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# ARCHEOLOGICAL DATA RECOVERY AT SITE 16SJB29, NEAR WILLOW BEND, ST. JOHN THE BAPTIST PARISH, LOUISIANA

## WITH A DISCUSSION OF REGIONAL ARCHEOLOGICAL EXPECTATIONS AND PRIORITIES ALONG THE MISSISSIPPI RIVER

April 1989

## FINAL REPORT

R. Christopher Goodwin and Associates, Inc.
5824 Plauche Street
New Orleans, LA 70123

PREPARED FOR:

U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
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St. John the Baptist Parish
Sugar
Wharves

19. ABSTRACT

During July and August, 1988, R. Christopher Goodwin & Associates conducted archeological data recovery at Site 16SJB29, St. John the Baptist Parish, Louisiana. The excavation, conducted for the U.S. Army Corps of Engineers, New Orleans District, resulted in the recordation of three archeological features associated with a late nineteenth and early twentieth century rice irrigation system. This report presents the results of the archeological investigations at 16SJB29.

This report has been divided into two parts. Part 1 discusses the excavations at 16SJB29. The natural setting and previous archeological investigations in and around the project area provide a backdrop for the project. The local economic history is presented, with an emphasis on the land tenure history. Field investigations are reviewed, and the individual features are discussed. Finally, the archeological results are synthesized, and compared with previous investigations of rice irrigation systems in south Louisiana.

Part 2 discusses the riverine economic development of the St. John the Baptist Parish region, and the effects of geomorphic and cultural processes on batture archeological features. Historic indigo, sugar, and rice production are discussed, as are landings, wharves, and levee structures. A summary of the historical development of each is presented, with an emphasis on those aspects which produced archeological remains. Archeological expectations are developed, previous related excavations are discussed, and priorities are presented for future archeological research. The major processes that affect the batture are discussed, including natural riverine processes, flood control and river management construction, industrial development, and the towing and shipping industry.

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REPLY TO
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May 9, 1989

Planning Division
Environmental Analysis Branch

To The Reader:

This study, detailing data recovery at 16SJB29, was executed at the direction and under the guidance of the U.S. Army Corps of Engineers, New Orleans District. It was funded under the auspices of the Mississippi River and Tributaries Project, Channel Improvement Program and fulfills the terms of a No Adverse Effect Determination agreed to by the District, the Louisiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation. The study is but one element of a thirteen-year commitment by New Orleans District to inventory all sites within the Mississippi River batture construction corridor and to study in detail those sites which have retained scientific value through decades of natural and man-induced impact.

The results of the 16SJB29 excavation are presented here within the context of historical, cultural and previously collected archeological data concerning the Mississippi River rice industry. The report further places the site within the context of other, contemporary agricultural industries occupying the natural levee of the river, transportation related sites and impacts, and two centuries of flood control and channel training projects. The result is a predictive statement of functional site types, consideration of the conditions under which such sites might be studied, and formulation of priorities for future research. These priorities reflect the thrust of the preceding thirteen years of Corps investigation along the river. The data presented will be utilized by the District in future determinations of eligibility to the National Register of Historic Places for sites of the functional types discussed.

Carroll H. Kleinhans
Carroll H. Kleinhans
Authorized Representative
of the Contracting Officer

R. H. Schroeder, Jr.
R. H. Schroeder, Jr.
Chief, Planning Division

# ARCHEOLOGICAL DATA RECOVERY AT SITE 16SJB29, NEAR WILLOW BEND, ST. JOHN THE BAPTIST PARISH, LOUISIANA

WITH A DISCUSSION OF REGIONAL ARCHEOLOGICAL EXPECTATIONS AND PRIORITIES ALONG THE MISSISSIPPI RIVER

By

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Principal Investigator

With

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April 1989

For

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## RESULTS OF ARCHEOLOGICAL INVESTIGATIONS AT 16SJB29

# CHAPTER I

# INTRODUCTION

## Introduction

This report, prepared for the U.S. Army Corps of Engineers, New Orleans District, pursuant to Delivery Order 01 of Contract No. DACW29-88-D-0121, presents the results of archeological data recovery at Site 16SJB29, in St. John the Baptist Parish, Louisiana. The project area (Figures 1 and 2) is located at river mile 139.5-R, on the west (right descending) bank of the Mississippi River. The approximately 50 m long, 0.4 acre project area contains a late nineteenth and early twentieth century rice irrigation system, as well as a mid-to-late twentieth century barge mooring.

This site was located initially during a 1984 archeological survey conducted by the National Park Service. It subsequently was tested by R. Christopher Goodwin & Associates, Inc. during 1987 as part of an archeological reconnaissance of Mississippi River batture land scheduled for revetment construction (Shannon et al. 1988). The site was systematically surface collected, augered, shovel tested, and mapped during the 1987 investigations. In addition, four test units were excavated during that study.

During the 1987 investigations, four wooden features were identified. Two of these features consisted of large posts connected with vertical and horizontal boards. The third was a deposit of disarticulated cypress boards. These three features formed a line perpendicular to the Mississippi River, extending from the river to near the riverside toe of the late nineteenth century levee that was enlarged in 1920. A fourth feature, consisting of two adjacent horizontal board alignments, was located 13 m west of the other features. The site tentatively was interpreted as a wharf or landing, a class of site not previously studied. The potential for encountering intact cultural deposits appeared high.

Because of the presence of intact cultural features, and the potential for these features to provide information about nineteenth century riverine economic activity, Site 16SJB29 was identified as a significant cultural resource (Shannon et al. 1988). This site was determined eligible for listing on the National Register of Historic Places, because of its association with events contributing to broad patterns of history [36 CFR 60.4(a)], and for its presumed archeological research potential [36 CFR 60.4(d)]. The significance of the site was determined to lie in its archeological and historical data.

During archeological and historical research undertaken in 1988, archeological features at 16SJB29 were determined to comprise the remains of a nineteenth and early twentieth century rice irrigation system. The 1988 excavations produced important and previously unrecorded information concerning late nineteenth and early twentieth century rice irrigation along the Mississippi River. This contributed to a better understanding of the significant regional theme of rice cultivation.

## Planned Revetment Construction

As part of their on-going channel improvement program, the U.S. Army Corps of Engineers, New Orleans District, proposes to lengthen the Willow Bend Revetment. This construction is designed to inhibit further Mississippi River bankline erosion; to maintain levee stability; and, to lessen land loss by maintaining the present channel of the river. The two previously constructed adjacent segments, located upriver from the project area, were built in 1977 and 1981, forming a 7618 foot long revetment (U.S. Army Corps of Engineers 1987: 57). The 1988 construction will expand the downriver end of the revetment, covering the 16SJB29 site area.

Construction requires the mechanical clearing of all vegetation from a strip parallel to the bankline no less than 100 feet wide. The bankline then will be graded to a standard slope, using bulldozers and a barge-mounted dragline. This grading will destroy most of the surface deposits, significantly damaging or destroying all previously identified archeological features at the site. A continuous, articulated concrete

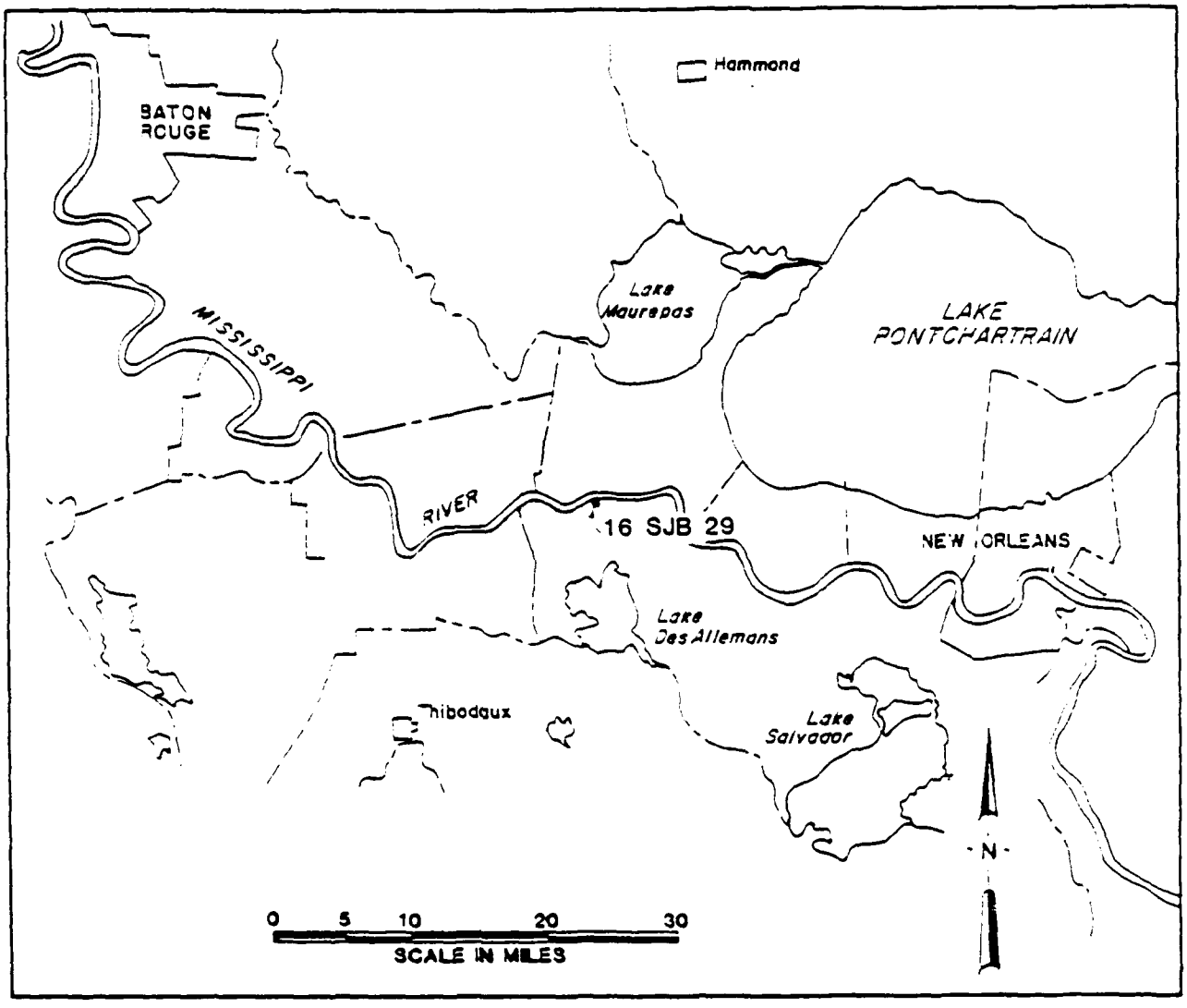



Figure 1. Map of the River Parish Region showing the location of 16SJB29 Data Recovery Project area, St. John the Baptist Parish.

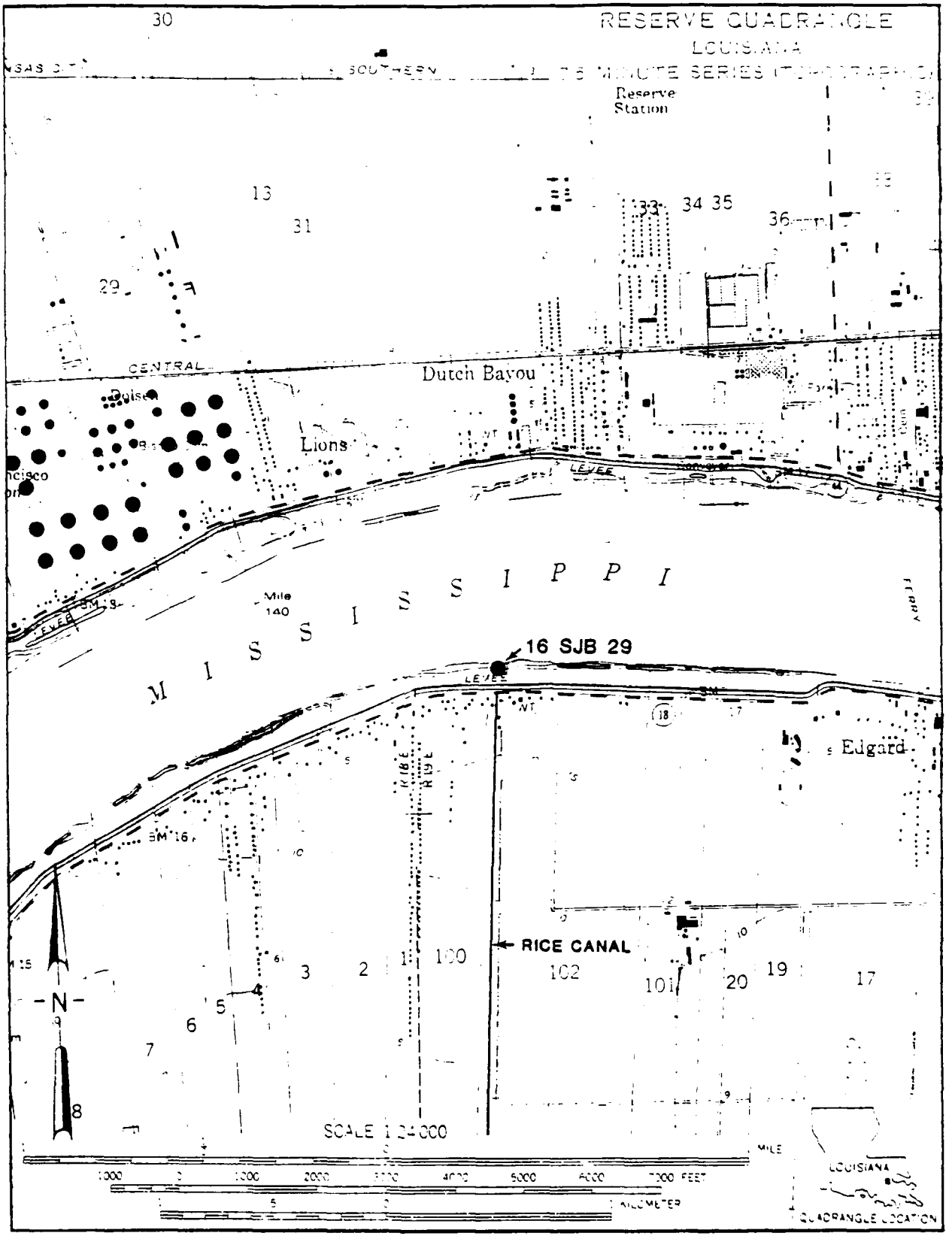



Figure 2. Excerpt from the 1962, photorevised 1981, Reserve, LA 7.5 minute series, USGS topographic quadrangle, showing the location of the 16SJB29 site complex.

mattress then will be laid mechanically, from the low water line to a point several hundred feet into the river and along the channel floor. The top of the mattress then will be covered with riprap to prevent further erosion of the bankline. This construction will destroy the site.

Because revetment construction is necessary, the U.S. Army Corps of Engineers, New Orleans District, the Louisiana State Historic Preservation Officer, and the Advisory Council on Historic Preservation subsequently agreed that mitigation in the form of archeological data recovery would preserve the scientific value of the site. Thus, archeological data recovery formed the basis of a Determination of No Adverse Effect (Appendix II).

### Research Issues

To assure preservation of the data, a program of historical research, and archeological excavation, recordation, and data collection was designed. The main theme identified to guide these investigations focused on nineteenth and early twentieth century rice agriculture in the St. John the Baptist Parish region. Archeological research examined the construction, function, and interrelationship of features at 16SJB29. These data then were synthesized with the archival research, to examine the historic and economic importance of rice production in St. John the Baptist Parish. During archeological data recovery, the dimensions, manner of construction and installation, and relationships of features to each other and to relevant historic features were recorded. Informants were sought and interviewed, and this information also was incorporated into the report. The local land tenure history was developed, and related to the historic rice industry. Archeological and historical data about the site were compared with other rice irrigation complexes, especially with the Vacherie Site (16SJ40) (Goodwin, Hewitt et al. 1988). Through these efforts, intrasite and intersite archeological and historical data concerning the nineteenth and early twentieth century rice industry in the region were integrated, and significant new information about the regional theme of rice production was obtained.

### Outline of the Report

Part 1 of this report (Chapters I - VIII) presents the results of the archeological investigations at 16SJB29. Chapter II examines the geomorphic and riverine processes operating in and around the project area, as well as the natural setting. It also contains a composite reconstruction detailing bankline changes over the past century, the sequence of levee setbacks, and the locations of formerly standing structures. Chapter III reviews previous cultural resources investigations near and in the project area. Previously recorded sites in the parish are reviewed; the excavation, recordation, and results of the 1984 and 1987 investigations at 16SJB29 (Shannon et al. 1988) are discussed, as well. The economic and land tenure history of the project area is examined in Chapter IV. Field methodologies applied during data recovery are reviewed in Chapter V. The excavations, stratigraphic profiles, archeological features, and additional cultural remains at 16SJB29 are discussed in Chapter VI. The following chapter presents the results of the laboratory analyses. The final chapter in Part 1, Chapter VIII, synthesizes the archeological and historical data, interprets features at the site, and compares the site with other historical and archeological data about rice irrigation systems in the St. John the Baptist Parish region. This chapter includes a comparison with the rice irrigation systems excavated at the Vacherie Site (16SJ40) (Goodwin, Hewitt et al. 1988), which is about ten miles upriver from the project area.

Because of the broader issue of antecedent difficulties in assessing the archeological and historical significance of features along the batture of the Mississippi River, Part 2 of this report examines the economic development of the region as a method for refining this assessment process. Chapter IX examines the primary types of archeological features found along the batture in the region. In this chapter, the historical development of indigo, sugar, and rice production is examined. The history of landings and wharves also is reviewed. Archeological features derived from these economic activities are identified; previously excavated examples of these features are summarized; and, priorities for further archeological research presented. In Chapter X, the effect of geomorphic and cultural processes on batture features is discussed to help archeologists identify these features. Finally, archeological expectations and predictions

for the batture, along with a summary of priorities for further archeological investigations on the batture, are presented in Chapter XI.

## CHAPTER II

## NATURAL SETTING

The Willow Bend revetment area is located near Edgard, Louisiana, on the west (right descending) bank of the Mississippi River in St. John the Baptist Parish. Site 16SJB29 is situated on the batture at river mile 139.5-R; it extends from the riverside toe of an earlier man made levee to the river's edge. The site's east boundary is approximately 70 meters west of the intake pipe of the Edgard water pumping station. The project area lies on a relatively straight section of the river just east of a slight southward bend at river mile 140. The current is gentle, leading to the deposition of sediment and the gradual accretion of silts and sands (Newton 1987:38). The following is a discussion of the various geomorphic and riverine processes that occur within the study area.

### Geomorphic and Riverine Processes

The Willow Bend project area is located in the deltaic plain of the Mississippi River, a low flat area barely above sea level, and dominated by fluvial processes. The processes that formed, and continue to alter, the site area, as well as the rest of southeastern Louisiana, have been discussed adequately elsewhere (Goodwin, Hewitt et al. 1988; Shannon et al. 1988). In addition, the effects of riverine processes and of river control construction on the batture are examined in Chapter X. Therefore, they are summarized in this chapter rather than discussed in detail.

Within the last five thousand years, delta formation at the mouth of the Mississippi River has created most of the land in southeastern Louisiana south of Baton Rouge. Several major episodes of delta building have been identified. Each episode represents a change in the course of the river. Frazier (1967) described the general chronological framework of these episodes, and defined five major delta complexes; these are illustrated in Figure 3.

The project area was formed during the Cocodrie and St. Bernard complexes. The Cocodrie Complex was active between approximately 5000 and 3500 B.P., and resulted in the deposition of deltaic sediments in the Pontchartrain Basin (Gagliano et al. 1975:41; Saucier 1962:62). The subsequent St. Bernard Complex followed the present day course of the river and formed the delta within the Pontchartrain Basin and over the modern eastern shoreline of Louisiana. Deposition continued during the St. Bernard Complex from ca. 3500 B.P. until approximately 2000 B.P. (Smith et al. 1986:38-40). At that time, the trunk channel turned southward near the present city of Donaldsonville, Louisiana, and began forming the Lafourche Delta Complex. Between 1000-1200 B.P., the trunk stream shifted eastward. The course established during the St. Bernard complex remains the significant modern day channel of the river (Saucier 1962:68). The study area lies within the intersection of the Cocodrie and St. Bernard complexes, where the St. Bernard deltaic processes overlapped the earlier Cocodrie deposits.

The Mississippi River Delta region has undergone dramatic changes since the advent of manmade protection levees. Bahr et al. (1983) state that "The greatest... influence on the modern delta is the artificial confinement of the Mississippi River." Control of the Mississippi River by levees and revetments has confined the natural alteration processes, including deposition and erosion, to the batture. Prior to the completion of the modern levee system in the lower Mississippi River Valley (1928-1936), large swamp basins on both sides of the river transported and accumulated a large percentage of the overbank discharge. Since then, and without the seasonal overflow of the Mississippi River, bankline cutting and aggrading have increased along the river. River migration can be defined as a lateral movement in a downstream direction (Inglis 1947). Artificial levees limit the lateral migration and meandering of rivers within their confines. As a result, the confined lateral migration occurs with more power, and the once balanced alternating sequences of deposition, subsidence, and rejuvenation give way to the now dominant processes of erosion and subsidence. The increasing width of the Mississippi River in the lower delta region is evidence of this change.

