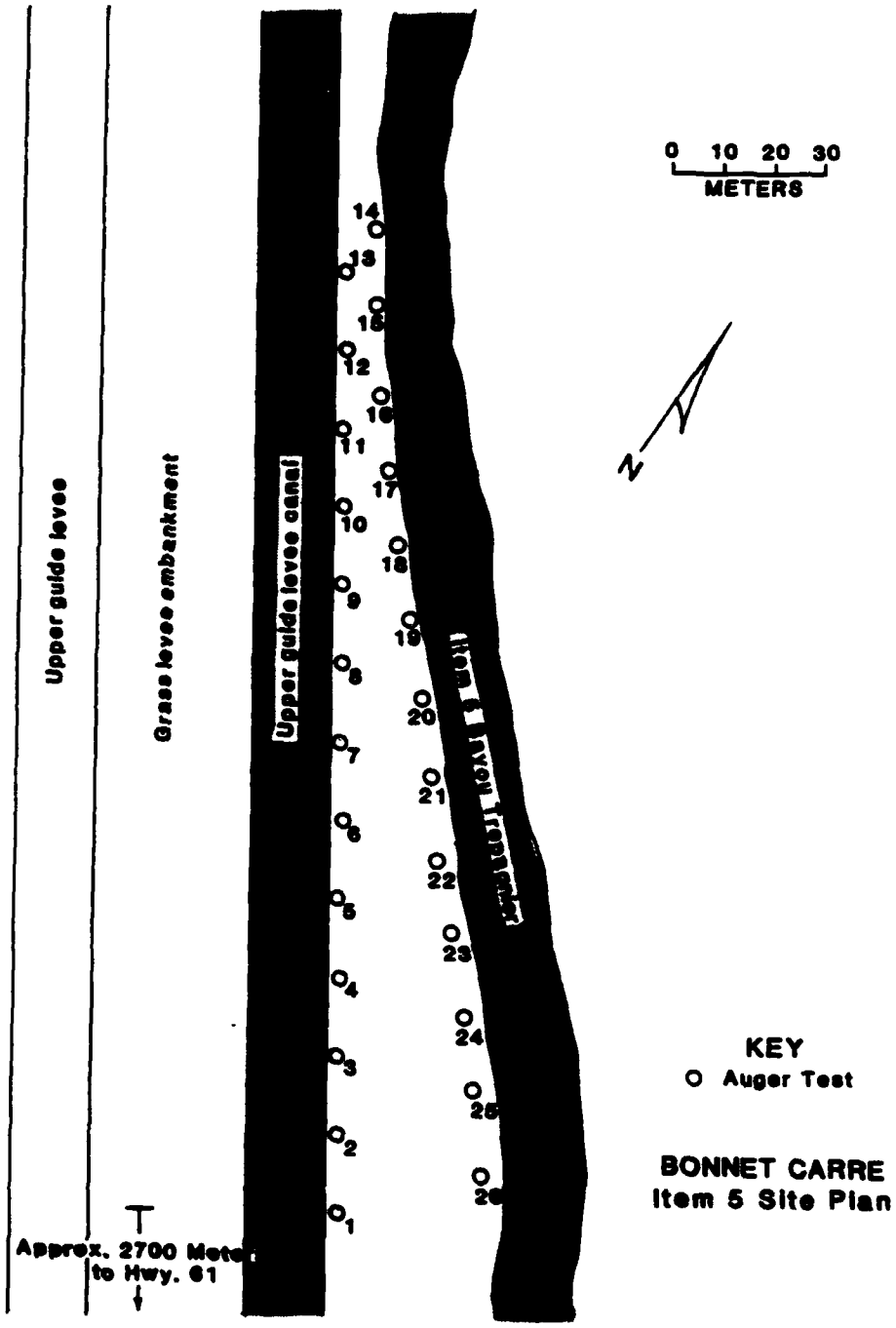


Figure 23. Plan view of Item 5, showing the location of Dutch auger test holes along drainage.