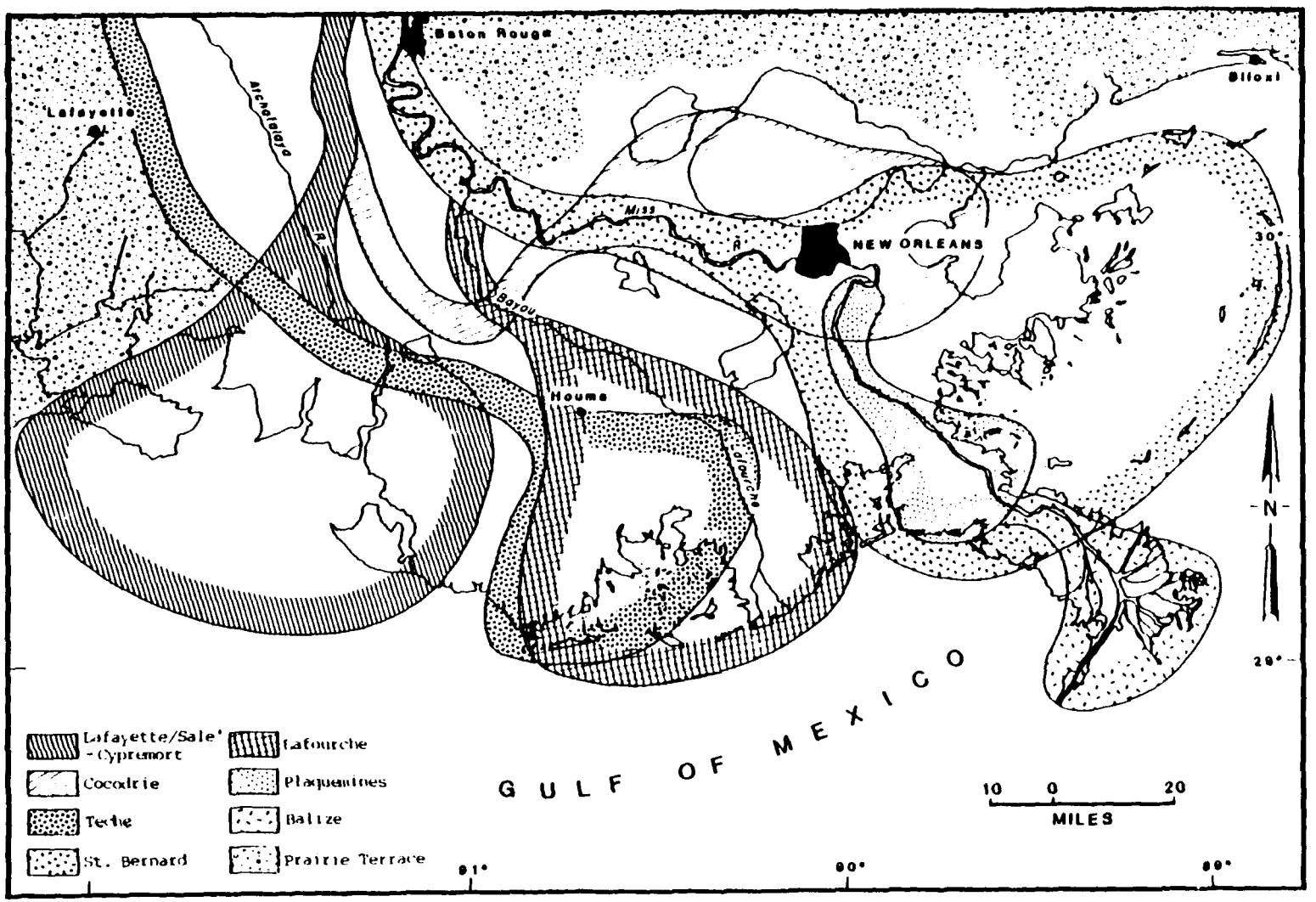



Figure 3. Major delta lobes of the Mississippi River (modified from Kolb and Van Lopik 1958).

## The Natural Setting

Site 16SJB29 lies entirely on the present day batture, between the manmade levee and the Mississippi River. The batture consists of numerous fine deposits naturally deposited by the river during floods. Loamy and clayey soils characterize the batture and the adjacent natural levee. These soils are subject to scouring and deposition during times of flood or high water. The river was extremely low at the time of fieldwork, and the terrain gradually sloped from the top of the bank. As will be discussed more fully in Chapter VI, surface deposits consisted of dark grayish-brown silt or silty clay, while the subsoil was a stratified, dark gray silt and silty clay, faintly mottled with yellowish-brown and gray.

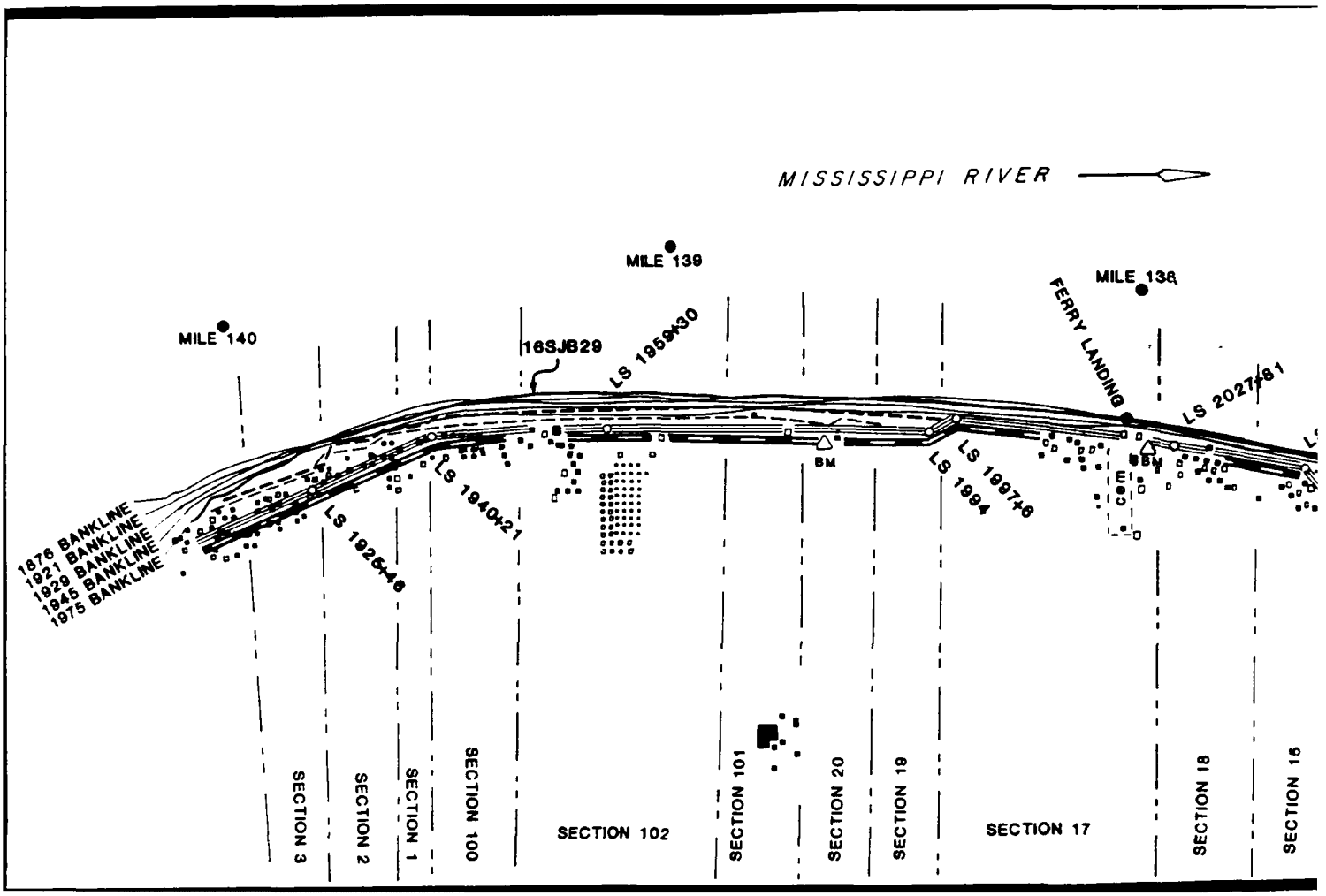
Periods of erosion, stability, and aggradation helped to form the batture in the following manner. Vertical erosion occurs in two ways. Transgression of the river water during high water stages usually causes sedimentary deposition; regression of the river erodes the batture. When the regressional phase is slow, erosion due to wave action and current is more extensive, and both transgressional deposits and underlying strata may be washed away. Slumping may occur during the regressional phase when inundated bluffs and terraces become saturated (Fisk 1943).

Figure 4 traces the changes in the bankline of the Mississippi River and its levees that occurred during the past century between river miles 137 and 140. This map is a composite of the 1876-1893 and 1921 Mississippi River Commission Charts 72; the 1952 Caving Bank Survey map; the 1973-1975 Mississippi River Hydrographic Survey Chart 43; and, the 1962 (photorevised 1981) Lutcher, LA, USGS 7.5 minute series topographic quadrangle. The site is located on a fairly straight section of the river. Over the past century, there has been little lateral movement of the river, with alternating short periods of minor cutting and agrading. The levee that appears on the 1876 map was capped in 1920 to make it several feet higher. The modern levee, built in 1932 and since modified, was set back from the 1920 levee by about 50 m; however, most of the 1920 levee still exists.

The minor amount of grading and cutting that has occurred within the project area over the past seventy years was described by David Webre, a lifelong local resident. According to Webre, Feature 2, a rice flume, was abandoned in the early 1920s. It then filled with riverine sedimentation, and no longer was visible. Several years later, while fishing in the Mississippi River, Mr. Webre observed the upper portion of the rice flume, which had been exposed through the cutting of the river (David Webre, personal communication 1988). While it is unclear how often this feature was covered and subsequently exposed, by 1988 the upper 3-6 cm of the feature were visible, as was the majority of its riverine end. The minor bankline changes illustrated in Figure 4 probably reflect seasonal changes in water level more than actual changes in the bankline.

The batture sediments support a variety of vegetation typical of the initial stages of ecological succession. Comprising the overstory vegetation are hardwoods such as sweetgum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Popular deltoides*), elm (*Ulmus spp.*), water oak (*Quercus arkansana*), hackberry (*Celtis laevigata*), pecan (*Crya illinoensis*), sycamore (*Platanus occidentalis*), and black willow (*Salix nigra*). The understory is composed of poison ivy (*Rhus radicans*), Virginia and trumpet creeper (*Parthenocissus spp.*), green briar (*Smilax spp.*), mimosa (*Albizzia julibrissin*), water millet (*Echinchloa spp.*), and peppervine (*Ampelopsis spp.*) (United States Department of Agriculture 1973:14). The most abundant vegetation found in the study area comprised sweetgum, sycamore, oak, hackberry, poison ivy, mimosa, and water millet.

Important faunal species present today include deer (*Odocoileus virginianus*), cottontail rabbit (*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and gray fox (*Urocyon cinereoargenteus*). Species that formerly were important in the region include black bear (*Euarctos americanus*), mountain lion (*Felis concolor*), and wolf (*Canis lupus*). In addition to mammalian species, birds fish, and reptiles are common in habitats both within and near the project area (Shelford 1963; Lowery 1974). Faunal species observed during fieldwork at 16SJB29 include turtle, lizard, and blue heron.


MISSISSIPPI RIVER
MILE 140
MILE 139
MILE 138
16SJB29
LS 1956+30
FERRY LANDING
LS 2027+81
BM
BM
LS 1994
LS 1997+8
LS 1940+21
LS 1926+40
1876 BANKLINE
1921 BANKLINE
1929 BANKLINE
1945 BANKLINE
1975 BANKLINE
SECTION 3
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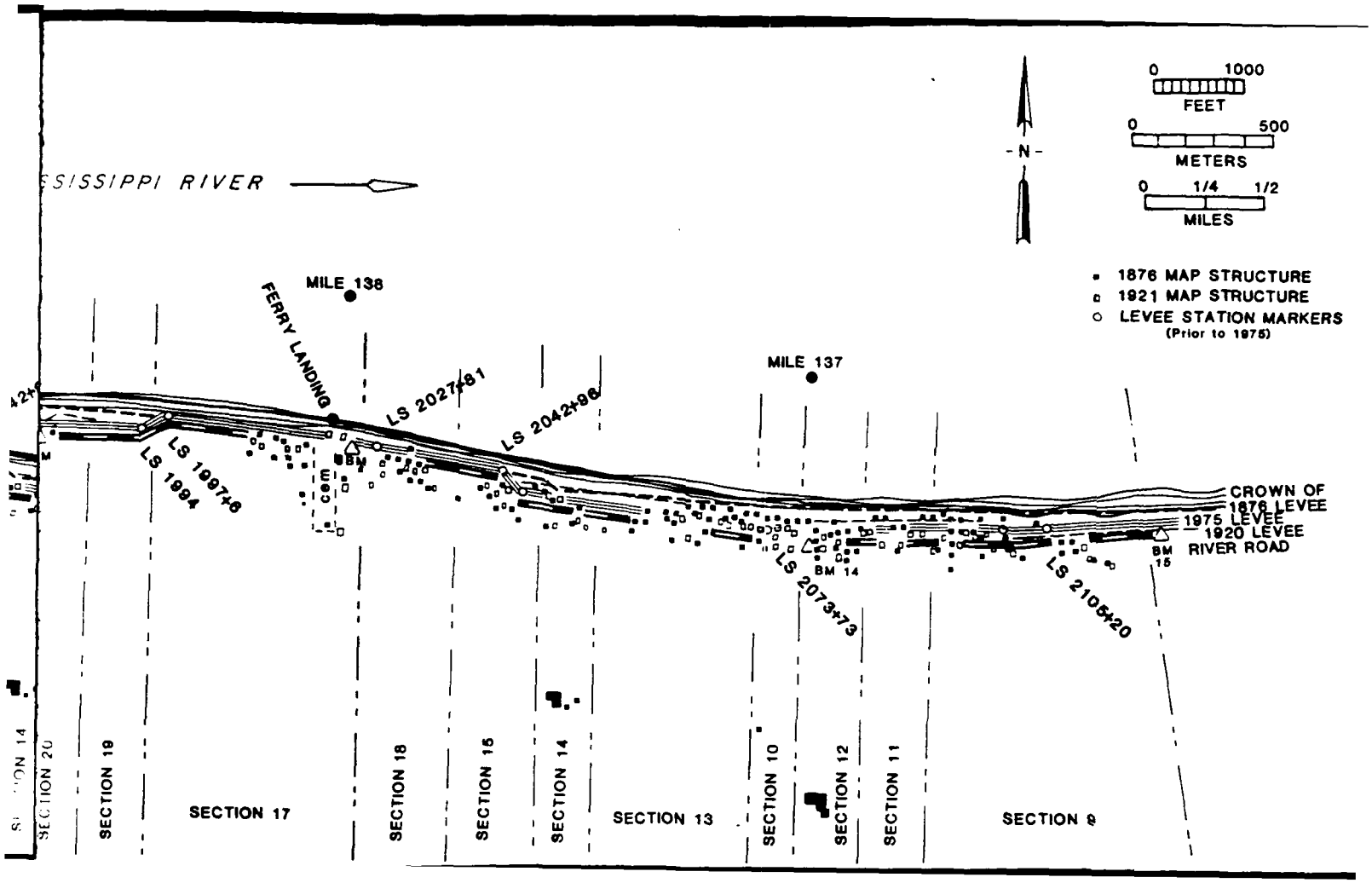
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- N -
0 1000
FEET
0 500
METERS
0 1/4 1/2
MILES
1876 MAP STRUCTURE
1921 MAP STRUCTURE
LEVEE STATION MARKERS
(Prior to 1975)
MILE 138
FERRY LANDING
MILE 137
LS 2027+81
LS 2042+98
LS 1994
LS 1997+6
BM
CEM
BM 14
LS 2073+73
LS 2105+20
BM 15
CROWN OF
1876 LEVEE
1975 LEVEE
1920 LEVEE
RIVER ROAD
SECTION 20
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## CHAPTER III

## PREVIOUS ARCHEOLOGICAL INVESTIGATIONS

In the following discussion, archeological resources in the vicinity of the study area are reviewed. This review emphasizes previous studies within St. John the Baptist Parish, and archeological sites recorded in the parish.

### Previous Cultural Resource Studies Near the Project Area

Several previous archeological studies have examined portions of St. John the Baptist Parish. In 1976, Rivet (1976) reported the results of his cultural resources survey of the Donaldsonville/New Orleans Highway and LA 3127 to LA 18 route. This survey was conducted for the Louisiana Department of Transportation and Development. During these investigations, Rivet located two archeological sites. One (16SJB5) was a multicomponent site that included a probable Baytown through Coles Creek period prehistoric occupation, as well as the remains of a late nineteenth century logging camp. The other (16SJB6) consisted of a scatter of late nineteenth century historic artifacts, probably from a tenant house associated with Edgard Plantation (Rivet 1976:2).

McIntire (1978) reported an archeological survey of a proposed Willow Bend chemical complex, conducted for the Shell Oil Company. During his study, he recorded two late nineteenth or early twentieth century sugar mills (16SJB14 and 16SJB15), as well as a complex of five late nineteenth or early twentieth century houses (16SJB13). McIntire concluded that both sugar mill sites were substantially disturbed, and that neither was significant. In addition, all five of the houses at 16SJB13 had been moved from their original locations, and each incorporated extensive structural modifications; none of these structures was significant.

Coastal Environments, Inc. (Glander et al. 1979) conducted archeological investigations at four proposed alternative Mississippi River Bridge alignments in St. James and St. John the Baptist Parishes, for the Louisiana Department of Transportation and Development. During the study, they located and recorded seven historic archeological sites within St. John the Baptist Parish. Six of these (16SJB18-23) were standing or recently standing structures, while the seventh (16SJB16) was a cemetery. The 1880s rice barn at 16SJB18 was determined to be significant from an architectural standpoint, but no determination of eligibility was made on the archeological components of these sites.

Garrison et al. (1981) conducted archeological excavations at two nineteenth or early twentieth century wells (16SJB24 and 16SJB25) near the town of Lucy. These excavations were undertaken for the U.S. Army Corps of Engineers, prior to planned bank stabilization construction. Both wells were on an aggrading bank of the Mississippi River, and were excavated and recorded prior to their destruction by the river. The authors concluded that these wells were probably contemporaneous, and that they were utilized by Germans who were being assimilated into the Acadian culture through marriage. In addition, local informants stated that the water from these wells probably was used for livestock rather than for human consumption (Garrison 1981: 24, 119, 126).

In 1984, the National Park Service conducted an archeological survey of a portion of the Mississippi River batture in St. John the Baptist Parish. This survey resulted in the identification of five archeological sites (16SJB28-32), including 16SJB29, the site under consideration in this report. These sites are discussed in a draft report (Shafer et al. 1984) on file with the U.S. Army Corps of Engineers, New Orleans District.

In 1987, R. Christopher Goodwin & Associates, Inc. conducted archeological investigations at nine revetment areas in St. John the Baptist, St. Charles, and Jefferson Parishes, for the U.S. Army Corps of Engineers (Shannon et al. 1988). This investigation included both site identification in previously untested areas, and site evaluation for previously discovered sites. During this project, the five sites located by the National Park Service in 1984 were evaluated, and five other historic archeological sites (16SJB35-40) were identified on the batture. The archeological investigation conducted at 16SJB29 will be discussed in more

detail later in this chapter.

A number of other archeological surveys have been conducted in the parish. These include those by Gibson (1978), Beavers and Chatelain (1979), Shenkel (1977), Stuart and Greene (1983), Twiner (1986), and Price (1987). None of these surveys resulted in the recordation of any historic archeological sites.

### Previously Recorded Sites Located Near the Project Area

Louisiana's Comprehensive Archaeological Plan (Smith et al. 1983) listed a total of 20 sites within St. John the Baptist Parish. Since the publication of the state plan, an additional 20 sites have been recorded in the parish. Most of these sites were identified as a direct result of surveys conducted in response to federal regulations. Most of these investigations consisted of survey projects designed to locate archeological sites prior to the construction of roads, pipelines, revetments, or levee enlargements. Few of these sites have been tested extensively.

Of the forty recorded sites, twenty-six have historic components; these are summarized in Table 1. Most of these sites date from the late nineteenth or early twentieth century and reflect a wide range of cultural activities. Many of the recorded sites are standing or destroyed domestic structures. At one end of the socio-economic spectrum, there are several mid-nineteenth century slave quarters (16SJB21), which were occupied until at least the 1960s; these dwellings were destroyed in 1979. Intact cultural remains associated with these structures are believed to be present; these have the potential to provide important information about one of the poorest sectors of the parish. At the other end of the spectrum is 16SJB27, the Gold Mine Plantation House Site, a nineteenth century Greek Revival house that was razed in 1982. This site reflects an upper middle class segment of society, in sharp contrast to the aforementioned slave quarters. Most of the recorded domestic sites within the parish fall between these two extremes. These include the remains of a tenant house (16SJB6), several late nineteenth century Creole houses (16SJB19, 16SJB20, 16SJB22), and several other modest houses and domestic sites (16SJB13, 16SJB18, 16SJB28). While several of the surviving structures (16SJB13, 16SJB20, house associated with 16SJB18) have been moved from their original locations, and separated from potentially significant associated features, the others have maintained their locational integrity and may include significant archeological remains.

Several commercial and small industry sites also have been recorded in the parish. These include sites related to the timber, sugar, and rice industries. The remains of a late nineteenth century logging camp (16SJB5) were recorded by Rivet (1976). Two sugar mill sites (16SJB14, 16SJB15) have been recorded; these sites reflect an integral part of the south Louisiana sugar industry, which was prevalent in much of the parish. In addition, a rice barn (16SJB18), as well as rice irrigation features such as rice flumes (16SJB29, 16SJB37), have been recorded; these mirror the relative importance of the river rice industry during the late nineteenth century.

A few other commercial sites have been recorded in the parish. One standing structure, the Willow Grove Store (16SJB23), is a late nineteenth century community store. Another, 16SJB32, is an early twentieth century concrete pad, which may be the base of a pump station associated with a crawfish farm. In addition, the function of a late nineteenth century boiler housing (16SJB39) on the Mississippi River batture has yet to be identified. While it has not been verified, it is likely this boiler housing was part of machinery used to draw water from the Mississippi River into agricultural (rice?) fields land side of the levee. Finally, the two nineteenth or early twentieth century wood lined wells excavated near Lucy (16SJB24, 16SJB25) have been interpreted as livestock wells.