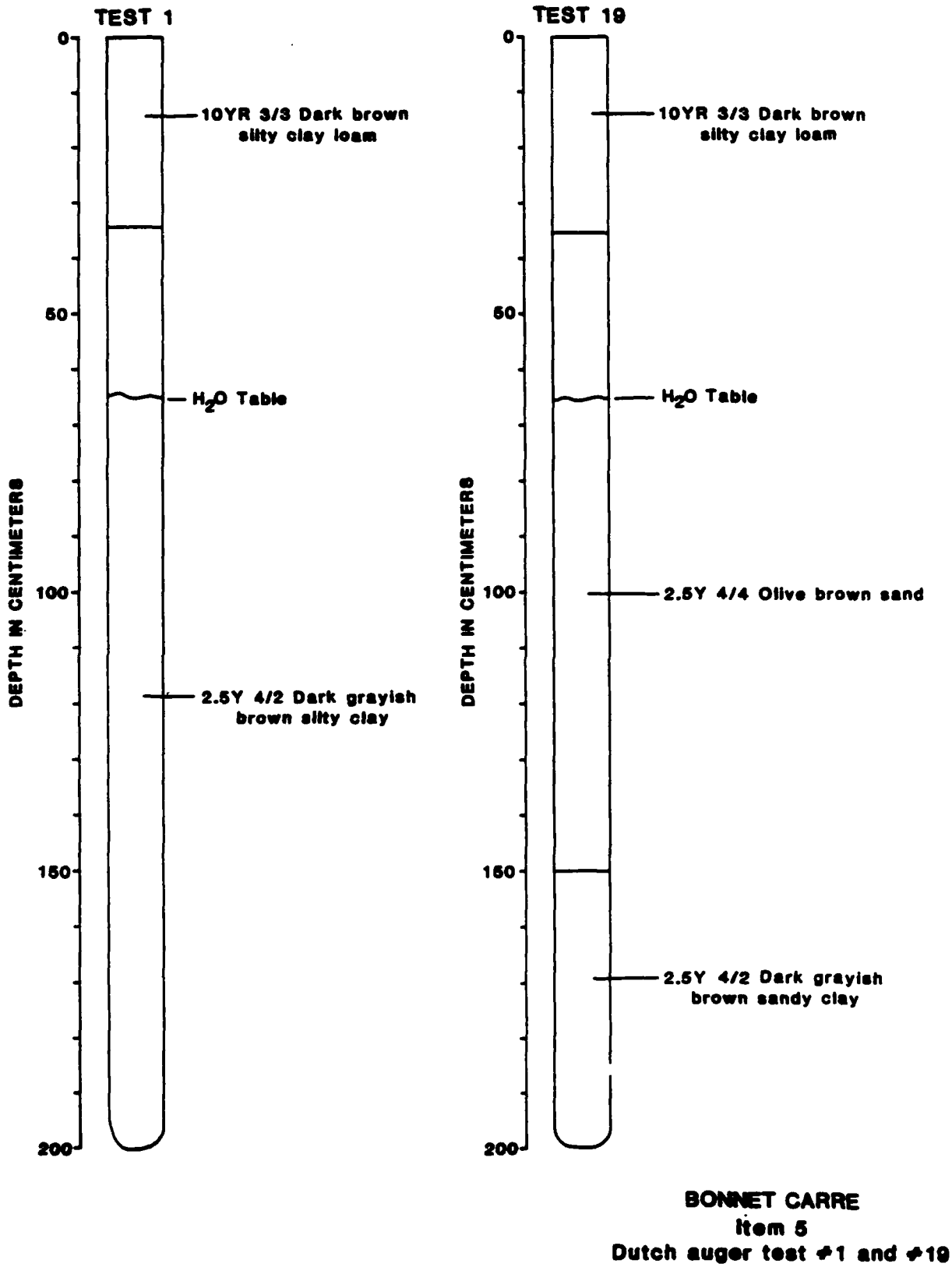


Figure 24. Auger test profiles, Item 5, Tests 1 and 19.

archeological sites, or historic cultural resources.

One feature (8a) was located on the edge of the island near the northern end of lower borrow canal. This feature consisted of two large wooden planks and a length of steel braided cable. The location of these features could not be associated with any known historic structures or features within the spillway. Probing near the remains failed to locate any additional cultural remains. This feature may represent refuse derived from the dredging of the canal, or later flood deposited debris. In either case, the locale did not possess sufficient integrity to be defined as an archeological site.

The other feature (8b) was located on the lower bank of the borrow canal, nears its juncture with US 61. This feature consisted of a steel apparatus, placed on concrete piers. No other cultural remains were recovered at or near this feature. The apparatus consisted of "A" frame of three steel beams, with two large pulleys attached to the top of the frame (Figures 25 and 26). It could have been associated with the dredging of the borrow canal. It also may represent a frame for drawing a ferry or logging pull boat (cf. Goodwin and Jones 1986:58) across the canal. However, the permanent orientation of the frame would permit the drawing of a vessel across the width of the borrow canal only. This suggests that the apparatus is more likely related to dredging activities. In either event, the apparatus appears to have been placed on the edge of the canal. This suggests that it was constructed during or after the development of the spillway. Therefore, this feature was not considered to represent an archeological site, or a significant historical resource.

Item 9

Approximately 5.7 miles (9.1 km) of exposed bankline along the upper and lower drainage canals, adjacent to the protected toes of the guide levees, were inspected for cultural remains (Figure 1). Two features (9a and 9b) were observed along this canal. Neither was determined to represent an archeological site.

A lens of Rangia shell (9a) was observed along the banks of the upper drainage ditch. This lens was very shallow, and concentrated on the ground surface. No cultural remains were observed within the shell lens. Its location within the right-of-way of the Shell oil/gas pipeline suggests that these materials were deposited as fill within the pipeline right-of-way to provide a more stable surface for pipeline monitoring and maintenance.

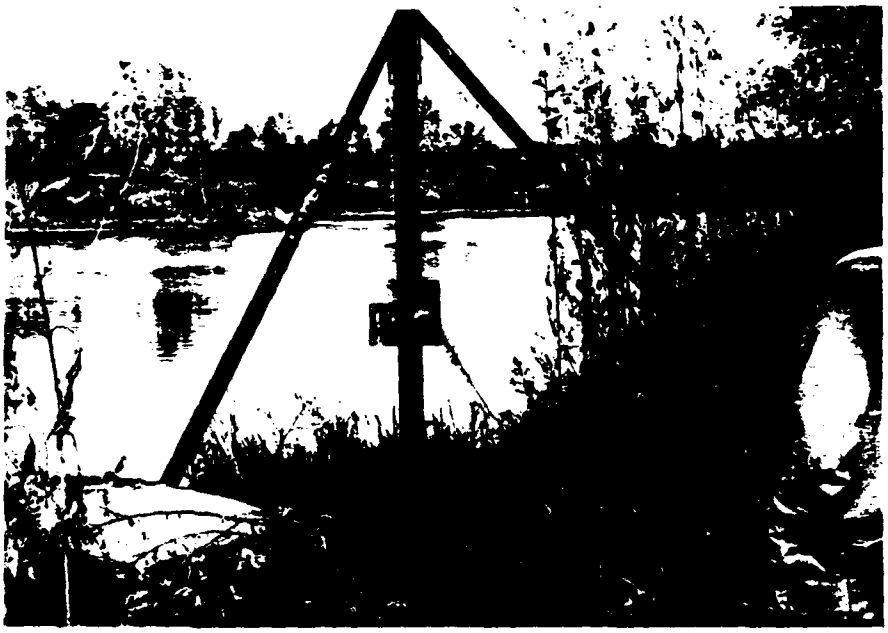


Figure 25. View of structure on the bank of the lower guide levee borrow canal.

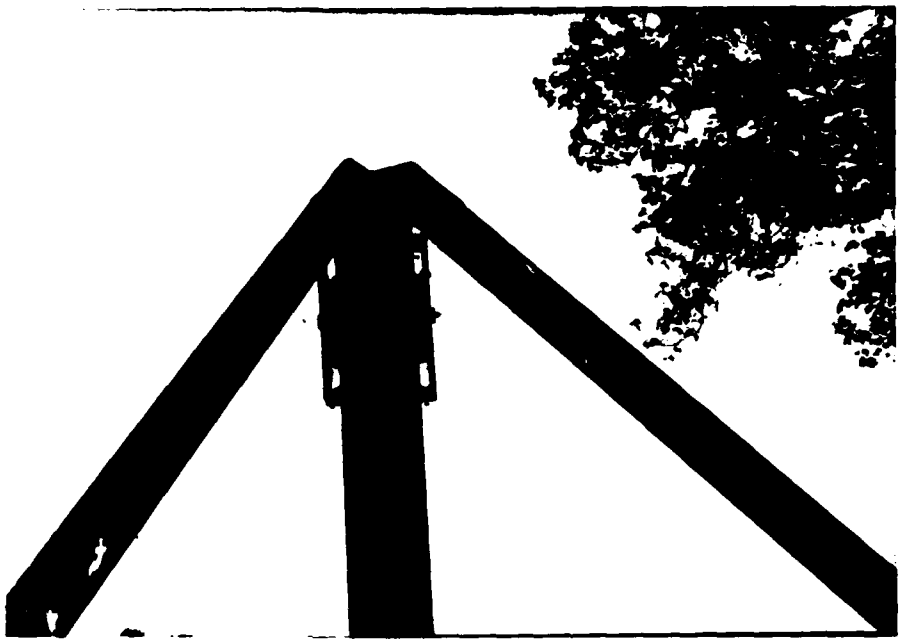


Figure 26. Close-up view of the pulley mechanisms.

The remains of a boat and dock (9b) also were observed near the northern end of the lower drainage canal. The vessel is a small, deep drafted boat constructed of plywood. It is resting on the edge and bottom of the canal, adjacent to the toe of the guide levee. The remains of the pier consist of several pilings adjacent to the boat. Wire nails and other modern refuse associated with the boat suggest that this craft is of recent construction. Its location in the drainage canal, against the guide levee, suggests that it could not have been moored at this point prior to the construction of the spillway.