As stated earlier, most of the recorded historic sites within St. John the Baptist Parish date from the late nineteenth and early twentieth centuries. This skewness is disproportionate to the known history of the parish. This parish, especially along the river, was fully settled by the end of the eighteenth century. While some sites have eroded into the river, many antebellum sites should be scattered throughout the parish. Reasons that so few have been recorded include natural riverine processes, as well as cultural activities such as levee and revetment construction. Some sites may have been missed or not recognized during surveys. In addition, only a small amount of the parish has been surveyed archeologically, and many of the recorded

Table 1

PREVIOUSLY RECORDED HISTORIC ARCHEOLOGICAL SITES LOCATED NEAR THE PROJECT AREA*

| Site # | Site Name | Site Description | River Bank and Mile | Recorded By |
|---|---|---|---|---|
| 16SJB5 | Bayou Becnel | Late 19th c. logging camp | N/A | Rivet (1976) |
| 16SJB6 | Edgard Plantation | Late 19th c. tenant residence | Right, M. 137.6 | Rivet (1976) |
| 16SJB13 | Wallace Community | Five late 19th-early 20th c. houses, moved, standing | Right, M. 141.6-142.3 | McIntire and Morgan (1978) |
| 16SJB14 | Shell Road Site | Late 19th-early 20th c. sugar mill remains | Right, M. 141.8 | McIntire and Morgan (1978) |
| 16SJB15 | Wego Plantation | Late 19th c. sugar mill remains | Right, M. 142.0 | McIntire and Morgan (1978) |
| 16SJB16 | Woodville Cemetery | 20th c. cemetery | Right, M. 146.1 | CEI (1979) |
| 16SJB18 | Zeringue House | 1920s house, moved, standing, and 1880s rice barn | Right, M. 146.0 | CEI (1979) |
| 16SJB19 | Hymel | 1880s Creole house, standing, and mid-19th c. domestic refuse midden | Right, M. 146.0 | CEI (1979) |
| 16SJB20 | Schexnayder | 1890s Creole house, moved, standing | Right, M. 146.0 | CEI (1979) |
| 16SJB21 | Marathon | Several c. 1850s slave quarters, razed in 1979 | Left, M. 140.7 | CEI (1979) |
| 16SJB22 | Tassin House | 19th c. Creole cottage | Right, M 137.5 | CEI (1979) |

| Site # | Site Name | Site Description | River Bank and Mile | Recorded By |
|---|---|---|---|---|
| 16SJB23 | Willow Grove Store | Late 19th c. commercial structure, standing | Right, M. 145.0 | CEI (1979) |
| 16SJB24 | North Lucy | 19th-early 20th c. wood lined livestock (?) well | Right, M. 135.0 | Garrison et al (1981) |
| 16SJB25 | South Lucy | 19th-early 20th c. wood lined livestock (?) well | Right, M. 135.0 | Garrison et al. (1981) |
| 16SJB26 | Pratt Lane | 19th-20th c. historic artifact scatter | Right, M. 147.3 | Barnes (1980) |
| 16SJB27 | Gold Mine Plantation House Site | 19th c. Greek Revival house | Right, M. 136.0 | Van Horn (1983) |
| 16SJB28 | None | 19th-20th c. domestic | Right, M. 138.6 | RCG & A, Inc. (1987) |
| 16SJB29 (Project Area) | None | Late 19th-early 20th c. rice irrigation flume system, 20th c. barge mooring area | Right, M. 139.5 | RCG & A, Inc. (1987) |
| 16SJB30 | None | Late 19th-early 20th c. unidentified wood feature, historic artifact scatter | Right, M. 139.7 | RCG & A, Inc. (1987) |
| 16SJB31 | None | Early 19th-late 20th c. artifact scatter | Right, M. 140.1 | RCG & A, Inc. (1987) |
| 16SJB32 | None | 20th c. concrete pad, possibly commercial | Right, M. 142.2 | RCG & A, Inc. (1987) |
| 16SJB35 | Angelina 87-1 | Late 19th-early 20th c. historic artifact scatter | Left, M. 142.5 | RCG & A, Inc. (1987) |
| 16SJB36 | Angelina 87-2 | Late 19th-early 20th c. historic artifact scatter | Left, M. 142.3 | RCG & A, Inc. (1987) |

| Site # | Site Name | Site Description | River Bank and Mile | Recorded By |
|---|---|---|---|---|
| 16SJB37 | Willow Bend<br>87-1 | 19th c. rice irrigation flume,<br>Mid-19th-20th c. historic<br>artifact scatter | Right,<br>M. 139.8 | RCG & A, Inc. (1987) |
| 16SJB39 | None | Late 19th c. boiler housing | Right,<br>M. 143.4 | RCG & A, Inc. (1987) |
| 16SJB40 | Vacherie<br>87-1 | Late 19th c. historic<br>artifact scatter | Right,<br>M. 144.2 | RCG & A, Inc. (1987) |

KEY

CEI = Coastal Environments, Inc.
RCG & A, Inc. = R. Christopher Goodwin & Associates, Inc.

*Sites 16SJB5 and 16SJB37 have prehistoric components. Data from the State Site Files, Louisiana Division of Archaeology, Department of Culture, Recreation and Tourism, Baton Rouge.

sites are standing structures. As more archeological surveys are conducted in the parish, a better data base for pre-Reconstruction period sites will be established.

### Investigations at the Vacherie Site, 16SJ40

The Vacherie Site (16SJ40), which is located about 10 miles upriver from 16SJB29, provided information relevant to 16SJB29. The Vacherie Site was excavated and recorded in 1987, and a report was written to document and interpret the findings (Goodwin, Hewitt et al. 1988). The site complex consisted of a series of nineteenth century rice irrigation flumes, which were spread along a mile of the batture. These rice flumes serviced the landward cultivation of river rice during the 1850-1890 period. These findings are discussed in more detail in Chapter IV of this report, because they are directly germane to this study.

### History of Archeological Investigations at 16SJB29

The archeological site 16SJB29 was located during a 1984 survey of the Mississippi River batture conducted by the National Park Service, Denver Service Center. At that time, the site was identified as an approximately 700-foot by 30-foot linear scatter of late 19th to early 20th century domestic refuse, in association with a wooden hand pegged sluice or drain, and with a possible historic revetment comprised of a vertical alignment of boards. Additional archeological testing was recommended by the National Park Service, Denver Service Center, to determine the National Register eligibility of 16SJB29 (Shafer 1984).

A Phase II study was conducted at 16SJB29 in 1987 by R. Christopher Goodwin & Associates, Inc. (Shannon et al. 1988). The site was systematically surface collected, with artifacts located in an approximately 30 m north-south by 80 m east-west area, parallel to the river. At this time, 112 artifacts were recovered including: brick fragments, iron shovel parts, roofing tiles, oyster shells, bottle glass, ginger beer bottle glass, milk glass, domestic brown stoneware, whiteware, ironstone, porcelain, pearlware, and cut and wire nails. These artifacts represent a predominantly late 19th and early 20th century assemblage. In addition, two boiler grates, slag, and coal were observed near Feature 1. The site size was reduced to correspond with the observed deposition of artifacts and features.

During that study, four wooden features were identified within the site. Feature 1 was an arrangement of posts and horizontal boards located adjacent to the Mississippi River. Features 2-4, located 13 m east of Feature 1, formed a linear arrangement of boards positioned perpendicular to the river, and extending from the river to the riverside toe of the pre-1876 levee. Three units were excavated within Feature 1, and one was excavated within Feature 3 (near the old levee), to interpret the nature of these features. In addition, fifteen auger tests, six probes, and six shovel tests were placed across the site.

The three excavation units within and adjacent to Feature 1 revealed two vertical board alignments that tapered toward each other. This feature initially was thought to be the remains of a boat. However, excavation demonstrated that the wooden posts were driven into the sterile batture clay, and that they did not form the ribs to a vessel. Since the clay floor of Feature 1 sloped toward the river, Feature 1 was interpreted as a wooden trough, possibly used for drainage. However, its precise function remained unclear. It was believed to be related functionally to Features 2-4.

Features 2-4 were tested to ascertain their function. The excavation unit placed in Feature 3 produced a few 19th and early 20th century artifacts, and a scattered arrangement of boards. These boards were interpreted as the remains of a wooden plank structure associated with Features 2 and 4. Features 2 and 4 consisted of squared posts connected by horizontal boards; these boards were photographed and mapped, and the area between them was shovel tested. Shovel testing demonstrated that the two features in fact were articulated.

The previously identified wooden hand pegged sluice or drain was not visible during the 1987 investigations; therefore, the conclusion was reached that the sluice or drain feature had eroded into the river during the intervening three years. This interpretation was disproved during the 1988 excavations, when

record low water levels exposed the previously identified sluice or drain feature.

Based on evidence gathered in 1987 from excavation units placed at Features 1 and 3, on the surface appearance of Features 2 and 4, and on the linear alignment of Features 2-4, the site was interpreted as the remains of a 19th century wharf possibly associated either with Columbia Plantation or with some undocumented ferry landing. Because of the extant structural remains and the lack of historical or archeological documentation on rural landings and wharves along the lower Mississippi, 16SJB29 was evaluated as a significant cultural resource, eligible for inclusion onto the National Register of Historic Places (Shannon et al. 1988).

The 1987 site testing was fairly comprehensive, stopping short of destroying the very fragile resource base. The project followed appropriate procedures without lapsing into salvage archeology at the testing phase. However, the results of this testing, coupled with insufficient property specific archival research, led the investigators and the contracting agency to faulty interpretations. The importance of extensive property specific archival research during site testing is underscored by the inaccurate interpretations of the 1987 investigations.

The U.S. Army Corps of Engineers, New Orleans District, in consultation with the Louisiana State Historic Preservation Officer, concurred with the evaluation of significance for 16SJB29. It was concluded that the most practical means to mitigate damage to the site prior to planned revetment construction was to excavate the site. Through archeological excavation, significant data from the site would be recorded to preserve the historical and scientific value of the site. This archeological recordation, in conjunction with historical research, would form the basis for a determination of No Adverse Effect at 16SJB29 (Appendix II).

In July 1988, the U.S. Army Corps of Engineers, New Orleans District, contracted with R. Christopher Goodwin & Associates, Inc. to conduct archeological excavations at 16SJB29, and to undertake extensive historical research about the site and about rural landings and wharves. The excavations were directed toward recording the remains of the wharf or landing tentatively identified during the 1987 Phase II investigations. The research design for the project was multi-faceted. It included a detailed historical study of site-specific land tenure history, with emphasis placed on the use of the landing within the Columbia Plantation complex. A documentary study of rural landings and wharves along the lower Mississippi River was planned, as were local informant interviews. Through these sources, a typology of landings and wharves in the river parishes would be developed. Archeological excavations emphasized the structural recordation of the features, since soil deposits lacked contextual integrity. Finally, the data obtained at 16SJB29 were to be intertwined with the historical documentation and used in creating the landings and wharves typology. Through this research, a previously unrecorded class of riverine archeological features, landings and wharves, would be documented. This would help archeologists to identify and to evaluate these features in the future.

Archeological excavations at 16SJB29 began on July 18, 1988. Early the following week, it was determined that the articulated Feature 2/4, renamed Feature 2, was a rice agriculture irrigation flume and not a landing or wharf. The New Orleans District was consulted promptly about this reinterpretation; Ms. Carroll Kleinhans, Contracting Officer's Representative for the New Orleans District, visited the site on August 1, 1988, to monitor work in progress.

Because of the reinterpretation of the features at 16SJB29, the research design for the project was reassessed. While the original research design had revolved around the examination of landings and wharves, a revised research design was necessary to examine the rice irrigation system excavated at 16SJB29 and to address the concerns about why the site originally was misinterpreted. In consultation with the Contracting Officer's Representative, the following multi-faceted research design was established to address the evolving needs of the project.

A portion of the modified research design revolved around the discussion and interpretation of the excavated rice irrigation system. It emphasized the significant local cultural theme of rice production. Its goal was to learn more about the adaptation of local rice production to technological and legal changes. During the late 19th and early 20th century, technological innovations such as the steam engine were

increasingly available in the river parishes. In addition, state and federal regulations controlling the Mississippi River levee system forced local residents to modify established rice irrigation practices. Through archeological excavations at 16SJB29, historical research, informant interviews, and the comparison of the excavated flume with other known rice flume systems, the goal of documenting the local development of rice irrigation systems could be achieved.

Several other important research issues were raised during the 16SJB29 excavations. These issues centered on why 16SJB29 originally was misinterpreted and revolved around archeological expectations about the batture and the natural and cultural factors that affect the morphology of batture archeological sites. Questions examined included: 1) What types of economic activities regularly occurred along the batture, and what types of archeological deposits were formed as a result of these activities? 2) Which expected batture archeological features would produce potentially significant historical or scientific data? 3) How have these archeological deposits been affected by natural and cultural forces? The goal of the research was to help archeologists to anticipate the types of archeological features occurring along the batture within the river parishes; to evaluate more accurately cultural resources located during survey; and, to understand the effects of both natural and cultural forces on the archeological resource base. Through this study, the location, identification, and evaluation of archeological sites would be enhanced.

In order to address the research issues, local history was examined to determine which local economic activities produced batture archeological sites. In the St. John the Baptist Parish region, these activities included indigo, sugar, and rice production and the construction of landings, wharves, and levee structures. Each was examined historically, with an emphasis on those aspects that produced archeological remains. Through this research, archeological expectations were developed. These expectations were compared with previously excavated archeological sites to determine which classes of features merited further research. One of the contributing factors that led to the original misinterpretation of 16SJB29 was damage to the site caused by both natural and cultural forces. Through a detailed examination of these forces, site formation and destruction processes at the site and in the region were interpreted.

This report is the product of the modified research design. The archeological and historical research conducted during the project demonstrated that the rice irrigation flume system excavated at 16SJB29 was a significant cultural resource, and the data obtained from the excavation provided previously unrecorded information important to the local history [36 CFR 60.4(d)]. These data are presented in the first part of this report. In the second part, archeological expectations and priorities for the batture in the St. John the Baptist Parish region are presented, along with a discussion of factors that affect sites on the batture. It is hoped that the identification and evaluation of batture sites will be enhanced and that the resource base and the U.S. Army Corps of Engineers, New Orleans District, will be better served.

## CHAPTER IV

## ECONOMIC AND LAND TENURE HISTORY

### Introduction

The Willow Bend project area historically was agricultural land. Land use within the study property developed according to agronomic patterns characteristic of St. John the Baptist Parish during the historical period. This chapter discusses the relevant economic and culture history of the study area and provides an historical framework for the project's archeological setting. Using the direct historical approach, the research data presented in this chapter were based upon archival documentation collected at the St. John the Baptist Courthouse in Edgard, Louisiana, at Louisiana State University, Southeastern Louisiana University, Tulane University, the University of New Orleans, and at the public libraries of Orleans and St. John the Baptist Parishes. Specific land tenure history of the project area, including the development of Camelia and Columbia Plantations, follows the general economic history of the parish.

### The Colonial Period

The earliest historic settlements in the project vicinity were established by German speaking immigrants in the 1720s. Most of these people were survivors of a failed Arkansas River settlement. John Law's Company of the West enticed yeoman farmers, mostly from the war torn Rhineland region, to colonize the New World for France. Law brought approximately 2,000 German speaking farmers to the New World (Deiler 1975). Most of the German immigrants were engagees, or indentured servants. They agreed to work as servants for a specified number of years in exchange for payment of their passage to America. The German engagees encountered much difficulty in the Arkansas settlement, and it was abandoned in 1720 (Deiler 1975:88). The 170 survivors of the Arkansas post joined German colonists who settled along the west bank of St. Charles Parish under the leadership of Karl Friedrich D'Arensbourg. Together with the Arkansas engagees, the German colonists established small farms approximately ten to twelve leagues (30 to 36 miles) above New Orleans on the west bank of the Mississippi River. The "village de Karlstein" was established amidst these west bank farms approximately where the town of Lucy is situated today (Deiler 1975:89). According to the 1721 Census of Inhabitants and Concessionaires of New Orleans and Surrounding Places, the first German Coast (La Cote des Allemands) families were industrious farmers:

> The German families which may comprise about 330 persons of all sexes and ages are located twelve leagues above New Orleans to the left on going up the river on a very good soil where formerly there were wild fields 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).

In September 1721 a severe hurricane destroyed the Karlstein village, and it was rebuilt upriver. By 1724, the German Coast was one of the most successful agricultural communities in south Louisiana. The 1724 census stated:

> 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 from 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 planter, 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 1730, the German Coast supplied the markets of New Orleans with butter, fowl, and vegetables; and small quantities of beans, rice, and corn were being shipped to the French West Indies (Newton 1987:126, Hoffman, 1986:54). The German farmsteads surrounding the second Karlstein settlement expanded and included a chapel (built in 1723) and cemetery. By 1731, the German Coast included a settlement on the east bank of the Mississippi River (Maduell 1972: 146-147; Deiler 1975: 7677).

The upper portion of the original German Coast settlement was settled quickly by Acadian immigrants who arrived in large numbers after 1755. Between 1755 and 1785, more than 2,500 French speaking Acadians arrived in Louisiana (Fortier 1894). The village de Ste. Phillip was established by the immigrant Acadians approximately 49 miles above New Orleans on the west bank near present day Wallace. The Willow Bend study area is situated between the traditional German and Acadian Coast settlements, between present day Lucy and Wallace respectively.

The combined German and Acadian settlements became known as Cote d'or, the Golden Coast, because of the fertility of the lands (Voss 1928:13). Figure 5 shows the Golden Coast settlements on both banks of the Mississippi River in 1765. By the end of the French colonial period, the German Karlstein settlement expanded upriver while the Acadian St. Phillip settlement expanded downriver. It was during this period that the town of St. John was created. In 1769, the first church of St. John the Baptist Parish was built at the village of St. John, (present-day Edgard).

Throughout the remainder of the French colonial period, additional colonists settled the burgeoning Golden Coast, and the colonists continued to establish an agricultural base despite the desperate political atmosphere in France. Although the Louisiana territory was politically strategic to France in its conflict with England, the French could not afford the large, unprofitable colony. In 1762, France ceded the Louisiana territory to Spain in the Treaty of Fountainbleau.

### The Spanish Colonial Period

The arrival of the Spanish did not dramatically change the agrarian society along the Mississippi River above and below New Orleans. In general, the economic development initiated during the French colonial period continued for the small Golden Coast farmers during most of the Spanish period. Eventually, demographic patterns in St. John the Baptist Parish changed as commodities and trade patterns changed. The failure of indigo altered agricultural patterns in the region during the late Spanish period; however, this failure affected the larger slave plantations and not the rice and vegetable farmers of the German and Acadian Coast. The Golden Coast agronomy remained stable until the end of the Spanish period when smaller landholders began selling their holdings or consolidating with others to form larger plantations. The consolidation of land holdings toward the end of the eighteenth century coincided with the large influx of French speaking planters. These French planters integrated with the German settlers marking the end of the German era. Population growth between 1769 and 1777 doubled on the Golden Coast, increasing from 1,183 to 2,363. The 1770 census showed a large increase in the number of negro slaves and French landholders along the tracts of St. John the Baptist Parish. The 2:1 ratio of slaves to whites indicates that there were affluent planters along both sides of the river during the late Spanish period. The 1783 census also showed population increases for slaves, whites, and Free People of Color. However, the agricultural tracts that were situated in west St. John the Baptist Parish near Edgard remained small until the second decade of the nineteenth century (Conrad 1981; Gaudet 1984:85).

For the wealthier planters of the parish, the increase in large scale slave agriculture did not insure profitable cultivation of the primary cash crop, indigo. During the 1790s, most of the indigo crops were lost to insect infestation and flooding. After a peak production of 400,000 to 600,000 pounds during the 1780s, the 1801 crop was a mere 80,000 pounds (Hoffman 1986).

During the late Spanish period, the indigo planters of St. John the Baptist abandoned this labor-intensive cash crop for other agricultural pursuits: lumber, cattle, vegetables, and rice. Most planters did not switch to sugar cane until the early nineteenth century. However, the establishment of the classic Mississippi River plantation culture, where numerous slaves worked large tracts of land, was fully evident in

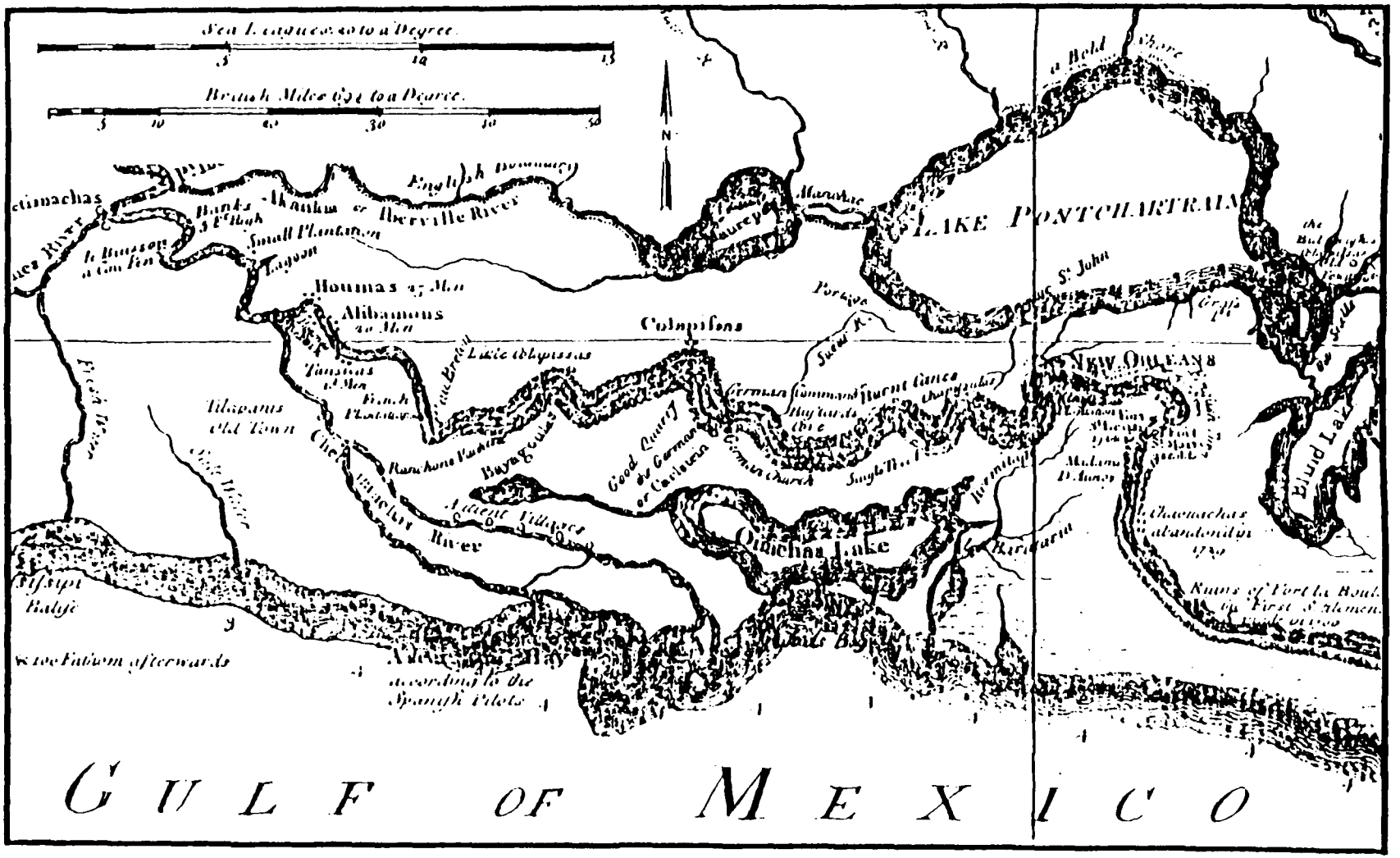



Figure 5. Excerpt from Ross' 1765 Course of the Mississippi from Balise to Fort Chartres showing the Golden Coast settlements (Louisiana Collection, Tulane University Library).

parts of the parish by the time of the Louisiana Purchase (de Laussat 1940).