Item 10

The banklines of an historic canal, apparently constructed between 1911 and 1929 that parallels the Lake Pontchartrain shoreline, adjacent to the I-10 right-of-way were inspected for the presence of cultural remains (Figures 1 and 2). The total length of this canal is approximately 2 miles (3.2 km). Cultural features were observed along this canal. None was considered to possess sufficient age or integrity to be considered an archeological site, or a significant historic resources.

Property maps indicate that the canal was excavated between 1911 and 1929 (U.S. Army Corps of Engineers 1911:Figure 2. The poor condition of the 1911 map prevented its reproduction). Construction of the canal during the period suggests that the waterway was excavated by commercial lumbermen for use in logging activities in the swamps along the western edge of Lake Pontchartrain.

A lens of Rangia shell (10a) was observed along the north bank of the canal, approximately halfway between the upper and lower guide levees. This lens extended from the ground surface to approximately 30 cm below the surface. It was present along approximately 10 m of the bank of the canal. Most of the shell was badly crushed. In addition, most of the animals represented were very small, less than 1 in (2.5 cm) in total length. The presence of this crushed shell adjacent to the right-of-way of an overhead high voltage transmission line, and the absence of cultural remains in the shell lens suggests that this lens probably represents dredge fill placed along the powerline right-of-way to facilitate the construction and maintenance of the powerline.

Other cultural features observed along this canal consisted of wooden pilings placed along the northern bank of the canal. One such feature, located near Item 3, was described above. Similar features were present near the

outlet of the canal to Lake Pontchartrain. While pilings were placed at the mouths of logging canals to facilitate barge mooring movement in the canals (Goodwin and Jones 1986:93), the location and orientation of the pilings observed in the historic canal (Item 10) is different. Both of the locations (10b and 10c) of the pilings in Item 10 are adjacent or opposite to canals that have been dredged since the completion of the Spillway. This suggests that these pilings provided mooring points for dredging equipment during the construction of these later waterways. The artifacts e.g., wire nails, presently associated with these pilings also suggest that they are recent cultural additions to the spillway.

Previously Recorded Archeological Sites

The locations of three previously located archeological sites, 16 SC 10, 16 SC 11, and 16 SC 12, were visited to determine the present status of these sites. Two of the sites could not be relocated. Only 16 SC 11 was relocated and inspected.

Bayou Trepagnier Site (16 SC 10)

The reported location of 16 SC 10 was visited (Figure 1). No evidence of the site was encountered. All exposed surfaces in the area were examined. In addition, shovel tests were excavated to 35 cm to determine whether cultural remains were present beneath the ground surface. Since this site was located through the dredging of Bayou Trepagnier, spoil from this dredging may have eroded back into the bayou, once again burying the site. Alternatively, subsidence within the area may have carried the cultural remains, i.e., *Rangia* shell and ceramic remains, below shovel test depth.

Bayou Labranche Mouth Site (16 SC 11)

Site 16 SC 11, located at the mouth of Bayou Labranche (Figure 1), on the present shore of Lake Pontchartrain, was relocated. The site presently consists of a shell scatter along the beach (Figures 27 and 28). Shovel and auger tests placed within the site suggest that the previously defined site limits, both horizontal and vertical, are approximately correct. No additional cultural remains were recovered from the site during this visit. At present, the site appears to be eroding into Lake Pontchartrain.

Figure 27. View of 16 SC 11, Bayou Labranche Mouth Site.