### The Antebellum Period

Geopolitical changes in the early 1800s influenced the economic development of the Louisiana colony including the agricultural communities of St. John the Baptist Parish. In 1800, Spain ceded Louisiana to France under the secret Treaty of San Ildefonso. France sold the colony to the United States in 1803. At the time of the Louisiana Purchase, the ecclesiastical parishes of St. John the Baptist and St. Charles were combined to form the County of the German Coast. In 1807, the Louisiana Legislature again divided the territory into nineteen parishes; by this act, the two separate German Coast parishes were re-established.

The first decades of the nineteenth century brought little agricultural and land use change to the study area farmsteads of west St. John the Baptist Parish. Gaudet (1984) states:

> ...the plantation system was not yet established on the west bank of St. John the Baptist Parish in 1811. There were mostly small farms. Though there were some slaves, there were no wealthy slaveholders, and the large plantations such as Glendale and Evergreen were built in the 1830s (Gaudet 1984:85).

By the second decade of the nineteenth century, however, the opportunities offered by the growing sugar industry stimulated immigration into the region. The discovery that sugar could be produced on a large scale and sold for profit changed the agricultural base of south Louisiana, including St. John the Baptist Parish. The promising sugar cane industry prompted small farmers either to consolidate their tracts with relatives and neighbors to form larger farms, or to sell their parcels to wealthier planters. The agricultural land adjacent to the batture study area followed a similar land use pattern.

By the turn of the century, Karlstein was known as Bonnet Carre Point. The town of St. John was renamed "Edgar," after postmaster Edgar Parret in 1850. The "D" was added because another Mississippi River post office was called Edgar (St. John the Baptist Parish Developmental Board 1959). The colonial St. John church at Edgard was washed into the Mississippi River during a flood in 1821 and rebuilt in 1822. The church served both sides of the river in St. John the Baptist Parish until 1869, when St. Peter's was built at Reserve, Louisiana. Upriver, St. Phillip became the town of Wallace.

By 1825, most of the farmsteads in west St. John the Baptist Parish switched from rice, cattle, and vegetable farming, and invested in the planting of sugar cane. The lands that eventually incorporated Site 16SJB29, the 13 arpent front Pierre B. Marmillion tract, was referred to as a sugar plantation in 1822 (COB D. Folio 125, St. John the Baptist Courthouse).

Between 1825 and 1860, the sugar estates along west St. John the Baptist Parish flourished. Figure 6 shows the Marmillion study area tract in Township 12S, Range 19E. Sugar production in the study area before the Civil War reached its peak at the P. B. Marmillion plantation in 1844 and 1855, with 788 and 715 hogsheads being produced (Champomier 1851-1858) (Table 2).

### The Civil War

The prosperous sugar planters of St. John the Baptist Parish had much to lose by the emancipation of slaves. At the beginning of the Civil War, the citizens of the parish organized the Stephen's Guards under Captain Lezin Becnel, a prominent planter who lived upriver from the Marmillion plantation. In 1862, the Stephen's Guards marched under the command of Colonel Wales from Edgard to Boutte where they defeated Union troops and took 450 prisoners. The Stephen's Guards served in the 13th Louisiana Regiment under Colonel Gibson in Gibson's Brigade. They took a prominent part in numerous important battles including the Battle of Shiloh. Overall, however, the parish saw very little of the war. In August 1862, cannon shots from the federal gunboat **North Carolina** were fired into the Goldmine sugarhouse at Edgard,

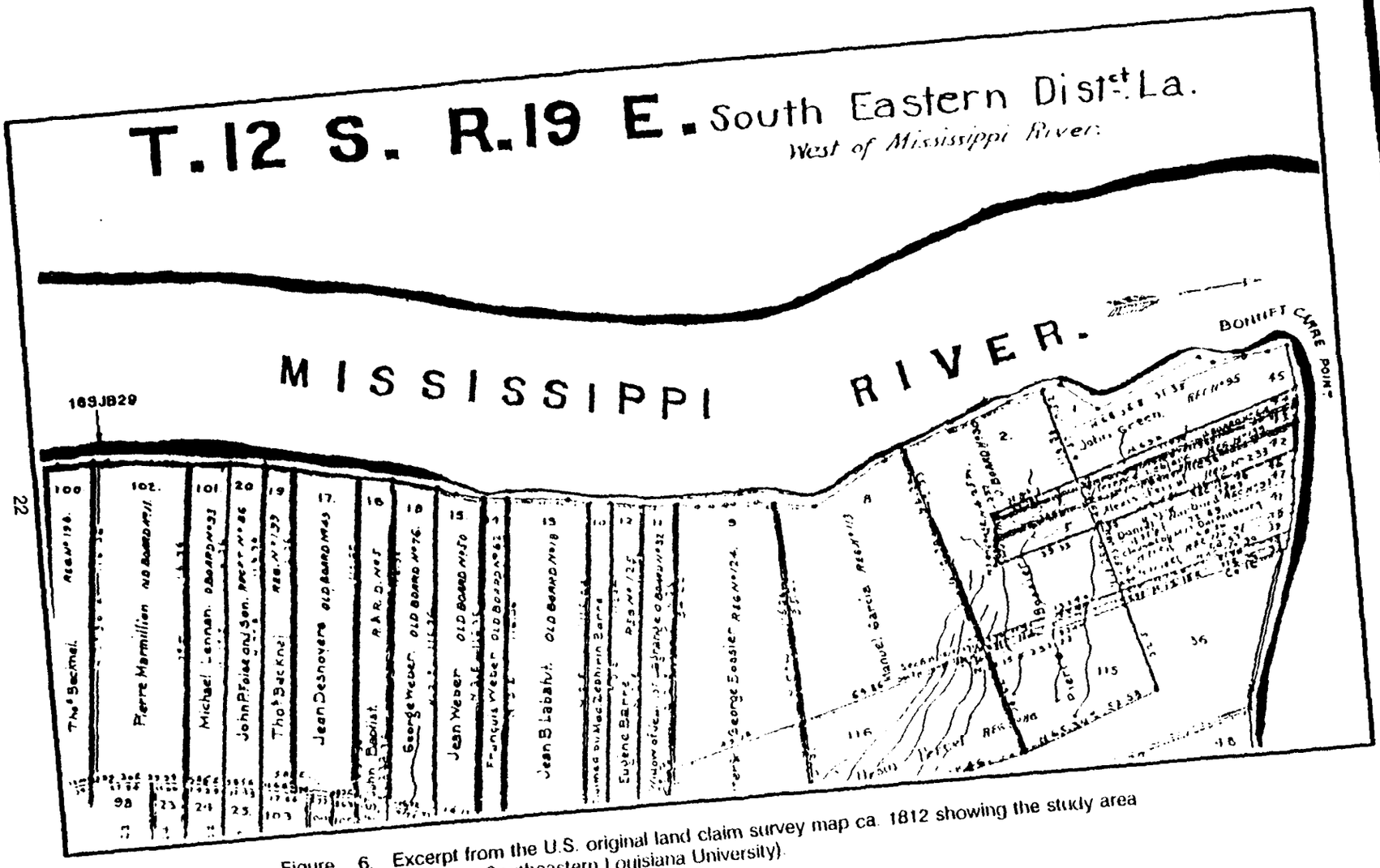



Figure 6. Excerpt from the U.S. original land claim survey map ca. 1812 showing the study area (Archives, Southeastern Louisiana University).

Table 2

SUGAR PRODUCTION AT CAMELIA PLANTATION
(Champonier 1851-1858; Bouchereau and Bouchereau 1868-1886)

| Year | Owner/Manager | River Mile | Sugar in Hhds |
|---|---|---|---|
| 1851-1852 | P. B. Marmillion & Becknel | 44 | 137 |
| 1852-1853 | " | 44 | 74 |
| 1856-1847 | P. B. Marmillion | 44 | 33 |
| 1868-1869 | Mrs. P. B. Marmillion | 44 | 35 |
| 1871-1872 | " | 44 | 44 |
| 1872-1873 | " | 44 | 49 |
| 1875-1876 | A. LeBoeuf | 44 | ... |
| 1876-1877 | LeBoeuf & Roussel | 44 | ... |
| 1877-1878 | " | 44 | 6 |
| 1879-1880 | " | 44 | 24 |
| 1880-1881 | August LeBoeuf | 44 | 20 |
| 1881-1882 | " | 44 | NY. |
| 1882-1883 | " | 44 | ... |
| 1883-1884 | " | 44 | ... |
| 1884-1885 | " | 44 | ... |
| 1885-1886 | " | 44 | ... |

where Confederate troops were camped. On September 4, 1863, a federal gunboat, the **Laurel Hill**, ascended the river into St. John the Baptist Parish. Union cavalry detachments landed on both sides of the river and confiscated money, jewelry, horses, pigs, cattle, poultry, and all possible provisions (Ferachi 1974:23; St. John the Baptist Parish Developmental Board 1959:8). These incidents of war were isolated occurrences, and St. John the Baptist Parish was spared much of the devastation of the war. However, the postbellum years were especially difficult ones for the parish. Ferachi states:

> There were few other hostile incidents in the parish, but it was Reconstruction, which lasted until 1896, that was to prove the more difficult era for the people of St. John the Baptist Parish (Ferachi 1974:23).

**The Postbellum Period**

The economy of St. John the Baptist Parish during the Civil War and Reconstruction was devastated by the collapse of the slave labor system and by the lack of available capital for rebuilding. Sugar farming in south Louisiana came to an abrupt halt after the occupation of New Orleans. Marketing was difficult, prices were low, and credit was unavailable. Slaves ran away or were freed by Union troops, who also confiscated stock and supplies. Some planters switched to subsistence farming, while others gave up completely and rented their lands (Begnaud 1980: 38-39; Goodwin, Yakubik, and Goodwin 1983). Many planters lost their plantations. Sugar production during most of the latter part of the nineteenth century did not approach the high reached just before the war in 1861. The causes included:

> Changes in labor systems, bad politics and government, and fear that the [sugar] tariff would be abolished or greatly modified... (Bouchereau and Bouchereau 1890:53a).

The postwar labor shortage was critical. The Thirteenth Amendment freed all people formerly held as slaves and destroyed the South's labor system. Wage labor initially proved inadequate for sugar farming; and the former slaves were seen as lazy, dishonest, and a political threat. During this period, the Parish of St. John the Baptist, in particular, witnessed intense political hostility between the majority black population and white citizens. The 1870 census listed 6,782 inhabitants in the parish, of which 4,044 were black. Local historians such as Rev. Msgr. Jean M. Eyraud and Donald J. Millet (1939), and Lubin Laurent (n.d.) remembered the Reconstruction period in St. John the Baptist Parisn as a time of reverse discrimination. Eyraud and Millet stated:

> In 1870, The Fifteenth Amendment to the Constitution gave to all negroes the right to vote. With the help of the white radicals and the Northerners, negroes, who a few years before were regular field hands, now became legislators, justices of the peace, sheriffs and constables. They soon began to handle public money, allowing large sums to flow into the pockets of their white advisers, and some into their own pockets. There followed a period of shameless corruption, with increasing taxes and rapidly increasing debt (Eyraud and Millet 1939:17).

The St. John the Baptist Parish Developmental Board (1959) expressed similar sentiments:

> The reconstruction days after the Civil War were dark days for the Parish. The Parish suffered greatly from the control of the radicals and carpetbaggers. The situation was growing worse all the time as the violators were protected by the officers and the courts. It became necessary for the citizens to organize the White League and the Regulators to cope with the situation and protect the people of the Parish (St. John the Baptist Parish Developmental Board 1959).

To alleviate the labor shortage after the Civil War, Bouchereau advocated the introduction of white (European immigrant) labor into the sugar industry, and proposed the establishment of a settlement organization: the Louisiana Immigration and Homestead Company (Bouchereau and Bouchereau 1871). A. Bouchereau also proposed the separation of cane growing and sugar processing costs. This way, cane

farmers who could not afford a sugar mill could still grow cane profitably on a smaller scale.

In the study area of west St. John the Baptist Parish, the postbellum Marmillion Plantation, owned by the widow of P. B. Marmillion, reinvested in sugar cultivation. This estate maintained its own wood steam and kettle apparatus sugar mill (Bouchereau and Bouchereau 1869). Besides cane, the plantation of Mrs. P. B. Marmillion grew 160 Bbls of rice in 1869 (Table 3). Throughout the remainder of the nineteenth century, this plantation steadily decreased its cane cultivation in favor of rice. When Augustave LeBouef purchased this land at a sheriff's auction in 1876, sugar production had stopped altogether while rice production increased to 748 Bbls (Bouchereau and Bouchereau 1876). LeBouef called his rice plantation, "Camelia," after his wife, Camelia Roussel, a free black (1870 census). LaBoeuf rented his rice fields to tenant farmers.

In 1883, LeBouef sold a one arpent front tract to Eugene Roussel, who was possibly his wife's son. Eugene Roussel and his wife, Tassephine Roussel, maintained their one arpent front farm into the twentieth century (Figure 7). Between 1930 and 1950, the Roussel and Saberre descendants of Eugene Roussel switched from rice cultivation to truck farming. Truck crops were produced principally for the local New Orleans market, although various vegetable products were shipped to northern markets. Truck farming is still a viable industry in St. John the Baptist Parish. An estimated 4,500 acres of vegetable crops were planted in the parish in 1954 (St. John the Baptist Developmental Board 1959:21). The principle truck crops were cabbage, shallots, corn, okra, turnips, broccoli, and mixed winter greens.

The adjacent downriver Columbia Plantation did not plant rice or truck products. Sugar cane production remained high during the postbellum and twentieth century at this plantation. Columbia Plantation is still one of the largest sugar growers and refiners in the parish. The present owners, Caire and Graugnaud, operate the Columbia Sugar Refinery, which grinds approximately 55,000 to 65,000 tons of cane annually (Table 4). The refinery produces high grade direct consumption sugar and molasses.

### Land Tenure History

The specific piece of property that contains 16SJB29 and the associated rice canal is located in the upriver portion of Section 102 of Township 12S, Range 19E. The present owners of the property are descendants of Eugene Roussel, a Freeman of Color who acquired the one arpent front parcel from Augustave LeBouef in 1883 (COB Gns, Folio 185, St. John the Baptist Courthouse). Prior to Eugene Roussel's ownership, the study area in question was part of the downriver portion of the postbellum Camelia Plantation. Figure 8 is a schematic representation of land ownership showing that the historic owners of the study property were not directly involved with the development of the large Columbia Plantation, although this important sugar plantation is also situated in Section 102. As previously indicated, the property in the study area developed along agronomic patterns typical of the region until Reconstruction. After the Civil War, rice eventually replaced sugar cane as the primary crop at Camelia Plantation. The study area parcel of Camelia Plantation is the historic demarcation that separated the upriver rice fields from the downriver cane fields along west St. John the Baptist Parish between the towns of Edgard and Wallace. Because the study property lies between Section 100 and Section 102 of Township 12S, Range 19E, the following land ownership history examines both sections.

The study area property was settled originally by the German Brou family. The size of the original Brou tract is uncertain. Catherine Brou, a native of the German Coast, married Thomas Becnel from London on April 4, 1742 (Conrad 1972). They settled on Brou property and their descendants, the Becnels and the Roussels, cultivated this property into the nineteenth century. By the turn of the nineteenth century, this property was surveyed and defined for claim ratification by the U.S. Surveyor General's Office. The Becnel tract comprised Section 1 of Township 12S, Range 18E, and the adjacent Section 100 of Township 12S, Range 19E. Abstracts from the Civil Record of St. John the Baptist Parish during the Spanish Period indicate that Pierre B. Marmillion, owner of Section 102 in Township 12S, Range 19S in the 1790s, acquired this property by marriage to Francois Haydelle, daughter of Christopher Haydelle who arrived on the German Coast during the 1740s (Conrad 1972). Original Acts of St. John the Baptist Parish during the late eighteenth and early nineteenth century contain various records of the Becnel, Marmillion, and Roussel

Table 3

RICE PRODUCTION AT CAMELIA PLANTATION
(Bouchereau and Bouchereau 1868-1886)

| Year | Owner/Manager | River Mile | Sugar in Hhds |
|---|---|---|---|
| 1868-1869 | Mrs. P. B. Marmillion | 44 | 160 |
| 1870-1871 | " | 44 | ... |
| 1871-1872 | " | 44 | ... |
| 1875-1876 | A. LeBoeuf | 44 | 748 |
| 1876-1877 | LeBoeuf & Roussel | 44 | 481 |
| 1877-1878 | " | 44 | (not recorded) |
| 1879-1880 | LeBoeuf & Roussel | 44 | 28 |
| 1880-1881 | August LeBoeuf | 44 | ... |
| 1881-1882 | " | 44 | 516 |
| 1882-1883 | " | 44 | 975 |
| 1884-1885 | " | 44 | 565 |
| 1885-1886 | " | 44 | ... |

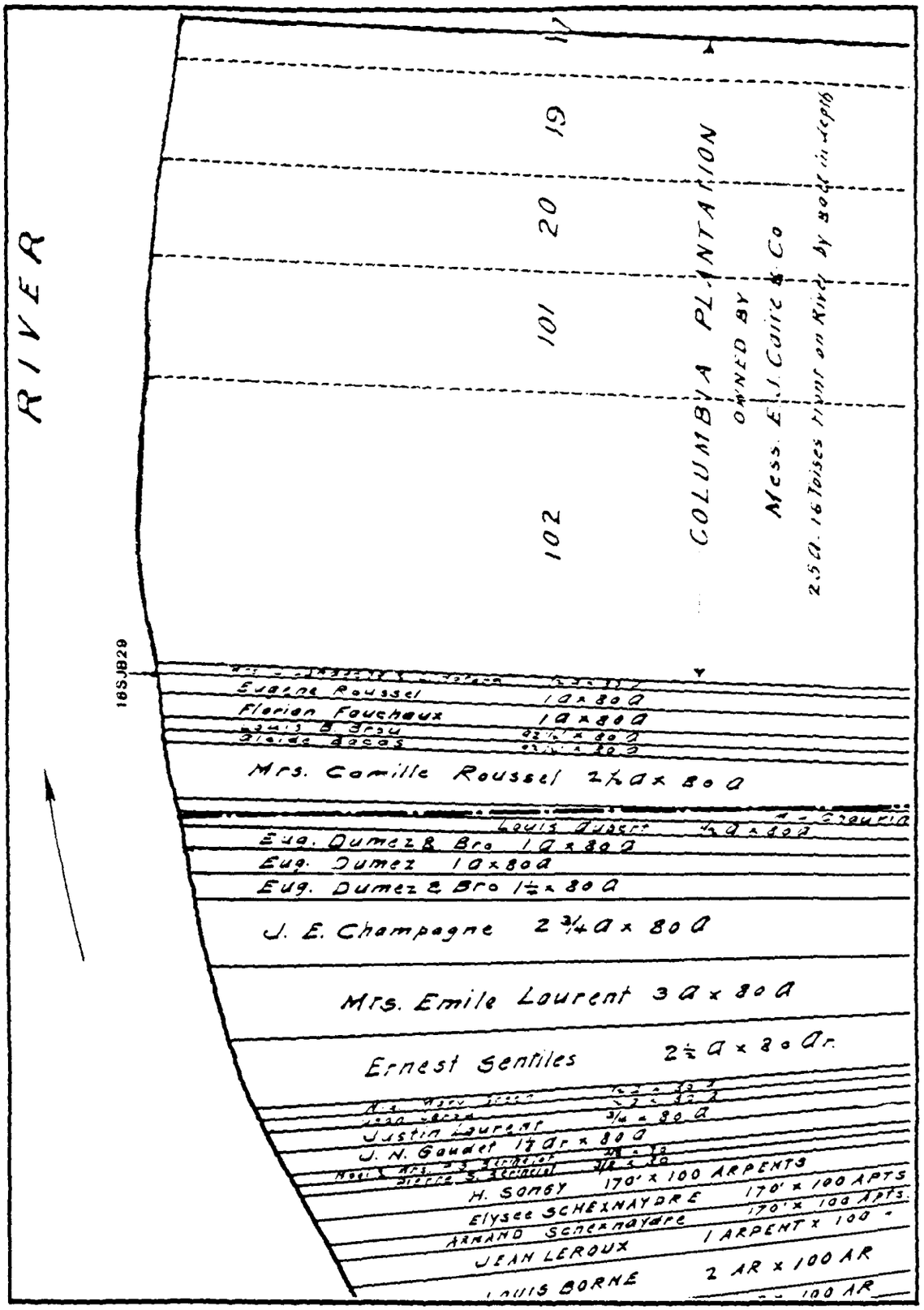



Figure 7. Excerpt from survey by Frank J. Payne, dated September 21, 1910, showing study area owned by Eugene Roussel and Columbia Plantation (Archives, Southeastern Louisiana University)