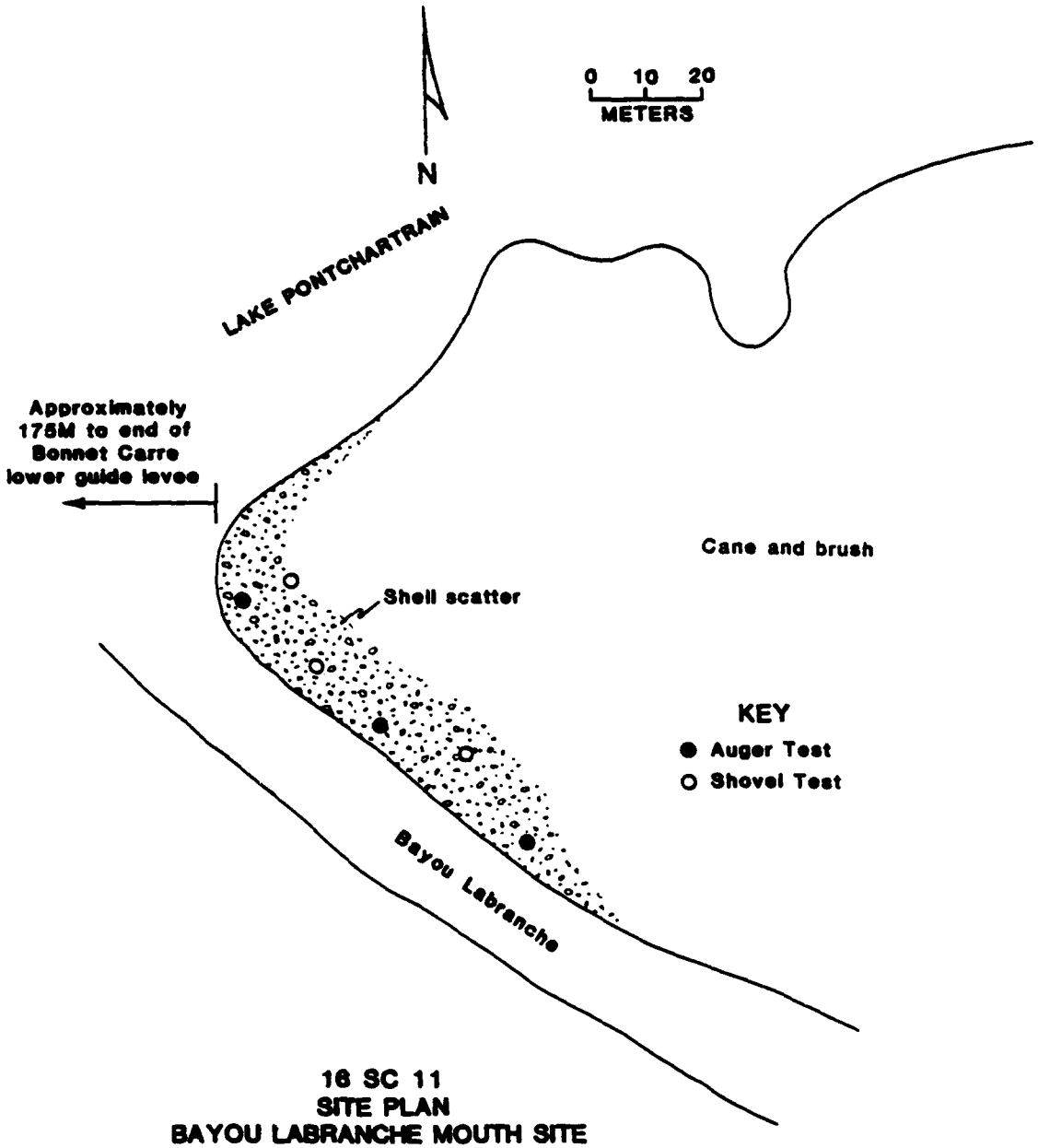


Figure 28. Site plan, Bayou Labranche Mouth Site (16 SC 11).

Bayou Labranche Site (16 SC 12)

The reported location of 16 SC 12 was visited (Figure 1). No evidence of the site was encountered. All exposed surfaces in the area were examined. In addition, shovel tests were excavated to 35 cm to determine whether cultural remains were present beneath the ground surface. Since this site was located through the dredging of Bayou Labranche, spoil from this dredging may have eroded back into the bayou, once again burying the site. Alternatively, subsidence within the area may have carried the cultural remains, i.e., *Rangia* shell, below shovel test depth.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions Concerning the Project Area

Item 1

Intensive pedestrian survey of Item 1 failed to locate any cultural remains, other than recent garbage and flood debris. No evidence of the railroad loading facility shown on the 1929 property of the Spillway area was recovered. This tract appears to be covered by crevasse deposits associated with historic natural flooding, or with openings of the Bonnet Carre' Spillway since 1937. This area has been quarried extensively for sand deposits. These deposits, as observed in the borrow pits, extend to a minimum of 2 m below the ground surface.

Item 2

The intensive survey of Item 2 failed to locate cultural remains other than the base of the floodgates shown on the 1929 property map of the Bonnet Carre' Spillway area. The western half of the tract has been borrowed. No artifactual remains, or evidence of gate structures or pumps, were observed near the concrete and brick structures. The concrete floodgate supports and concrete and brick pump base are in poor repair. They lack integrity, and they do not have the ability to contribute to understanding of the history of the region [36 CFR 60.4(d)]. Therefore, these structural remains are not considered to represent significant cultural resources.

Item 3

No archeological evidence of the small community of Tunity shown on the 1929 property map could be identified in the field. Much of this area has been disturbed by the construction of a high voltage transmission line parallel to the Illinois Central Railroad line. This construction may have permitted an influx of water from Lake Pontchartrain, contributing to the subsidence of the area. Much of the tract presently is covered with standing water. Similarly extensive archival investigations failed to locate any information concerning this settlement. Therefore, this community appears to have been totally lost since its abandonment, presumably sometime between the acquisition of the property by the U.S. Army Corps of Engineers and the

first utilization of the Spillway for flood control. Most of the property in the lakeward portion of the Spillway was owned by logging companies during the early twentieth century. The historical canal, Item 10, may have been dredged to facilitate lumbering activities. Tunity may have been a logging settlement related to the removal of cypress from the Spillway area. However, as shown on 1929 property map (Figure 2) settlement, appears to have been oriented towards the railroad, rather than the historic canal to the south. This suggests that the settlement had some function related to the railroad, rather than the lumbering activities in the region.

Item 4

Auger testing along the four drainages included in this item failed to identify any cultural remains, or deposits suggestive of cultural occupations. All deposits encountered along the four drainages were suggestive of a similar depositional environment, backswamp. No evidence of former distributary levees was encountered.

Item 5

Auger testing in Item 5 failed to identify any cultural remains, or any deposits suggestive of cultural occupations. Depositional environments similar to those evidenced in all Item 4 drainages were encountered, with the exception of one test. One small area contained a very sandy stratum. This stratum may represent a levee of a buried distributary channel, or a buried crevasse splay. No cultural remains whatsoever were associated with this stratum.

Item 6

Boat-based inspection of the Lake Pontchartrain shoreline failed to identify any cultural remains other than recent flotsam or flood remains. No evidence of intact cultural features was observed along the shoreline within the floodway.

Item 7

Boat-based bankline inspection of the I-10 right-of-way beneath the present highway viaduct failed to identify any cultural remains other than recent flotsam and flood debris. This area was disturbed severely by the opening of the Spillway in 1937, and by the subsequent construction of the

present roadway.

Item 8

Boat-based bankline inspection of the upper and lower levee borrow canals failed to locate any cultural features that represented significant cultural remains. Two cultural features (8a and 8b) were located in the lower borrow canal. Near the northern end of the canal, two large planks and a length of steel cable were observed (8a). These remains appeared to have been deposited secondarily on the edge of borrow canal. They could derive from the dredging of the borrow canal. No other cultural remains were encountered at this locale. A structure, consisting of a steel frame on concrete piers (8b), was observed on the edge of the borrow canal adjacent to US 61. No other cultural remains were recovered at this locale. Neither feature could be associated with occupations prior to the construction of the Spillway. Neither was considered to represent an archeological site or a significant cultural resources. The only other cultural remains observed within the borrow canals were recent flotsam and flood debris.

Item 9

Boat-based bankline inspection of the two drainage canals adjacent to the protected toes of the upper and lower guide levees failed to locate any significant cultural resources. One feature (9b), a sunken boat and the piers of a dock, were observed near the northern end of the lower guide levee. This boat and dock appeared to be recent. The feature was not considered to represent an archeological site, or a significant cultural resource. A shell lens (9a) also was observed along the upper guide levee. This lens occurred on the ground surface, where an oil/gas pipeline passes underneath the drainage canal and levee. This shell appeared to represent fill placed within the pipeline right-of-way.

Item 10

Boat-based bankline inspection of the historic canal parallel to the shoreline of Lake Pontchartrain failed to locate any significant cultural resources. Three cultural features (10a, 10b, and 10c) were located along this canal. A series of pilings (10b) were observed in the canal near the presumed location of Tunity, across from a canal dredged to the south since the construction of the Spillway. Another series of pilings (10c) were observed at the outlet from the

canal to Lake Pontchartrain. All contained wire nails suggestive of recent, i.e., twentieth century utilization. While the canal may have been constructed originally for logging activities, the location, orientation, and the association of the observed pilings with recently dredged canals, i.e., the drainage canal into the floodway and the outlet, suggests that these features are related to the construction of these post-Spillway waterways. One lens of shell (10a), Rangia cuneata, was observed along the north bank of the canal. Auger and shovel tests excavated at and near the point of exposure revealed that this lens was less than 30 cm thick. It occurred at the ground surface, and it was not associated with any cultural remains. Much of the shell was small; many pieces were crushed. It appeared to represent dredge fill deposited on the edge of the canal. This fill may have been deposited during the construction of the nearby overhead high voltage transmission line. None of the cultural features observed along the canal were considered to represent archeological sites or significant cultural resources.

Sites Visited Outside the Project Area

Bayou Trepagnier Site (16 SC 10). The reported location of 16 SC 10 was visited during these field investigations. No cultural remains, or other evidence suggestive of human occupation were found. The site may have subsided, or it may have been covered by the erosion of spoil into the bayou.

Bayou Labranche Mouth Site (16 SC 11). The Bayou Labranche Mouth Site (16 SC 11) was encountered on the present shoreline of Lake Pontchartrain. The shell lens associated with the site is exposed along a 100 m stretch of beach. Shovel and auger tests excavated at the site failed to recover any cultural remains. The shell extends 1-2 m below the present ground surface. This site appears to be eroding into the lake.