Table 4

SUGAR PRODUCTION AT MARMILLION/MATILDA/COLUMBIA PLANTATION
(Champonier 1851-1858; Bouchereau and Bouchereau 1868-1916)

| Year | Owner/Manager | River Mile | Sugar in Hhds |
|---|---|---|---|
| 1851-1852 | V. B. Marmillion | 44 | 646 |
| 1852-1853 | " | 43 | 615 |
| 1856-1857 | " | 44 | 33 |
| 1857-1858 | " | 44 | 168 |
| 1869-1870 | " | 44 | 66 |
| 1872-1873 | L. D. Martin | 44 | 108 |
| 1875-1876 | " | 44 | 292 |
| 1876-1877 | " | 44 | 560 |
| 1877-1878 | " | 44 | 245 |
| 1879-1880 | " | 44 | 270 |
| 1880-1881 | " | 44 | 277 |
| 1881-1882 | " | 44 | 277 |
| 1882-1883 | " | 44 | 703 |
| 1884-1885 | " | 45 | 358 |
| 1885-1886 | " | 45 | 334 |
| 1886-1887 | " | 44 | 300 |
| 1887-1888 | " | 44 | 489 |
| 1891-1892 | " | 44 | 653,548 lbs. |
| 1892-1893 | " | 44 | 653,566 lbs. |
| 1892-1894 | Caire & Graugnard | 44 | 3,900,165 lbs. |
| 1897-1898 | Caire, Graugnard & Co. | 44 | 3,680,950 lbs. |
| 1900-1901 | " | 44 | 1,775,000 lbs. |
| 1904-1905 | " | 44 | 4,550,000 lbs. |

| Year | Owner/Manager | River Mile | Sugar in Hhds |
|---|---|---|---|
| 1905-1906 | Caire, Graugnard & Co. | 44 | 4,930,000 lbs. |
| 1907-1908 | " | 44 | 2,485,000 lbs. |
| 1912-1913 | " | 44 | 1,590,000 lbs. |
| 1913-1914 | " | 44 | 1,560,000 lbs. |
| 1914-1915 | " | 44 | 2,840,000 lbs. |
| 1915-1916 | " | 44 | 1,580,400 lbs. |

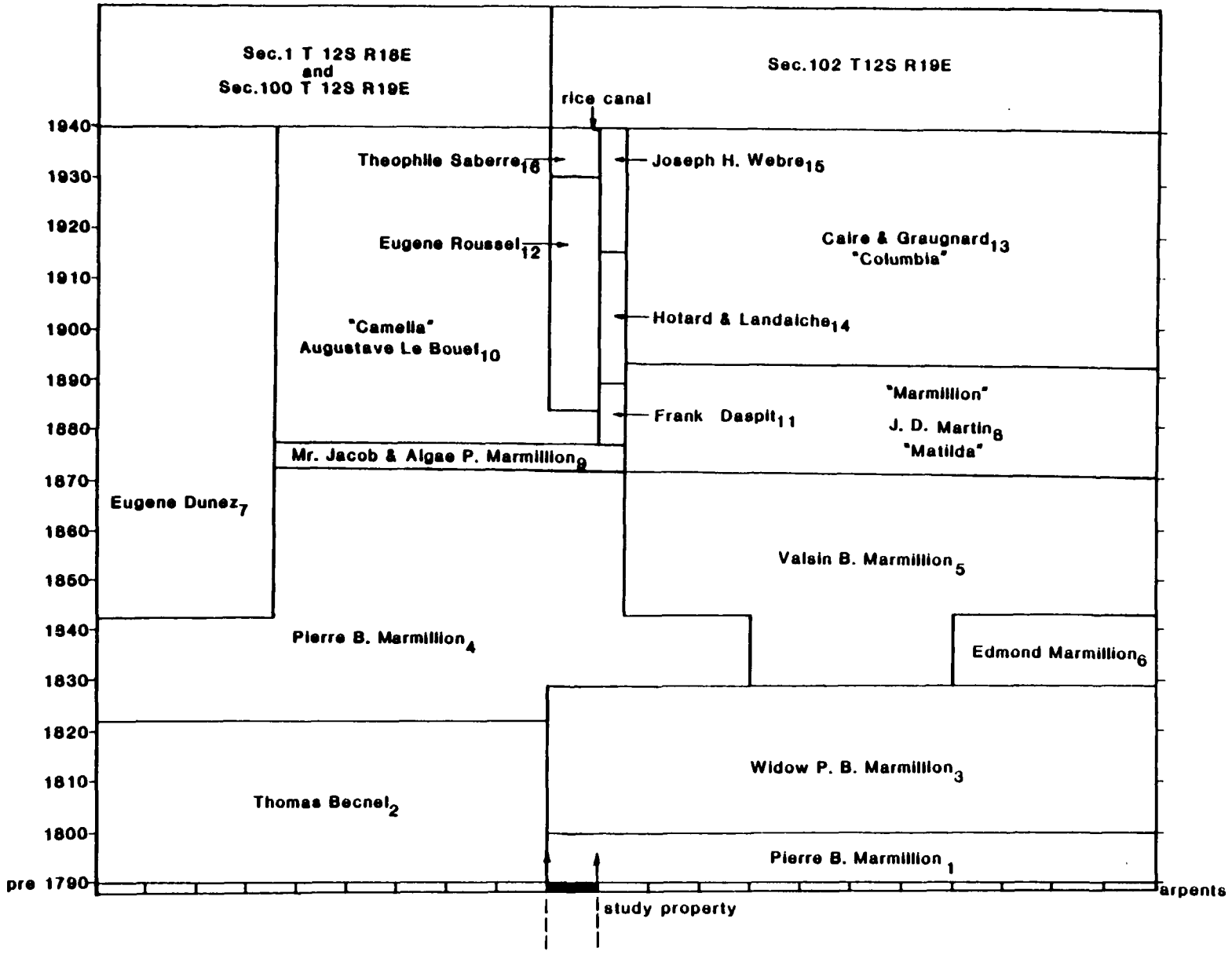



Figure 8. Schematic representation of land tenure for the Willow Bend study property.

## Notes on Figure 8

1. Pierre Marmillion recieved Spanish Patent for twelve arpent tract in Township 12S, Range 19E prior to 1792 (Lowrie and Franklin 1834: Vol.2:376, Gayles and Seaton Edition).

2. Thomas Becnel submitted claim patent for nine arpent tract in Township 12S, Range 19E to the U.S. Surveyor General's Office in 1812 (Lowrie and Franklin 1834: Vol.3:594, Gayles and Seaton Edition).

3. Pierre P. B. Marmillion's widow inherited property in 1800 (Conrad 1972:83:10).

4. Pierre B. Marmillion, son of father by same name, purchased nine arpents from Thomas Becnel in 1822 (COB D, Folio 25, St. John the Baptist Parish Courthouse). He acquired adjacent downriver four apents front from his mother in 1829 (COB F, Folio 63, St. John the Baptist Parish Courthouse).

5. Valsin P.B. Marmillion inherited four arpents front from his mother, Widow P.B. Marmillion in 1828. (COB F, Folio 63, St. John the Baptist Courthouse). He purchased the downriver four arpent front property from his brother, Edmond, and three upriver apents front from his other brother, Pierre, in 1842 (COB I, Folio 78 and 80, St. John the Baptist Parish Courthouse).

6. Edmond Marmillion inherited four apents front from his mother, Widow P.B. Marmillion in 1828 (COB F, Folio 63, St. John the Baptist Parish Courthouse).

7. Eugene Dunez purchased the four arpent front upriver property from Pierre B. Marmillion in 1842 (COB I, Folio 152, St. John the Baptist Parish Courthouse).

8. J.D. Martin purchased Vaisin B. Marmillion's land in 1870 (COB Dns, Folio 44, St. John the Baptist Parish Courthouse).

9. Jacob and A.P. Marmillion purchased seven arpents front from P.B. Marmillion in 1872 (COB Cns, Folio 105, St. John the Baptist Parish Courthouse).

10. Augustave LeBouf aquired property after civil suit. (Docket 602, 603, 4th J.D.C., COB D, Folio 344, St. John the Baptist Parish Courthouse).

11. Frank Daspit purchased one-half arpent front, lot 13, from Augustave LeBouef in 1876 (Docket 602, 603, 4th J.D.C., COB D, Folio 344, St. John the Baptist Parish Courthouse).

12. Eugene Roussel purchased one arpent front property from Augustave LeBouef in 1883 (COB Gns, Folio 185, St. John the Baptist Parish Courthouse).

13. E. T. Caire and J. B. Graugnard purchased "Marmillion" Plantation from L. D. Martin in 1892 (COB U, Folio 134, St. John the Baptist Parish Courthouse).

14. Joseph Levine Hotard and Feliciene Landaiche purchased Frank Daspit's one-half arpent front property in 1892 (COB Ins, Folio 143, St. John the Baptist Parish Courthouse).

15. Joseph Webre purchased a 350 ft. frontage parcel from Hotard and Landaiche in 1925 (COB 4, Folio 383, St. John the Baptist Parish Courthouse).

16. Theophile Saberre inherited one arpent front property from his mother, Tassephine Saberre, in 1930 (COB 24, Folio 449, St. John the Baptist Parish Courthouse).

families who lived in the study area. These transactions indicate that the Becnels, Marmillions, and Roussels intermarried and cooperated in various agricultural pursuits. One act states that on October 1, 1803, Thomas Becnel, Pierre Marmillion, Pierre Roussel, and others agreed to let livestock roam freely over their combined lands (COB A, Folio 121, St. John the Baptist Courthouse).

Figure 6 shows the U.S. Federal land grants for the properties in the study area originally surveyed in 1812. The map shows the size of the properties in the study area corridor and the names of the owners. The size of the study area tracts indicates a previous consolidation of the smaller German Coast parcels, which were usually no more than five arpents front on the river (Fortier 1894). Most of the owners' names from this map are French, or are French spellings of German names. Section 1 in Township 12s, Range 18E, and Section 100 in Township 12s, Range 19E, was claimed by Thomas Becnel (the son), and measured nine arpents front of the Mississippi River. Becnel's original claim states: "the claimant proves possession and cultivation by him, and by those under whom he claims, from the year 1792 (Lowrie and Franklin 1834, Vol. III:594). Section 102 of Township 12S, Range 19E, was claimed by Pierre Marmillion (the son), and measured approximately twelve arpents front on the river. Marmillion's original claim states that he and his family cultivated this land ten years prior to 1803 (Lowrie and Franklin 1834, Vol. III:376). Sections 100 and 102 in Township 12S, Range 19E, continued to be cultivated by members of the Becnel, Roussel, and Marmillion families during the antebellum nineteenth century. In 1822, Pierre B. Marmillion purchased the seven downriver arpents of the original nine arpent Becnel tract (COB D, Folio 25, St. John the Baptist Courthouse). Pierre B. Marmillion's wife, Louise Lennon, continued to maintain this property from P. B. Marmillion's death (prior to 1869) until her death in 1872. The sugar and rice reports indicate that rice was cultivated at this plantation as early as 1868 and 1869 (Bouchereau and Bouchereau 1868, 1869). However, the public sale of movables from the inventory of the widow of Pierre B. Marmillion's estate in December of 1872 refers to a sugar mill and cane related activities and technology, and it did not mention rice cultivation (COB Cns, Folio 105-110 St. John the Baptist Courthouse). The buildings and improvements listed in this inventory, and in the subsequent sheriff's sale of this land in 1876, were located upriver from the study area. In 1872, Ulysse Jacob and Aglae Marmillion purchased the seven arpent front tract from Louise Lennon Marmillion for $18,000. Their possession of this property was short lived. In 1876, the estate was divided into 13 one-half arpent lots at a sheriff's sale. Augustave LeBouef purchased all of these lots except for the furthest downriver lot which was sold to Frank Daspit. LeBouef and his partner Camille Roussel grew mostly rice at Camelia Plantation. As previously stated, LeBouef leased his land for the cultivation of rice during the late 1870s and 1880s. The following is an excerpt from a conveyance act in which LeBouef leases his property to a rice farmer:

> The said Augustave LeBouef....does grant and give to the said Feliciano Landaiche, the right and privilege to cultivate in the current year [1887], on his aforesaid tract of land or plantation, from eighty to one-hundred arpents thereof in rice, which said eighty to one-hundred arpents of land of said Feliciano Landaiche binds himself to plant or sow in rice, and to work and cultivate at his own costs and charges to the best advantage so to provide therefrom a crop of rice.
>
> And in consideration of the right and privilege to him herein granted to said Feleciano Landaiche agrees and binds himself to give to the said Augustave LeBouef one fifth out of the crop of rice in which he shall make and gather on the aforesaid eighty to one-hundred arpents of land, said one fifth of said crop and deliver by him to the said Augustave LeBouef as soon as this harvest have been threshed and in sacks and on the river and have ready for the present year (COB Hns, Folio 362, St. John the Baptist Courthouse).

Sugar and rice reports show that rice production reached its peak at Camelia in 1883, yielding 975 Bbls. of rice (Table 3). During that year (1883), LeBouef sold lots no. 10 and 11, totalling one arpent front of the river to Eugene Roussel. Eugene Roussel's grandson, Theophile Saberre, believes that it was his grandfather who built the rice irrigation flume at 16SJB29 that is situated directly across the levee and river road from the rice canal (Theophile Saberre, personal communication 1988) (see Figure 2). It is uncertain if rice was grown continually on Eugene Roussel's land for the remainder of the nineteenth century (Theophile Saberre, personal communications 1988). It is certain, however, that rice was cultivated on this property during the early part of the twentieth century, as confirmed by oral informants who lived near the

study property at this time. Ernest Fiffie, age 86, remembers working these rice fields before World War I. The river rice grown here was referred to as "Early Prolific" and "Blue Rose" rice (Ernest Fiffie, personal communications 1988; David Webre, personal communication 1988). When Eugene's widow, Tassephine Roussel, bequeathed this property to her sons in 1930 (COB 24,Folio 449, St. John the Baptist Courthouse), rice no longer was cultivated there (Theophile Saberre, personal communications 1988).

Land tenure at the downriver Columbia Plantation followed genealogical and geographical beginnings similar to those at Camelia Plantation. Pierre B. Marmillion, original land claimant for Section 102, in Township 12S, Range 19E, had three sons, Pierre B., Valsin, and Edmond. Their mother bequeathed each Marmillion heir a four arpent frontage from the original 12 front estate. Valsin eventually acquired the upriver and downriver parcels from his brothers Pierre and Edmond. Valsin Marmillion successfully grew sugar at his plantation between 1830 and 1870 (Table 2). In 1871, L. D. Martin purchased Valsin Marmillion's property. Martin called his plantation "Matilda" and consistently produced high yields of cane between 1871 and 1881 (Bouchereau and Bouchereau 1871-1881) (Table 4). Between 1881 and 1891, sugar yields were lower. During this decade, the descendants of L. D. Martin's estate used the ancestral name "Marmillion" as the name of the plantation (Figure 9). In 1892, Jean Baptist Graugnard, stepson of L. D. Martin, purchased the Marmillion plantation with partner Etienne T. Caire (COB N, Folio 139, St. John the Baptist Courthouse). By 1912, Columbia Plantation incorporated 25 arpents front on the river (COB U, Folio 134, St. John the Baptist Courthouse) and it was the largest sugar estate in west St. John the Baptist Parish between Lucy and Wallace (see Figure 7).

In conclusion, the property owners in the vicinity of the Willow Bend study area used these lands for similar agricultural pursuits before the Civil War. During the colonial period, the Becnel, Roussel, and Marmillion families maintained small farms for growing vegetables and rice and for raising cattle. During the antebellum period, the Marmillion descendants used the study area lands for sugar cane cultivation. After the War, however, the property containing Site 16SJB29, and the Camelia Plantation lands upriver, were converted from sugar cane cultivation to rice cultivation by August LeBouef and Eugene Roussel. Tenant rice farming continued on these properties until c.a. 1925. The agricultural lands downriver from Site 16SJB29 property did not convert to rice farming after the Civil War. L. D. Martin successfully grew sugar cane on this property from 1872 to 1892. After L. D. Martin, Caire and Graugnard expanded the original Marmillion Plantation; by 1900, Columbia Plantation was the largest sugar estate in west St. John the Baptist Parish.

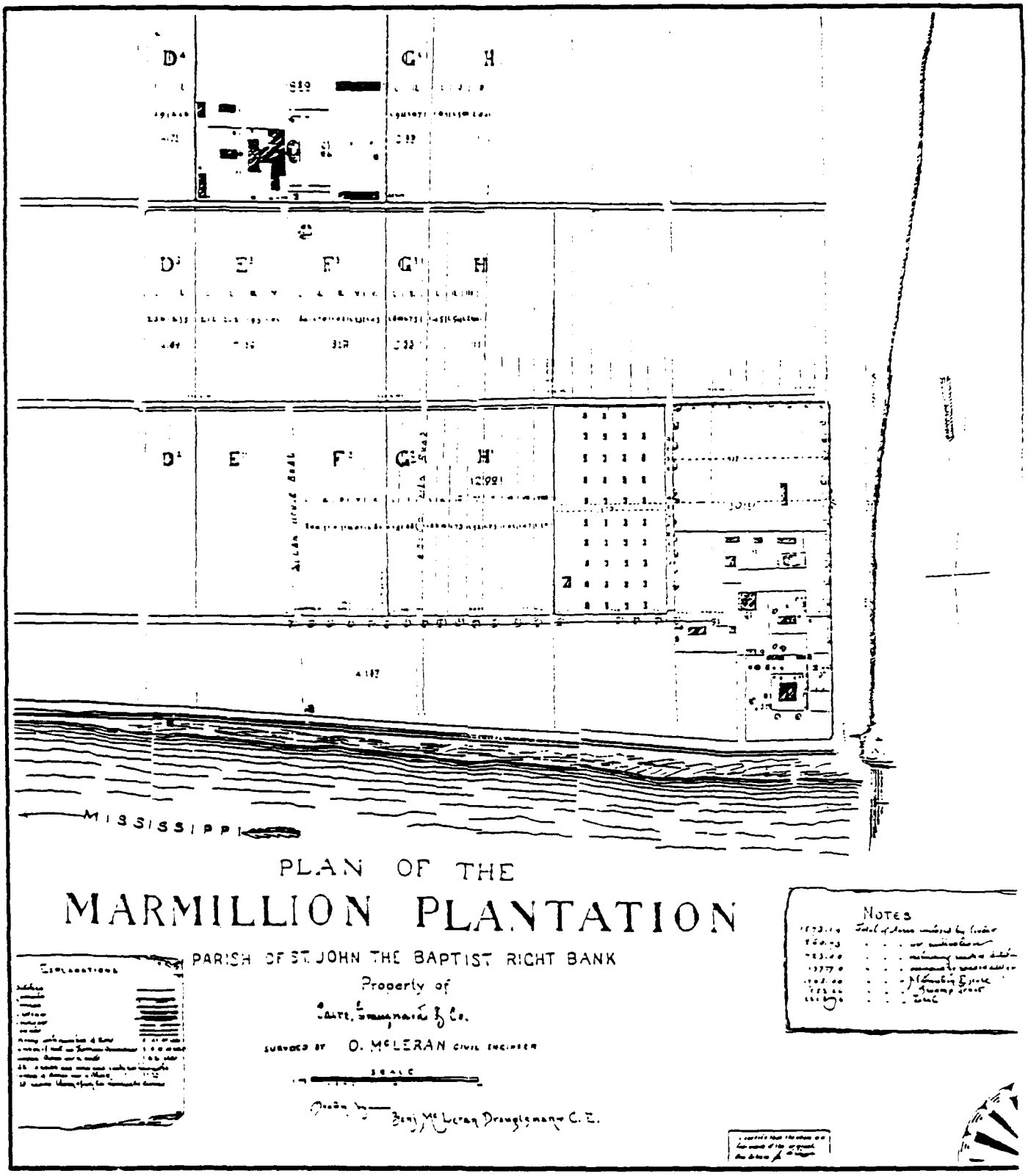



Figure 9. Map reconstruction of original survey of Marmillion Plantation by B. McLeran, dated March 2, 1910, showing residential complex and sugar refinery.

# CHAPTER V

## FIELD METHODS

This chapter discusses site mapping, surface collection, stratigraphic recordation, and subsurface testing modalities applied during fieldwork at 16SJB29. These procedures recorded site size, depth, extent of deposits, and stratigraphy, and they enabled assessment of the approximate dates, condition, cultural associations, and functions of the features. Fieldwork at Willow Bend began with a pedestrian survey of the batture area at river mile 139.5R to relocate four features identified in previous investigations (Shannon et al. 1988). These wooden features were relocated, and vegetation on them was removed. Feature 2 was visibly articulated with Feature 4; therefore the Feature 4 distinction was eliminated, and the entire feature was designated Feature 2. Because of the extreme low water level, portions of Features 1 and 2 not visible during the 1987 investigations were exposed.

A site map, including the horizontal and vertical relationships of the features and excavations, was drawn. The elevations and locations of the features were recorded with an EDM (electronic distance meter). This information was tied into fixed levee markers. The mapped cultural remains included not only Features 1, 2, and 3, but also an iron pulley, a finished timber, a dead man barge mooring, and an irrigation ditch located south of the site. Mapped excavations included trench and bluff profiles.

A surface collection was made within the site boundaries from the river's edge southward to the bluff of the levee shown on the 1876 MRC map, and enlarged in 1920 (cf. 1949 Caving Bank Survey map, revised through 1968). After the surface collections were completed, test excavations were initiated to elucidate the stratigraphic milieu of the site complex and to ascertain the physical relationships between features. All soil profile drawings contained soil descriptions, including soil color, based on Munsell Soil Color Charts, and soil consistency. Several techniques were employed to identify feature boundaries and the extent and nature of intact cultural deposits. Examinations included exposing the bankline using a backhoe; trenching; probing around surface features; excavating the features; and, cleaning, profiling, and photographing the bluff edge and the trench profiles.

Mechanical excavation employing a backhoe was utilized to define the limits of Features 1, 2, and 3, and to locate any additional features. Backhoe trenching was undertaken to identify deeply buried deposits and to verify the stratigraphic composition of the site. No additional features were exposed. An east/west trench was excavated across the site south of Feature 1 and between Features 2 and 3. This backhoe trench was 76 cm wide, and approximately 1 m deep. A professional archeologist monitored the excavation of the trench to identify the presence of any archeological remains. The backdirt piles and trench profiles were examined to determine if subsurface cultural features were present, and to define the nature and extent of the site. No additional cultural features were discovered. The site area was determined not to extend any further than the limits of Features 1, 2, and 3. A 1 m stratigraphic profile of this trench was cleaned and profiled. Observations and interpretations of the natural and cultural stratigraphy of the trench profile are presented in Chapter VI.

A 2 m wide profile was cut into the bluff south of Features 2 and 3, to record the vertical stratigraphy of the manmade levee constructed by 1876, and enlarged in 1920. The bluff profile was located between Feature 3 and a large beam resting on top of the levee. The backhoe was used to add depth to the profile. The bluff profile was cut, cleaned, photographed, and drawn.

All features were excavated and recorded using standard archeological techniques, and tied into datums with known elevations. The exterior of the Features 1 and 2 was excavated with a backhoe to expose the extent of the south, east, and west sides. The interior of each feature was divided arbitrarily into three excavation units. Feature 1 was composed of Units 14, 15, and 16; Feature 2 consisted of Units 11, 12, and 13; and Feature 3 contained Units 17, 18, and 19. These units were excavated in 30 cm arbitrary levels utilizing shovels and trowels. The information obtained from these units was recorded on separate excavation level forms. Basal depths were recorded for each unit. The floors of each unit were cleaned, photographed, and drawn in plan. Changes in the soil matrix were noted and recorded. These procedures

were followed for each of the levels.

After excavation of the features was completed, photographs and specific drawings were made. Photographs were taken in black and white and color. Complete plan drawings were made of Features 1, 2, and 3. Profile drawings were drawn of the east and west interior walls, and of the interior vertical boards of Feature 1. A cross sectional profile of the north wall of Unit 14 (Feature 1) and of the soils from the feature's limits were drawn to depict the stratigraphic variations between the interior and exterior sediments. Profile drawings were made of the exterior east wall and interior west wall of Feature 2. Three of the six cross members also were drawn. These drawings depict the various construction techniques utilized in Feature 2. Drawings of Feature 3 included a cross sectional profile of the north end and the vertical board stains in that area. Also, two additional unit profiles of Feature 3 were drawn. Each profile depicts change in soil color and texture, the depths of these changes, and the overall elevation of the feature. The results of the excavations at 16SJB29 are discussed in Chapter VI.

# CHAPTER VI

# FIELD INVESTIGATIONS

## Site Description

Field investigations at 16SJB29 (Figure 10) emphasized the recordation of the rice irrigation component, since that portion of the site contained significant information concerning important regional history. The extant portions of the rice irrigation component consisted of the remains of three wooden features. One, and probably two, of these features comprised the lower portion of a rice irrigation flume; the third probably was a small structure used to shelter the machinery that drew water from the rice flume, passing it over the levee into the rice fields to the south. This chapter discusses the results of the field investigations at 16SJB29, including the stratigraphic sequence at the site, and the three features. It also includes a brief examination of barge fleeting activity at the site.

## Stratigraphic Sequence at 16SJB29

Two stratigraphic soil profiles were drawn to record the landform on which the site was located. The first profile was within the backhoe trench that bisected the site. The second profile was located along the bluff edge, immediately south of Feature 3. Both profiles are described below.

### Backhoe Trench Stratigraphic Profile

A 1 m wide stratigraphic soil profile was drawn of a section of the backhoe trench that bisected the site (Figure 11). Three strata were present within this profile. Stratum I consisted of a 10YR 3/3 dark brown silt; it was a one meter thick deposit extending from the surface. Stratum II contained a 5YR 3/4 dark reddish brown silty clay. It was a 5 cm thick band within Stratum I that occurred near the surface, and it did not extend across the entire soil profile. Stratum III, a 2.5Y 3/0 very dark gray silty clay, occurred beneath Stratum I; it extended beyond the bottom of the trench. No artifacts were observed within any of these strata.

The stratigraphy was formed through riverine sedimentation. These processes produce layers of sediments, with varying thicknesses, that are often void of cultural remains. Similar natural stratigraphic profiles are common at other sites on the lower Mississippi River batture (Goodwin, Franks et al. 1986; Goodwin, Gendel et al. 1987; Goodwin, Hewitt et al. 1988; Shannon et al. 1988). The backhoe trench profile, with its natural, layered form, differs greatly from the upper bank edge stratigraphic profile described below.

### Upper Bank Edge Stratigraphic Profile

A 2 m upper bank edge stratigraphic profile was prepared and drawn along the bank south of Features 2 and 3 (Figure 12). This profile contained numerous soil types and colors, which formed two distinct developmental episodes. Soil Strata I-VII consisted of numerous irregularly mixed soils, with pockets of gray and brown clays, silts, and sands. While the profile of these strata denotes the primary soil colors present, each stratum also included numerous mottlings and ferrous oxide inclusions. In contrast, Strata VIII-XI were comparatively regular, level layers of nearly homogeneous silts and silty clays.

The irregular mixing of soils within Strata I-VII suggests that these upper strata constitute a series of fill episodes associated with historic levee construction. Stratigraphic soil profiles of manmade levees are discussed more fully elsewhere (Goodwin, Armstrong et al. 1988); in general, they are characterized by extensive mottling, the random scattering of cultural remains within the fill, frequent ferrous oxide inclusions, and by stratigraphic irregularity. While no artifacts were recovered from the upper bankline profile, its

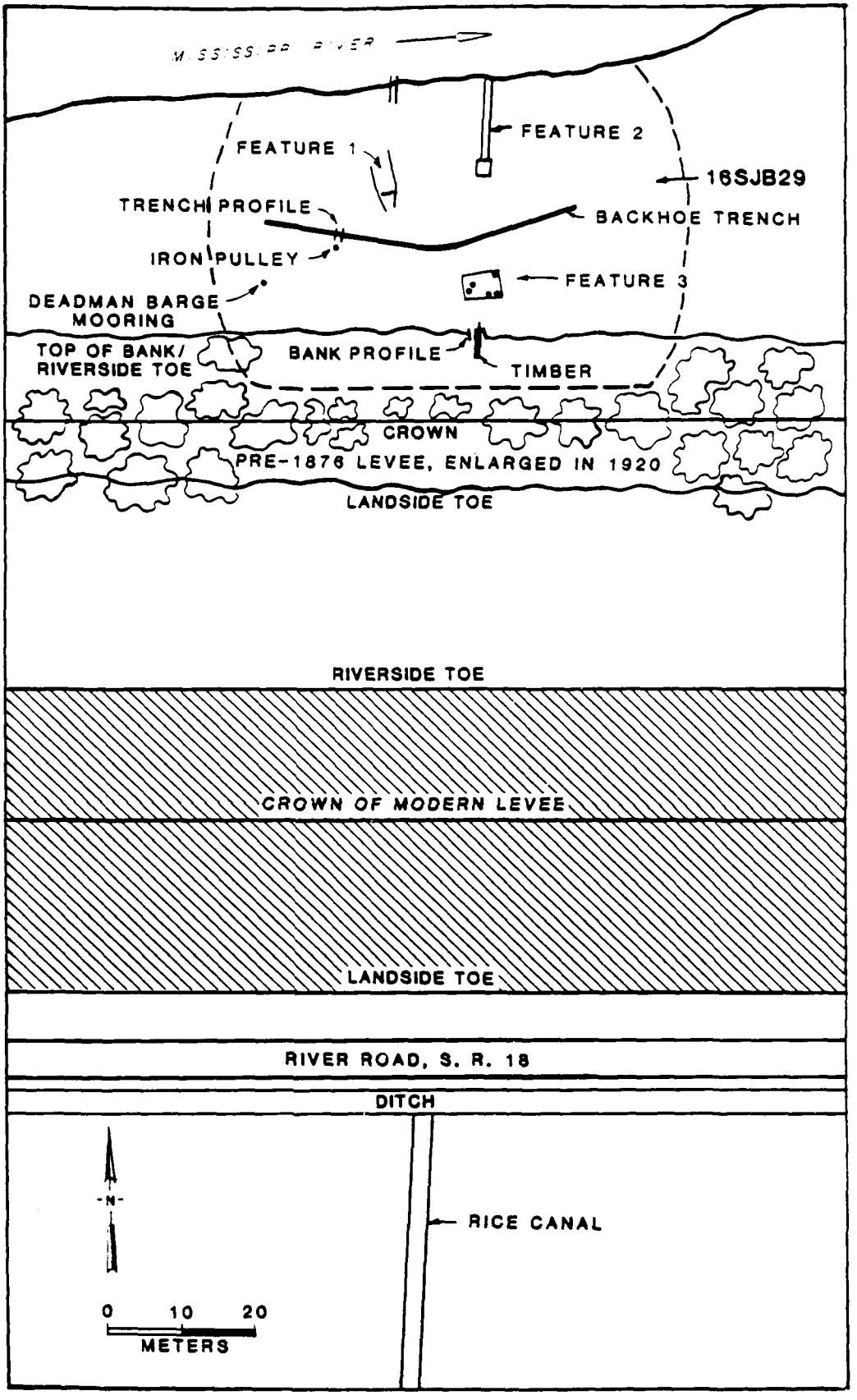
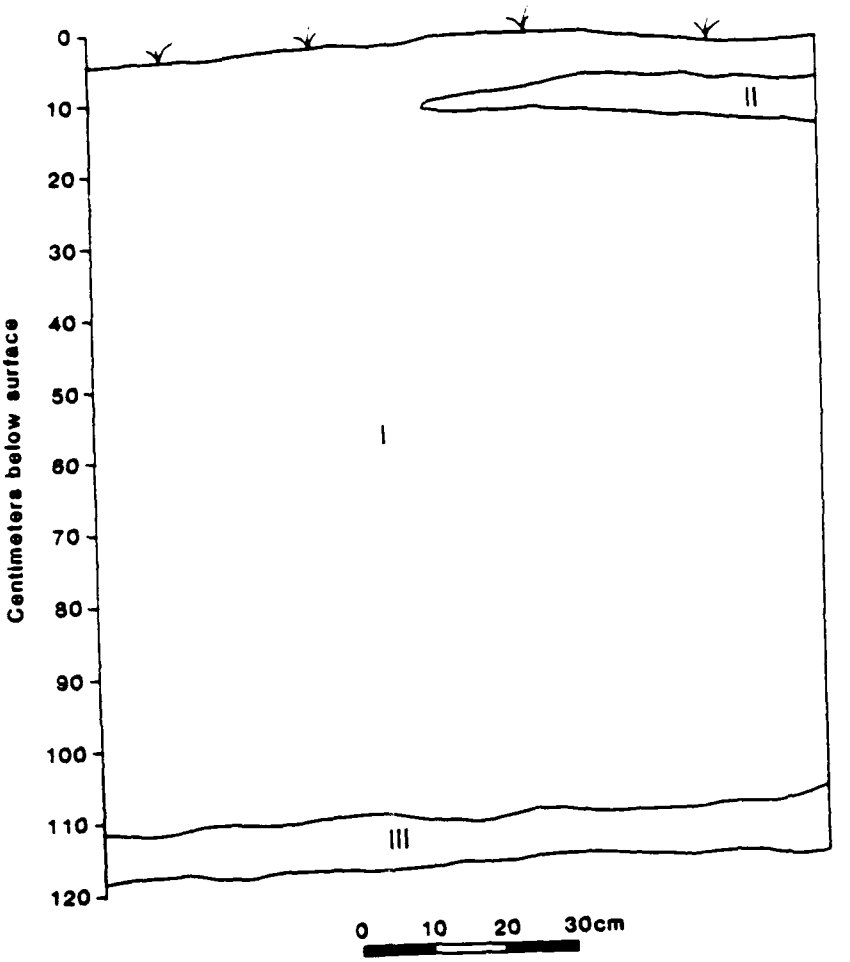
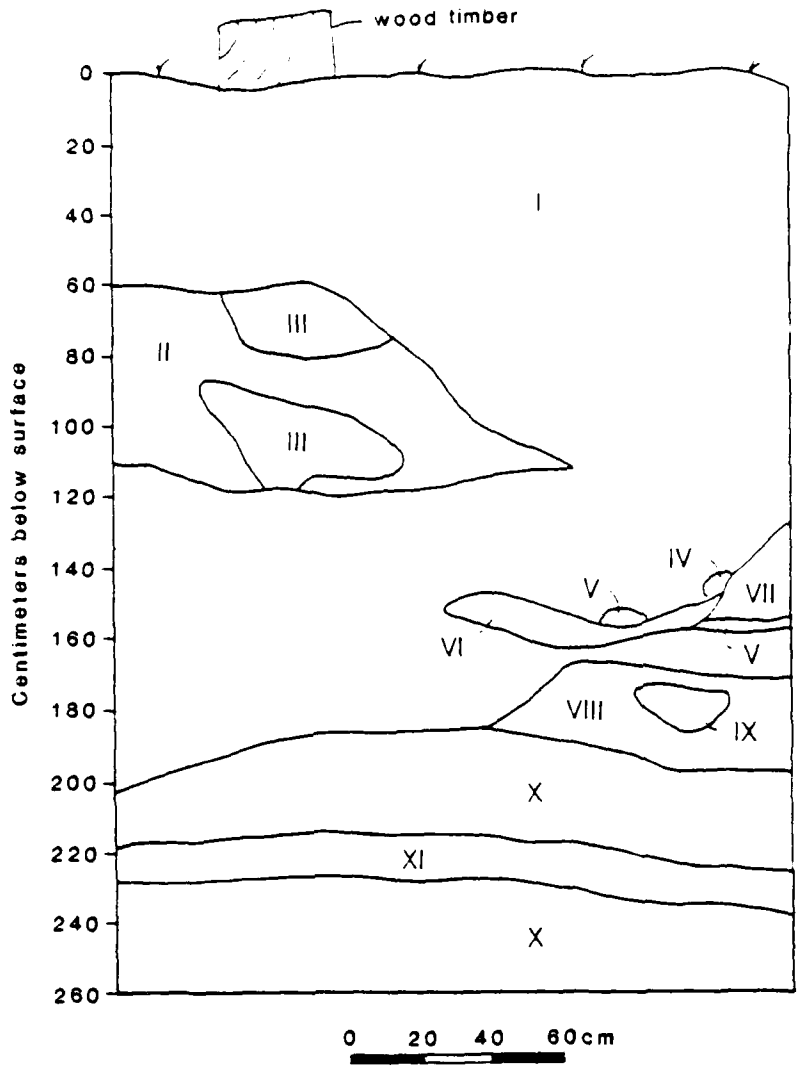



Figure 10. Site plan of 16SJB29 and surrounding area.




I 10YR 3/3 dark brown silt
II 5YR 3/4 dark reddish brown silty clay
III 2.5YR 3/0 very dark gray silty clay

Figure 11. Stratigraphic profile of trench at 16SJB29.




| | |
|---|---|
| I | 10YR 3/3 dark brown silty clay, heavily mottled with gray silty clays, brown silty sands, and ferrous oxide |
| II | 10YR 4/4 dark yellowish brown silt, heavily mottled |
| III | 10YR 3/3 dark brown clay, heavily mottled |
| IV | 10YR 5/2 grayish brown sand |
| V | 5YR 3/4 dark reddish brown clay |
| VI | 10YR 5/2 grayish brown silt, mottled |
| VII | 10YR 4/4 dark yellowish brown silt |
| VIII | 10YR 4/4 dark yellowish brown silt |
| IX | 10YR 4/6 dark yellowish brown silt |
| X | 10YR 3/3 dark brown silty clay, with 10YR 5/4 yellowish brown sand inclusions |
| XI | 10YR 4/3 dark brown silty clay, with 10YR 5/4 yellowish brown sand inclusions |

Figure 12. Upper bank edge stratigraphic profile, showing manmade levee.

stratigraphic characteristics, its form, and its relationship to the river confirm that the upper levels of this profile represent part of a manmade levee.

The lower strata within the profile (Strata VIII-XI) provide a sharp contrast to the aforementioned manmade levee deposits. While not identical, these strata are very similar to those recorded in the backhoe trench stratigraphic profile. They exhibit the near horizontal bedding typical of periodic overbank deposition. They contain few, if any, cultural remains. In addition, all contain various shades of nearly homogeneous dark brown and dark gray silts and silty clays. While the upper deposits were a direct result of manmade levee construction, these lower strata were developed through natural riverine processes.

**Feature 1**

Feature 1 comprised the subsurface remains of a rice irrigation flume (Figure 13). It consisted of a series of wood posts, in two rows nearly perpendicular to the river. Within each row, the posts were connected with horizontal (on edge) boards. Several vertical boards, also perpendicular to the river, and some flat boards, were in the interior of the feature. Within the river to the immediate north of these remains, were more horizontal (on edge) and vertical boards, as well as a post and a worked log. While not articulated with it, the portion of Feature 1 within the river probably was directly associated with the landward portion of the feature. Because of their proximity and alignment, both segments were designated Feature 1. Since the north section of Feature 1 was within the river, it was mapped but not excavated.

Initial exploration of this feature consisted of the hand excavation of the interior feature fill. The feature was divided arbitrarily into three excavation units (Units 14, 15, 16). Each unit was excavated carefully with shovels and small hand tools. In accordance with the Scope of Work (Appendix I), the emphasis of the excavations was on the recordation of feature construction. The interior feature fill was riverine sediment not directly associated with the construction or use of the feature. Therefore, the interior fill was excavated in arbitrary levels of 30 cm. All observed artifacts were collected.

The entire feature sloped from south to north. The surface remains were approximately level with the top of the sloping batture, while the dirt floor within the feature sloped more gradually toward the river. As a result, the depth of deposits within the feature varied considerably. Units 14 and 15 each contained two arbitrary levels, and extended from 40 to 60 cm before reaching culturally sterile batture clay. However, Unit 16 contained only one level, 15 to 30 cm deep, above culturally sterile batture clay.

In addition to the interior excavation of the feature fill, the surrounding exterior fill was removed mechanically with a backhoe. This enabled the exterior construction of the feature to be observed, and it proved that the feature did not extend beyond the observed feature boundaries. Balks were left on the east and west exterior sides of the feature. These balks, along with that between Units 14 and 15, enabled an east-west profile of both the interior and exterior fill to be drawn (Figure 14).

An examination of the east-west profile of Feature 1 (Figure 15) clearly illustrates the differing fill sequence between the interior and the exterior of the feature. The interior fill contained numerous thin layers of sediments, consisting of interbedded bands of clays, silts, and silty clays. These bands bent upward toward the sides of the feature, a normal depositional pattern for natural river-lain sediments. On the other hand, the external fill was composed of rather thick layers of fairly homogeneous batture soils. While the east side contained a somewhat more complex profile because of a differing fill sequence, both sides contained soils with similar colors and consistency.

This stratigraphic profile indicates the probable construction sequence for the feature. Culturally undisturbed 7.5YR 3/0 very dark gray silty clay was at the bottom of both the interior and exterior profiles. However, within the feature, it began 20 - 25 cm above where it began outside the feature. This would imply that both the internal and external areas were excavated during the construction of Feature 1, with the external area excavated somewhat deeper than that inside the feature. At some time subsequent to construction, the external sides were refilled, while the area within the feature was left open. Finally, probably once the feature no longer was utilized, it filled with natural riverine sediment.