Bayou Labranche Site (16 SC 12). The reported location of 16 SC 12 was visited during these investigations. No cultural remains, or other evidence of the site, could be located along Bayou Labranche. The site may have subsided, or it may have been buried beneath eroding spoil material from the banks of the bayou.

Recommendations

No further archeological investigations are recommended within the survey items, or within the remaining portions of the project area. No significant cultural resources have

been located within any of the items selected for examination. Thus, continued use of the Spillway as a flood control device is not expected to result in adverse impacts to any known cultural resources, significant, or otherwise. Given that the survey items represent areas of high probability for historic or prehistoric resources, no adverse impacts should occur to any cultural resources in the low probability areas outside the survey items. It should be noted, however, that the Spillway area is a very dynamic depositional environment. The presence of deeply buried, i.e., greater than 2 m below the ground surface, cultural resources within and beyond the surveyed portions of the floodway cannot be ruled out.

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APPENDIX I: SCOPE OF SERVICES

SCOPE OF SERVICES
Phase 2 of the
Cultural Resources Inventory of the
Bonnet Carre' Spillway
St. Charles Parish, Louisiana

1. **Introduction.** The Bonnet Carre' Spillway was authorized under the Jadwin Plan as part of the comprehensive Mississippi River and Tributaries project. The Jadwin Plan was approved by the Flood Control Act of 15 May 1928 and amendments. The purpose of the spillway is to protect the City of New Orleans and other downstream communities by preventing the river stage at the Carrollton gage in New Orleans from exceeding 20 feet N.G.V.D. This goal is achieved through the diversion of up to 250,000 cubic feet per second of floodwaters from the Mississippi River to Lake Pontchartrain.

The spillway is the largest parcel of fee-owned land in the New Orleans District. The U.S. lands in the project area amount to 7,624 acres. The first phase of the required cultural resources inventory was completed in 1986. This scope provides for the second phase of the inventory.

2. **Study Area.** The study area consists of designated portions of the Spillway as shown on Attachment 1 and listed below:

A. Potential historic sites (from 1929 Property map)
   (1) Railroad loading facilities
   (2) Old pump with floodgates
   (3) Tunity area

B. High probability features
   (4) Natural drainages shown on 1929 map and infrareds
   (5) Lower guide levee/Bayou Trepagnier interface

C. Disturbance corridors
   (6) Lake Pontchartrain shore
   (7) I-10 corridor
   (8) Levee borrow canals inside levees
   (9) Drainage canals outside levees
   (10) Canal along lakeshore shown on 1929 map

3. **Background Information.** The first phase of the inventory of the Bonnet Carre' Spillway was completed in 1986 by R. Christopher Goodwin and Associates, Inc. under contract to the New Orleans District. This phase concentrated on the portion of the project area considered to have a high potential for historic sites, i.e., the natural levee adjacent to the Mississippi River. Several sites were located including two historic cemeteries which were determined eligible for inclusion in the National Register.

Recommendations for further inventory efforts were provided in the final report (Yakubik et al., 1986). This scope incorporates those recommendations into a comprehensive effort to locate cultural resources which may exist on project lands.

4. **General Nature of the Work.** The study will consist of background research, cultural resources survey of selected portions of the project area, and data analysis and report preparation.

5. **Study Requirements.** The study 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 Archeological Plan dated October 1, 1983; and

The Advisory Council on Historic Preservation's regulation 36 CFR Part 800 entitled, "Protection of Historic Properties."

The study will be conducted in three phases: Background Research, Survey, and Data Analysis and Report Preparation.

A. Phase 1 Background Research. The study will begin with research of available literature and records necessary to predict the nature of the resource base in the project area and refine the survey methodology. This background research will include a brief literature review, review of the geomorphology, and research of historic records.

B. Phase 2 Survey. Upon completion of Phase 1, the Contractor shall initiate the fieldwork. The survey shall be a combination of pedestrian survey and boat survey as described generally below. For those portions of the study area listed under Section 2.A. above (potential historic sites), standard terrestrial survey methods will be employed. This will include subsurface testing every 50 meters along survey transects spaced 20 meters apart.

For the high probability features of the study area (Section 2.B. above), the survey will consist of boat-based inspections of the exposed banklines with auger testing every 30 meters along the banks. The auger tests will be excavated to a minimum depth of 2 meters. For the remaining portions of the study area (Section 2.C. above), the field survey is limited to boat-based visual inspection of the banklines and spoil banks for evidence of cultural materials. Potential sites or anomalous features will be further examined through subsurface testing. In order to maximize bankline exposure, the boat survey will be scheduled to take advantage of low tide conditions in the spillway area.