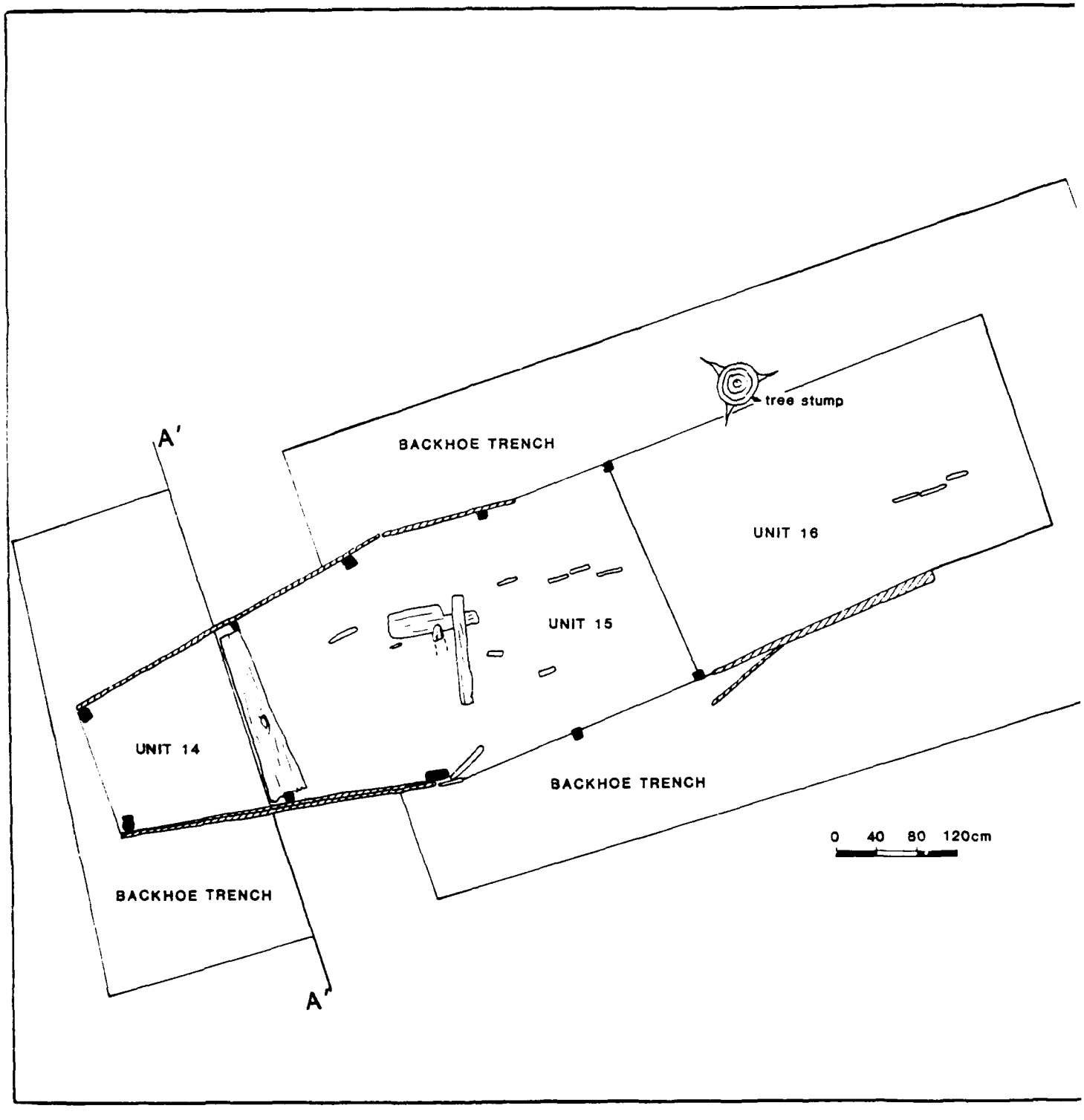
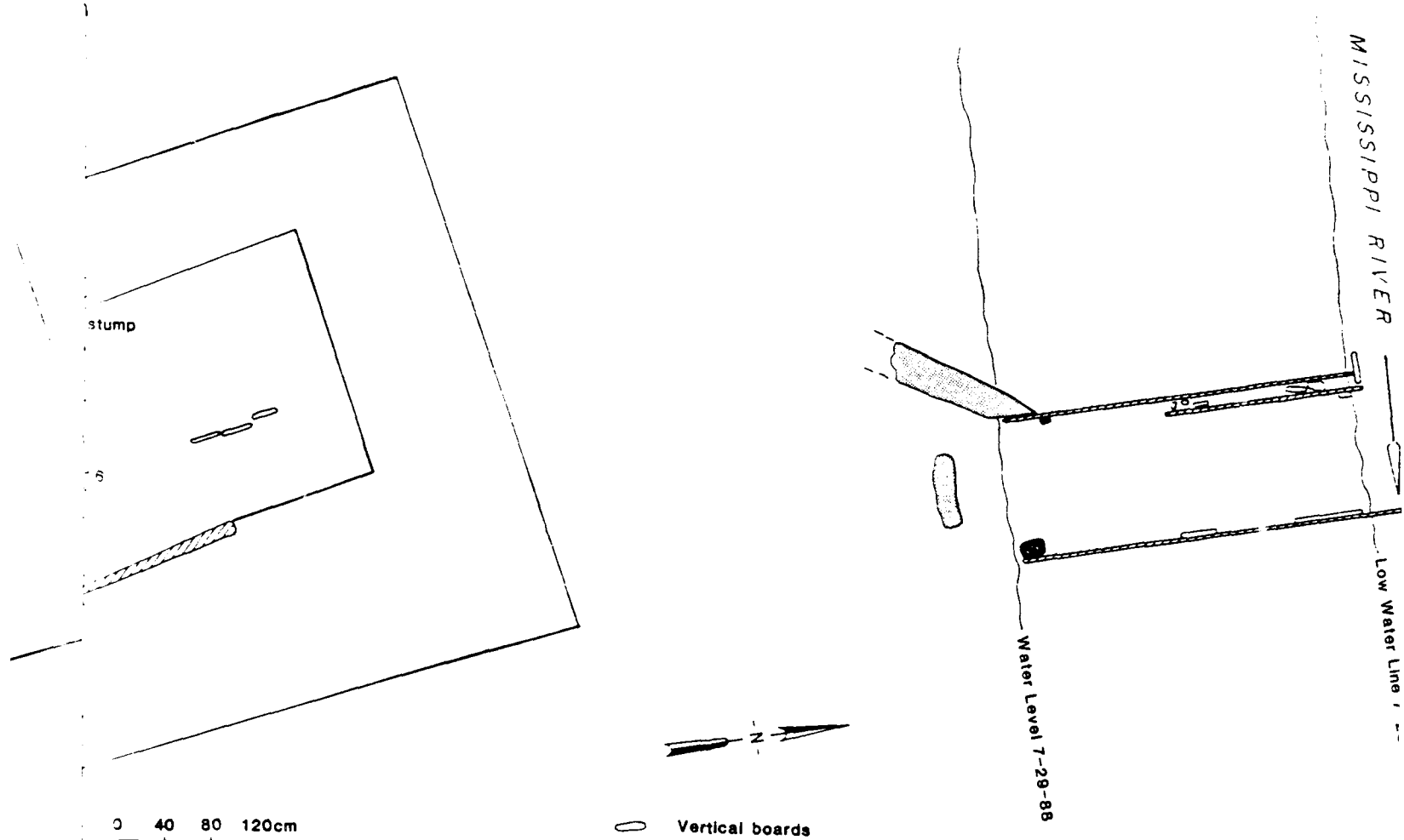
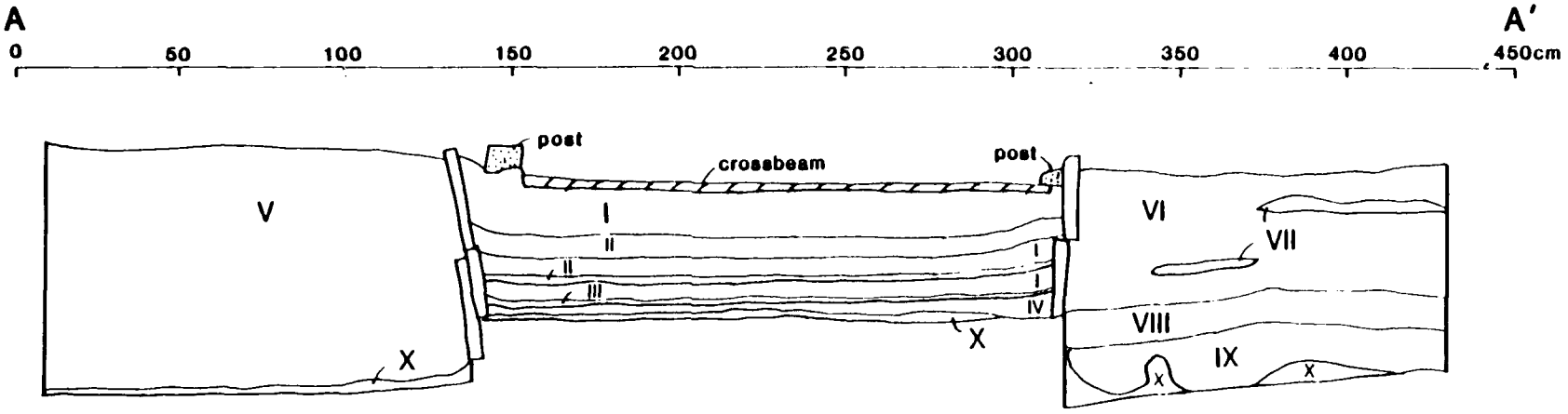



Figure 13. Plan of Feature 1.


stump
MISSISSIPPI RIVER
Water Level 7-29-88
Low Water Line
N
0 40 80 120cm
Vertical boards
Horizontal boards (on edge)
Horizontal boards (lying flat)
Logs
Posts






| | |
|---|---|
| I | 10YR 3/3 dark brown silty clay |
| II | 10YR 4/4 dark yellowish brown silt |
| III | 10YR 3/1 very dark gray clay |
| IV | 10YR 4/3 dark brown silty clay |
| V | 10YR 3/3 dark brown silty clay, mottled with ferrous oxides |
| VI | 10YR 4/2 dark grayish brown silty clay, motled with ferrous oxides |
| VII | 10YR 4/3 dark brown silt |
| VIII | 10YR 3/2 very dark grayish brown silty clay, mottled with ferrous oxide |
| IX | 10YR 4/2 dark grayish brown silty clay |
| X | 7.5YR 3/0 very dark gray silty clay, mottled with ferrous oxide |

Figure 14. Stratigraphic profile A-A' in Feature 1.

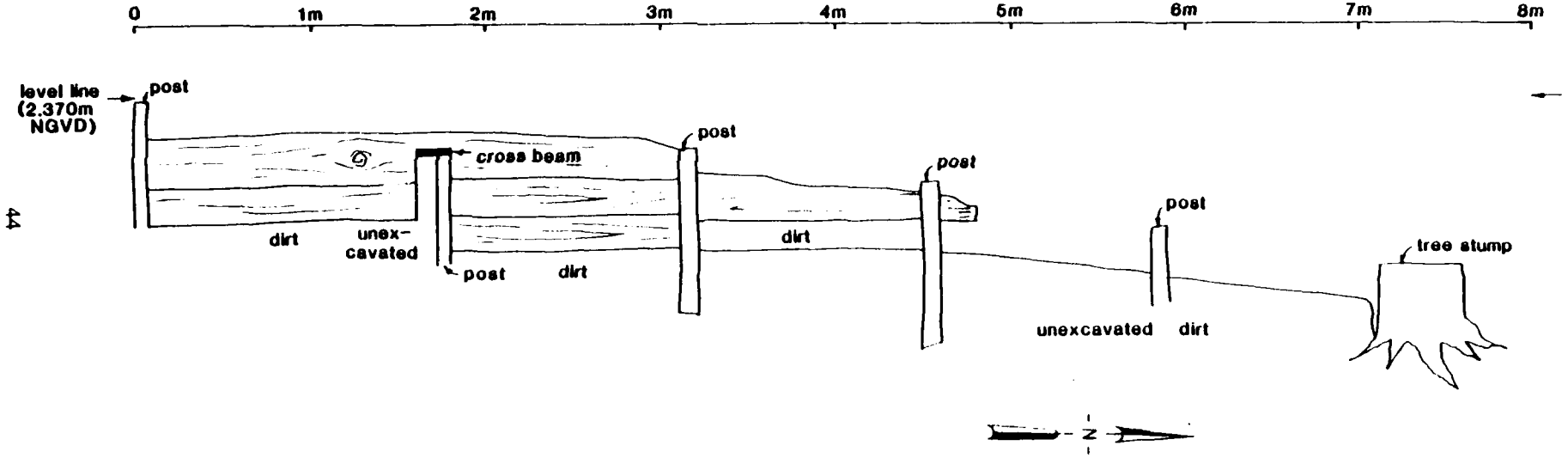



Figure 15. Interior west wall profile of Feature 1, facing west.

Subsequent to excavation, the feature plan (Figure 13), and the interior west wall profile (Figure 15) were drawn to document feature construction. The construction procedure is interpreted as follows. The batture soils were excavated to allow the placement of the lower north end of the feature into the ground. Two rows of posts with pointed ends were driven into the batture to make them secure. These posts were sawn, as was all the wood within the feature. The five surviving posts within each row were placed at about 1.4 m intervals. At the surviving north end, these two rows were parallel at 2.3 m from each other. The south half of these two rows slanted inward, and their south ends were 1.2 m apart. Horizontal boards were nailed along the external sides of the posts to form the walls of the feature. Along the south end, the surviving boards were up to three boards high, extending from undisturbed batture soil to the current tops of the posts. However, at the north end of these rows of posts, the boards were missing. These boards probably were destroyed or dislodged by the bottoms of barges scraping against them or by the action of the river. There also were a number of vertical boards within the feature. These boards, which were driven into the batture, formed an uneven, broken line perpendicular to the river. Nothing was attached to any of these boards. A flat board passed between the second set of posts from the south end of the feature. This board was adjacent to the inside edges of the posts, and it originally was attached to these posts. It averaged 30 cm wide and 1.35 m long, and lay 36 cm above the floor of the feature.

The portion of Feature 1 that extended into the river consisted of three parallel horizontal boards, the longer two 1.2 m from each other, and the third nearly adjacent to the inside edge of one of the longer boards. These boards were secured by a post and several vertical boards. A pointed log lay against the south end of one of these boards, and extended into the batture. The boards were aligned perpendicular to the flow of the river, on an orientation somewhat clockwise to the axis of the rest of the feature. While it is not currently articulated with the south end of Feature 1, its proximity to the south end and the alignment suggest that the two probably were associated with each other and that they formed part of the same feature.

### Feature 2

Feature 2 was a wooden rice irrigation flume which extended from the Mississippi River into a retainer tank to the south. It consisted of a square four-board water intake, an extensive post, crossmember, and board surrounding structure, and a large post and vertical board retainer tank (Figure 16). All structural components that originally were above the surface of the batture have been destroyed by a combination of natural and cultural forces. In 1987, this feature was interpreted as two possibly articulated features (Features 2 and 4). However, during 1988 they were recognized as part of the same feature; therefore, the entire feature was designated Feature 2.

The feature was divided into three excavation units. Unit 11 was a 1.5 m by 2 m unit at the south end of the feature. It included the entire retainer tank; it was separated from the next unit by a vertical board wall. Unit 12 extended from the retainer tank to the fourth set of crossmembers from the tank; it was about 1 m wide and 4.5 m long. Unit 13 extended from Unit 12 to the end of the excavated portion of the feature near the river; it was 1 m wide and 2.5 m long. Each of these units was excavated by hand, using shovels and small hand tools. The units were excavated using 30 cm arbitrary levels, since this facilitated fill removal and was suitable for accurate recordation of the feature. The feature fill was secondary deposition, and artifacts recovered from the fill generally were not associated directly with the construction or utilization of the feature.

Unit 11 was excavated in six arbitrary levels, to a total depth of 212 cm below datum. Levels 1 - 3 contained 7.5YR 4/0 dark gray clayey silt mottled with 7.5YR 3/4 dark brown clay. Within these levels, the exterior vertical board wall was exposed, as were six posts and the interior wall that separated Unit 11 from Unit 12. Only a few artifacts were present in these levels. The fill included several randomly placed boards, which were mapped, photographed, and removed. Two cut nails with hand-finished heads were recovered from one of these boards. In addition, a spike and an 8 cm diameter piece of sheet plastic were found. The plastic was located in situ, pressed against a post in Level 3, well below any recent surface disturbances.

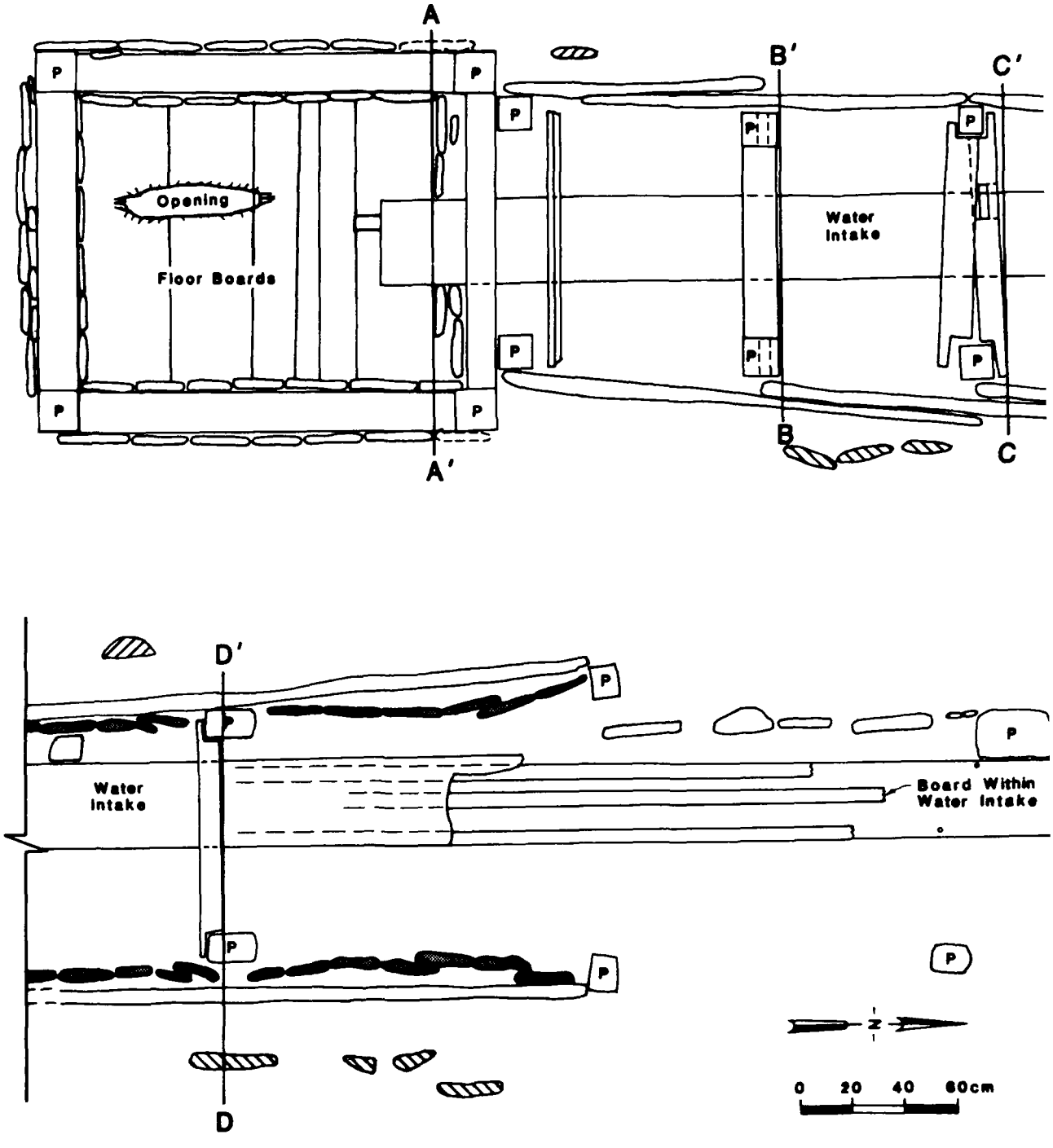
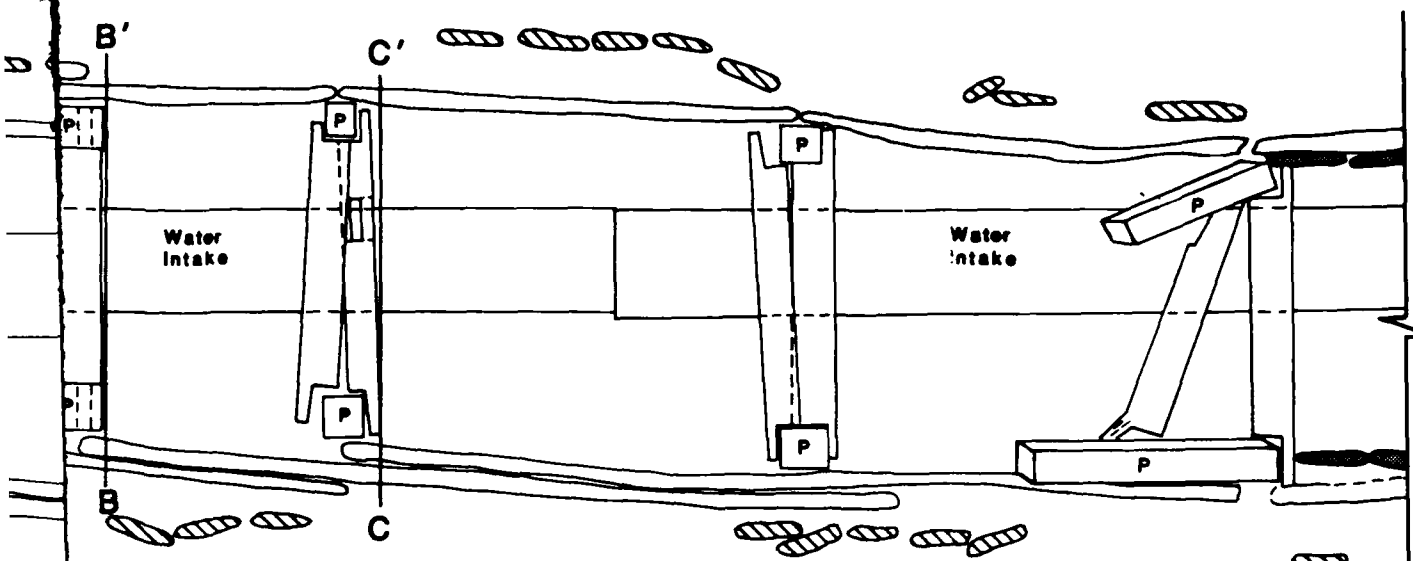
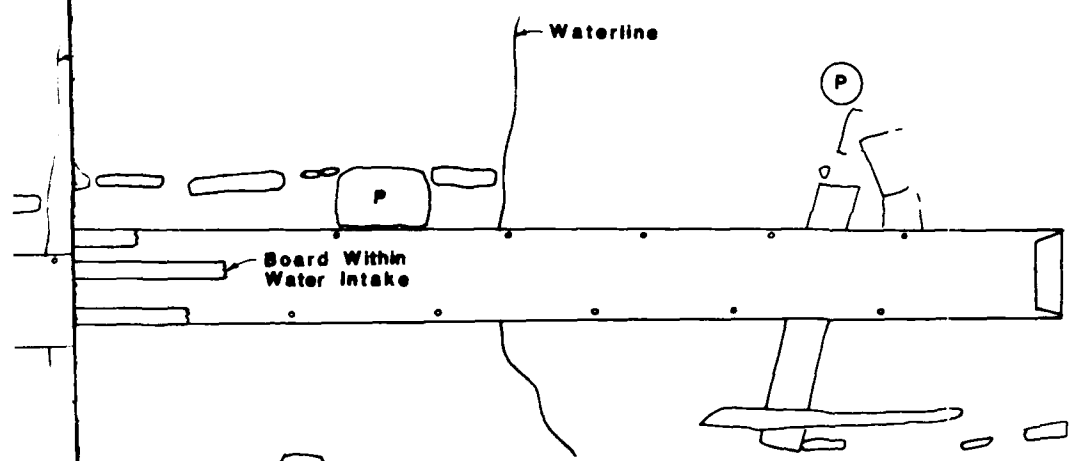
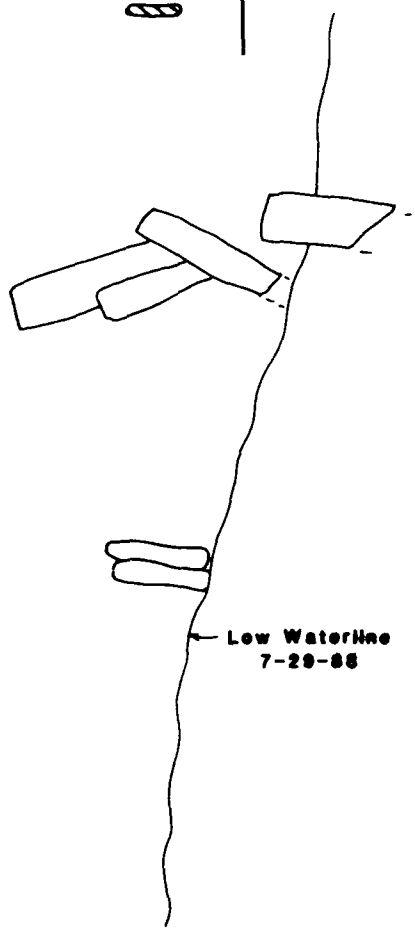
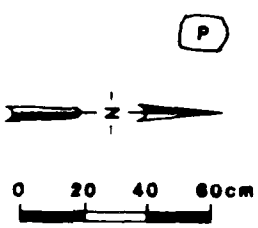



Figure 16. Plan of Feature 2.