State site forms will be completed 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 sketch-mapped, photographed, and briefly tested using shovel, auger, and limited controlled surface collection in an attempt to determine depth of deposit, site boundaries, stratigraphy, and cultural association. Any pre-World War II standing structures located in the survey transects will be recorded on Louisiana state standing structure forms and will include a minimum of three clear black and white photographs. For structures located in the survey transects, the contractor shall also address the archeological component of the site.

C. Phase 3 Data Analyses and Report Preparation. All 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 State Archeologist. The catalog system will include site and provenience designations. All cultural resources located by the survey will be evaluated against the National Register criteria contained in Title 36 CFR Part 60.4 and within the framework of the historic setting to assess the potential eligibility for inclusion in the National Register. The Contractor will classify each site as either eligible for inclusion in the National Register, potentially eligible, or not eligible. The Contractor shall fully support his recommendations regarding site significance.

The analyses will be fully documented. Methodologies and assumptions employed will be explained and justified. Inferential statements and conclusions will be supported by statistics where possible. Additional requirements for the draft report are contained in Section 6 of this Scope of Services.

6. Reports:

a. Draft and Final Reports (Phase 1-3). Eight copies of the draft report integrating all phases of this investigation will be submitted to the COR for review and comment within 16 weeks after work item award. Along with the draft reports, the Contractor shall submit three copies of the National Register Registration Forms for each site recommended as eligible for inclusion in the National Register. This documentation will contain all of the data required by NPS National Register Bulletin 16: Guidelines for Completing National Register of Historic Places Forms. The Contractor shall also provide recommendations for mitigation of any sites recommended as eligible. As an appendix to the draft report, the Contractor shall submit the state site forms. 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 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 6 weeks after receipt of the draft reports (22 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 4 weeks (26 weeks after work item award). Upon approval of the preliminary final report by the COR, the Contractor will submit 30 copies and one reproducible master copy of the final report to the COR within 28 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. In order to preclude vandalism, the final report shall not contain specific locations of archeological sites. Site specific information, including one set of project maps accurately delineating site locations, site forms, black and white photographs and maps, shall be included in an appendix separate from the main report.

7. **Attachments.**

1. Map of Study Area

Copy available to DTIC does not permit fully legible reproduction

Attachment 1 Map of the Study Area

APPENDIX II: AUGER TEST LOG

Bonnet Carre Auger Test Results

Survey Item/ Test	Test Depth (in cm)	Result	Water Table (in cm)	Notes
4a/				
AT2	0-35	silty clay loam 10 YR 3/3		
	35-190	clay 2.5 Y 3/3		

Identical results were obtained in tests at the following sites: AT5, 12, 15, 22, 25, 30, 37, 40, 47, 49, 56, 61, 66

4b/				
AT5	0-65	clay 10 YR 4/1	40	roots at 180 prevented further auguring
	65-180	clay w/silt 2.5 Y 4/0		
AT9	0-25	silty clay 10 YR 4/2	30	
	25-	silty clay 2.5 Y 4/0		
AT13	0-30	silty clay 10 YR 4/2	45	roots at 195 prevented further auguring
	30-195	silty clay 2.5 Y 4/0		
4c/				
AT3	0-15	clay loam 10 YR 3/2	76	roots at 130 prevented further auguring
	15-130	silty clay 10 YR 4/2		
AT6	0-30	clay loam 10 YR 3/3	45	
	30-190	silty clay 10 YR 5/1		changes to 2.5 Y 5/0 with depth
AT10	0-50	silty loam spoil 2.5 Y 5/2	75	roots at 130 prevented further
	50-190	clayey sand 2.5 Y 4/0		

4d/					
	AT1	0-40	dk. brown clay 10 YR 3/3	80	mottled w/iron oxides
		40-200	dk. grey/brown clay 2.5 Y 3/3		
	AT5	0-65	dry silty clay 10 YR 3/3		
		65-195	dk. grey/brown silty clay 2.5 Y 3/3		
5/					
	AT3	0-35	dk. brown silty clay 10 YR 3/3		
		35-150	olive-brown sandy lens 2.5 Y 4/4		
	AT6	0-35	dk. brown silty clay 10 YR 3/3		sulphurous smell at this site
		35-150	olive-brown sandy lens 2.5 Y 4/4		
	AT8	0-55	dk. brown silty clay 10 YR 3/3	60	
		55-190	dk. grey/brown clay 2.5 Y 3/3		
	AT10	0-15	dk. brown silty clay 10 YR 3/3	80	
		15-75	dk. grey clay 2.5 Y 4/2		
		75-190	dk. grey/brown clay 2.5 Y 3/2		
	AT13	0-65	dk. brown silty clay 10 YR 3/3	80	
		65-190	dk. grey/brown clay 2.5 Y 3/3		