B'
C'
B
C
P
Water Intake
Water Intake


Waterline
P
Board Within Water Intake


Low Waterline
7-29-88


P
N
0 20 40 60cm


Hand hewn boards with this shape
Hand hewn boards with this shape
P
Post

Levels 4 - 6 extended from the bottom of Level 3 to the floor of the retainer tank. An interior vertical board wall was exposed near the top of Level 4; it continued to the floor of the retainer tank. This wall was about 10 cm inside of the external tank wall. This internal tank measured 1.05 m by 1.7 m, covering a surface area of nearly 1.8 square meters; the volume of water it contained was dependent on the river level, and could vary considerably. The square four-board water intake, extending into the tank, was uncovered in Level 5. The board floor of the tank, with an oval cut opening, was at the bottom of Level 6. The fill within each of these levels was a 7.5YR 3/0 very dark gray silty clay. Other than a few board fragments, no artifacts were observed or recovered from this fill.

Unit 12 was excavated in five arbitrary levels. The surface sloped toward the river to the north. Levels 1 - 4 extended from the ground surface to the top of the wood water intake, while Level 5 was the fill on the sides of the water intake. The posts, crossmembers, side boards, and the top of the water intake were exposed in the upper four levels, while the remaining sideboards, and the sides of the water intake, were uncovered in Level 5.

Level 1 contained a mixture of natural riverine sediments, composed primarily of dark gray and brown clayey silts. This level contained most of the recovered artifacts from the feature, including nineteenth and twentieth century ceramics, glass fragments, a cut nail, a bolt, a tin can, slag, and other items. These items were randomly deposited through natural riverine activity, and are not associated with the construction or use of the feature.

Levels 2 - 5 contained fairly homogeneous dark gray clayey silt, in which there were few artifacts. Levels 2 and 3 contained a redware sherd, as well as bone. Level 4, near the south end of the unit, contained a concentration of waterworn brick fragments. These were mapped, photographed, and removed, and a sample collected. A whiteware sherd, a cut nail, a tin can, and three fragments of a cast iron kettle were recovered from Level 5, adjacent to the retainer tank. None of these artifacts related to the function of the rice flume, and their deposition within the flume appeared random.

Unit 13 proceeded from Unit 12 northward to the river; it was about 1 m wide by 2.5 m long. This was the northernmost unit excavated within Feature 2, since the rest of the feature to the north extended into the river. It was excavated in two levels, with Level 1 extending to the top of the water intake, and Level 2 extending from the top to the bottom of that intake. Level 1 revealed the same stratigraphy as Unit 12, Level 1, while the lower level corresponded with Unit 12, Level 5. Both sides of this unit were lined with beveled vertical boards, which were slanted toward the interior and nailed to exterior horizontal boards. These boards were not present in either of the other two units.

The artifacts recovered from Unit 13 were similar to those from Unit 12. As with Unit 12, Level 1 in Unit 13 contained most of the artifacts, which included ceramics, bottle glass, wire nails, thick nylon rope, and a tin can. In contrast, Level 2 contained only one artifact, a piece of whiteware. These artifacts are not associated with the use of the flume.

Backhoe and hand excavations delineated the boundaries of Feature 2 along its south, east, and west sides. These excavations were conducted to define and record the external construction techniques of the rice flume, and to verify the horizontal extent of the feature. The primary exterior aspect of construction that was not visible from the interior was a row of vertical pointed boards driven along both exterior sides of the feature, and separated from the rest of the feature by 5 - 30 cm.

Numerous drawings and photographs were taken to record the architecture of Feature 2. These drawings included a detailed plan view (Figure 16), the east wall profile (Figure 17), the west wall interior profile (Figure 18), as well as four sections of the flume (Figures 19 - 22). Based on the drawings and photographs, a perspective rendering of Feature 2 (Figure 23) was compiled, clearly illustrating the construction details of the rice flume. Through a careful examination of these drawings, the complex construction of this feature can be understood.

Feature 2 was a wood structure that included a water intake, a retainer tank, and a superstructure surrounding the water intake. The water intake exterior was about 30 cm square, with the wider top and

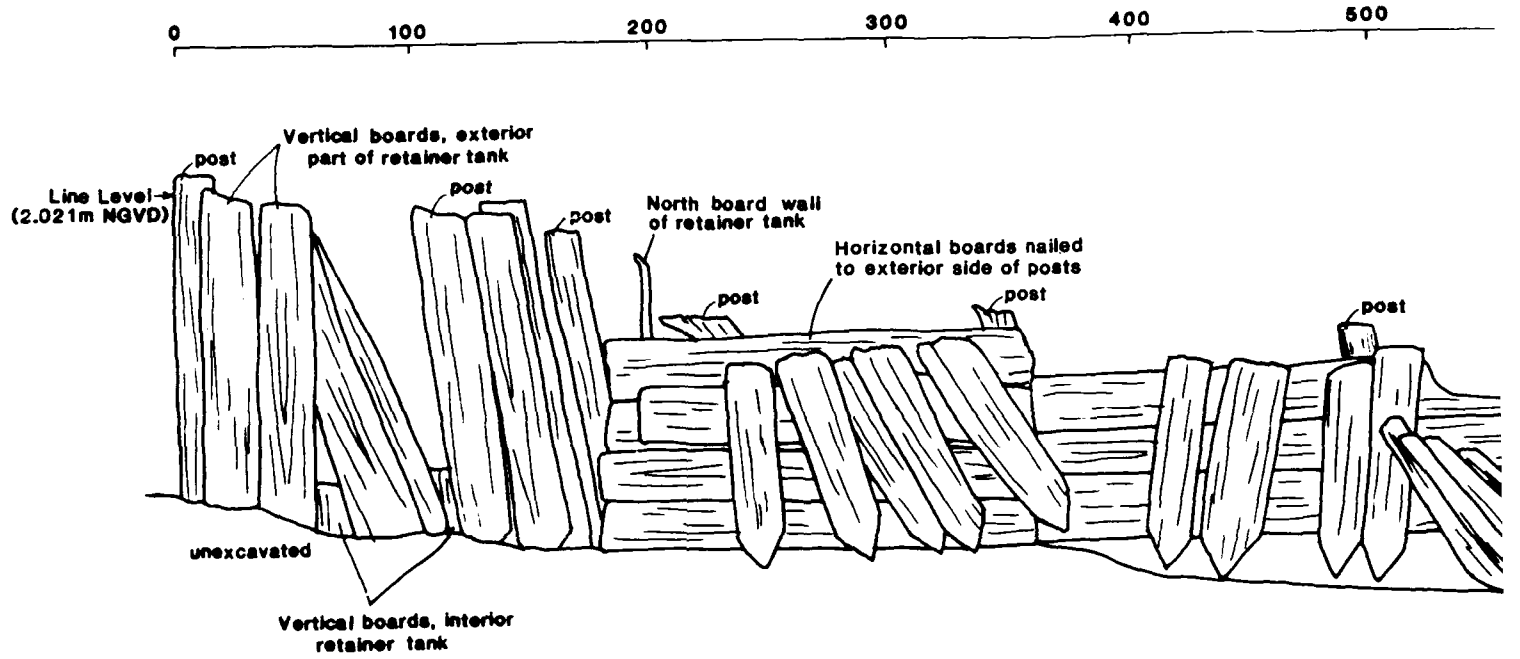
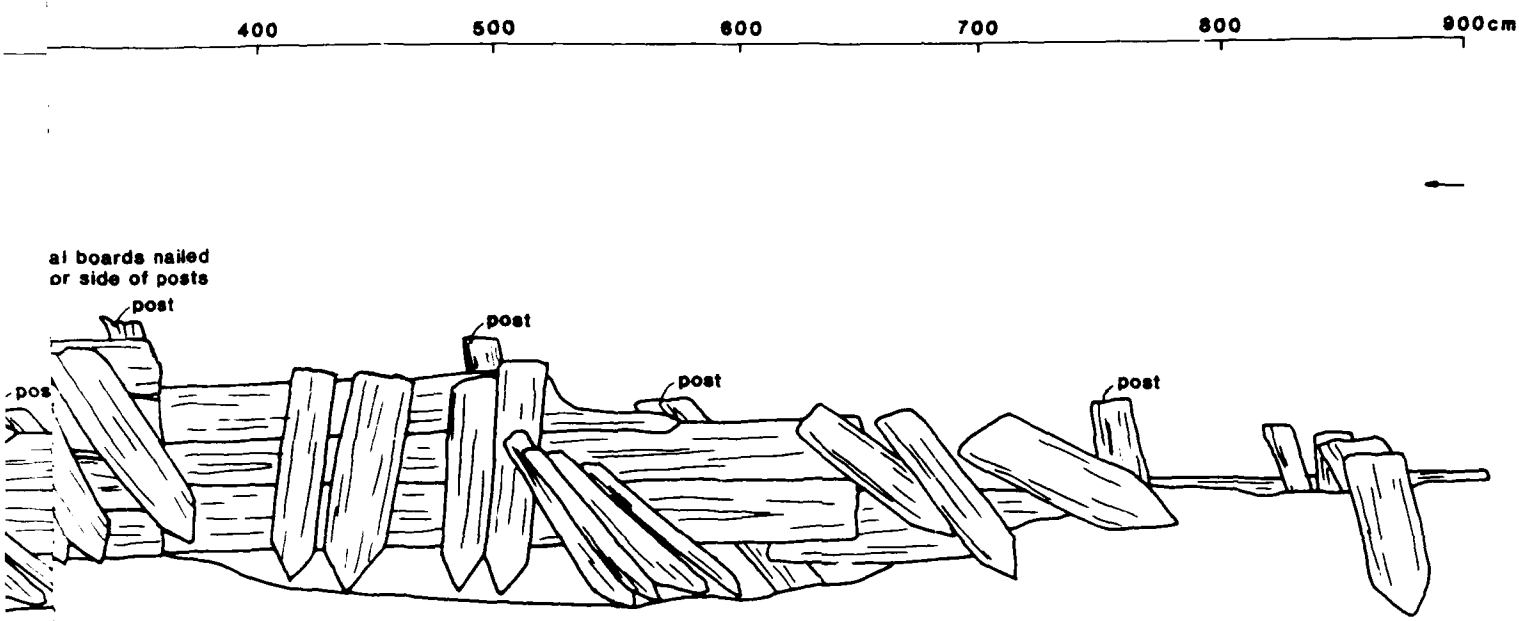



Figure 17. Exterior east wall profile of Feature 2, facing west.


400
500
600
700
800
900cm
al boards nailed
or side of posts
post
post
post
post
pos

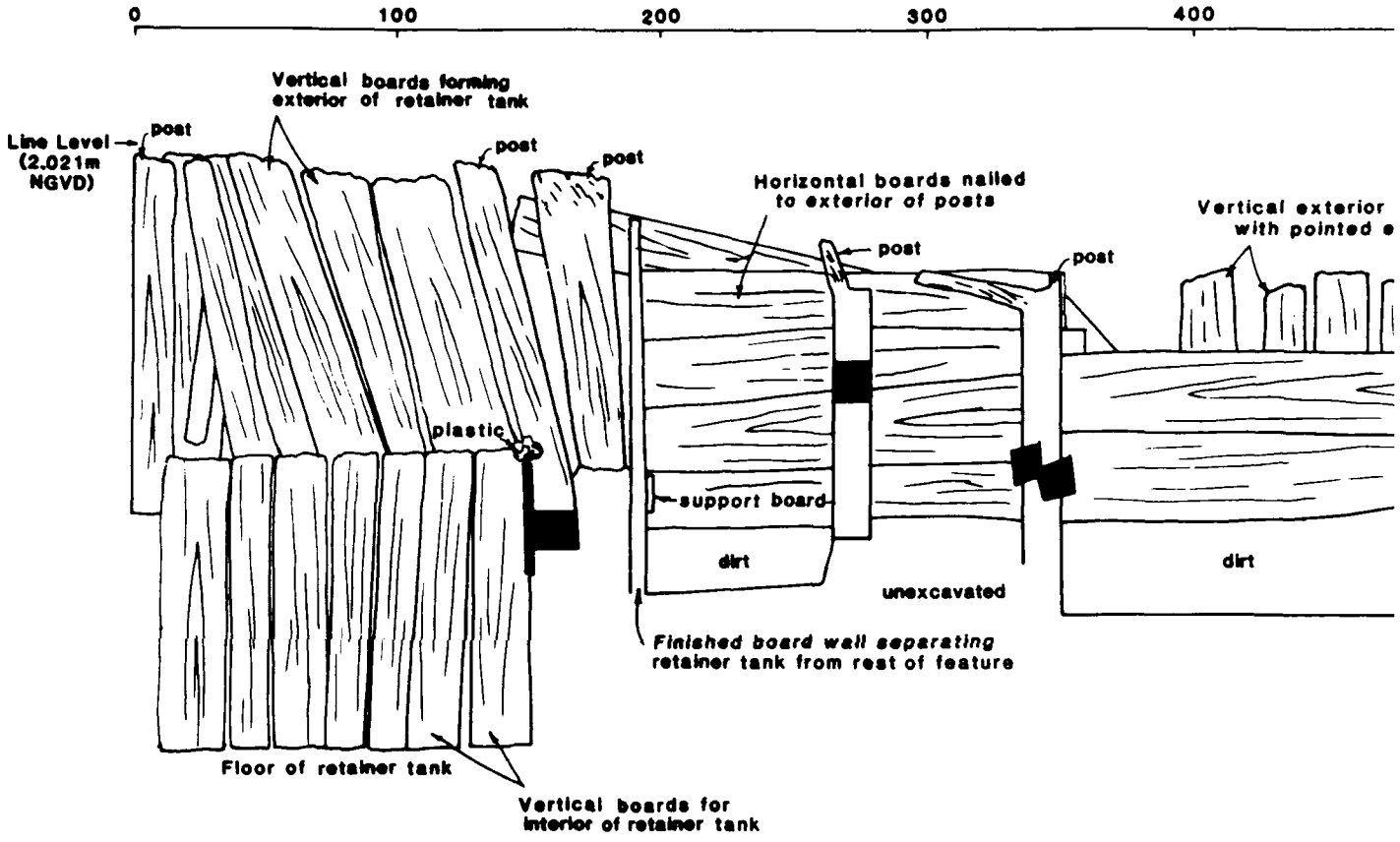
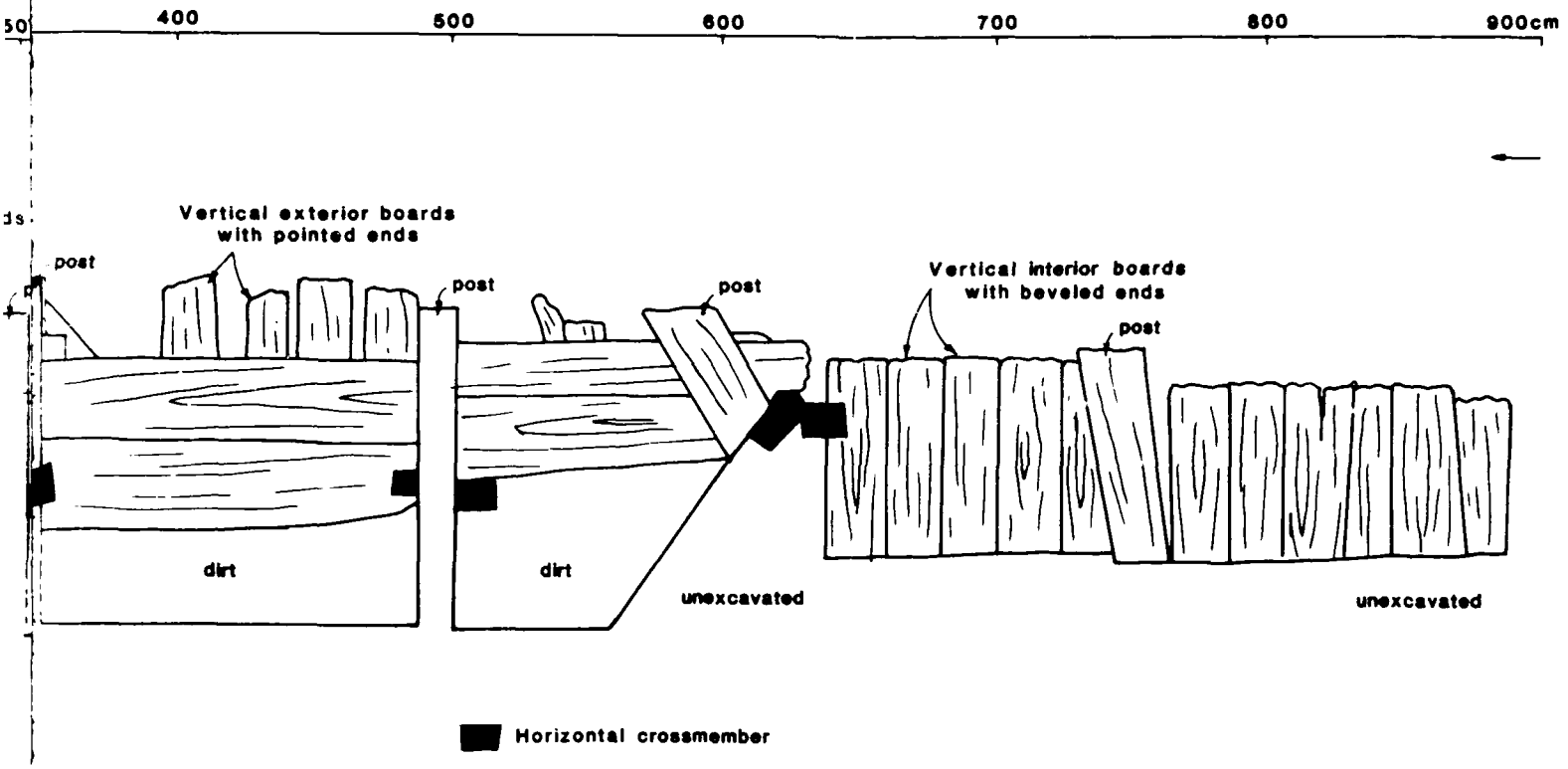



Figure 18. Interior west wall profile of Feature 2, facing west.


400
500
600
700
800
900cm
Vertical exterior boards
with pointed ends
post
post
post
Vertical interior boards
with beveled ends
post
dirt
dirt
unexcavated
unexcavated
Horizontal crossmember

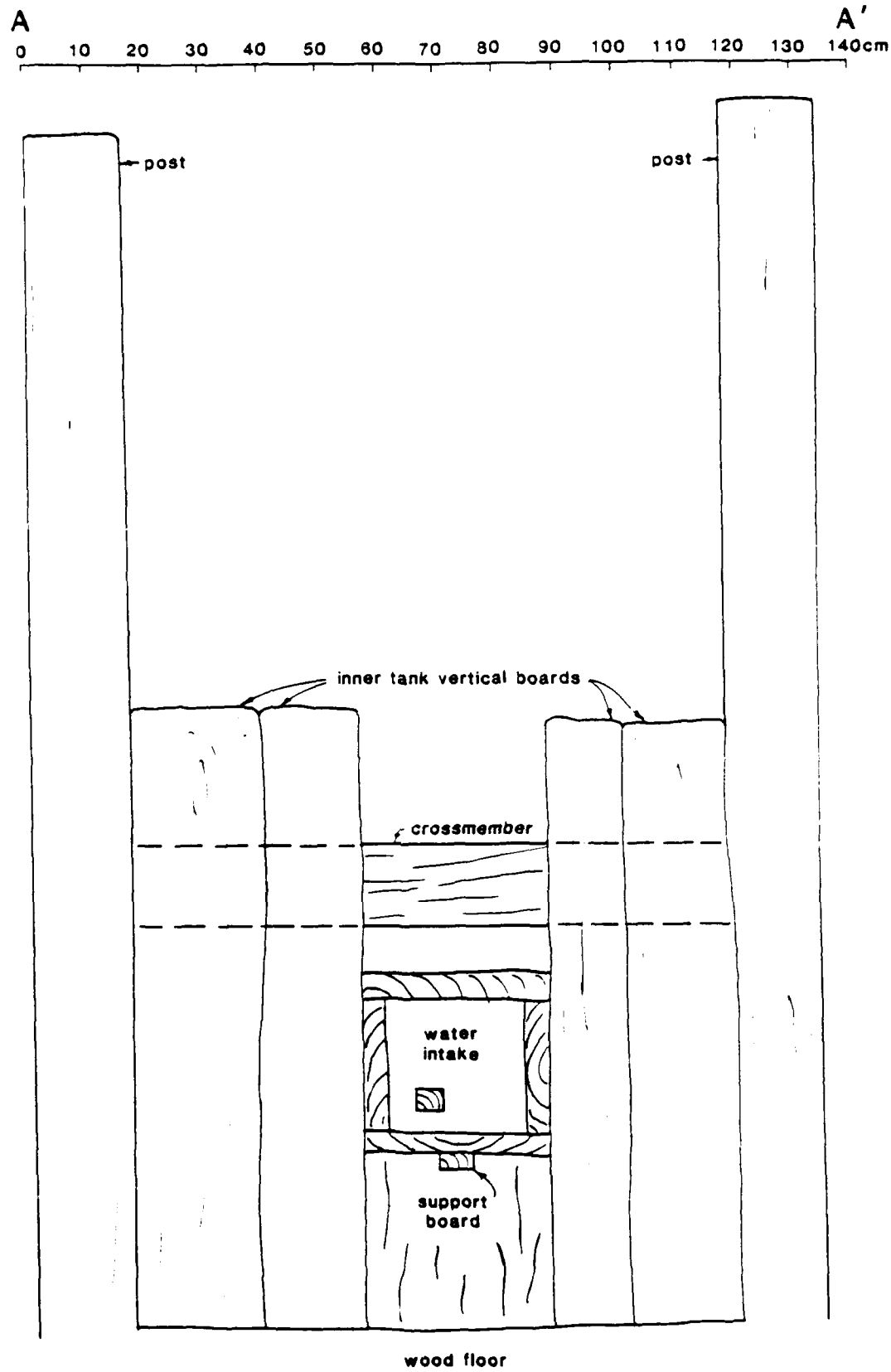



Figure 19. Profile A-A' in Feature 2, showing north interior wall of retainer tank.

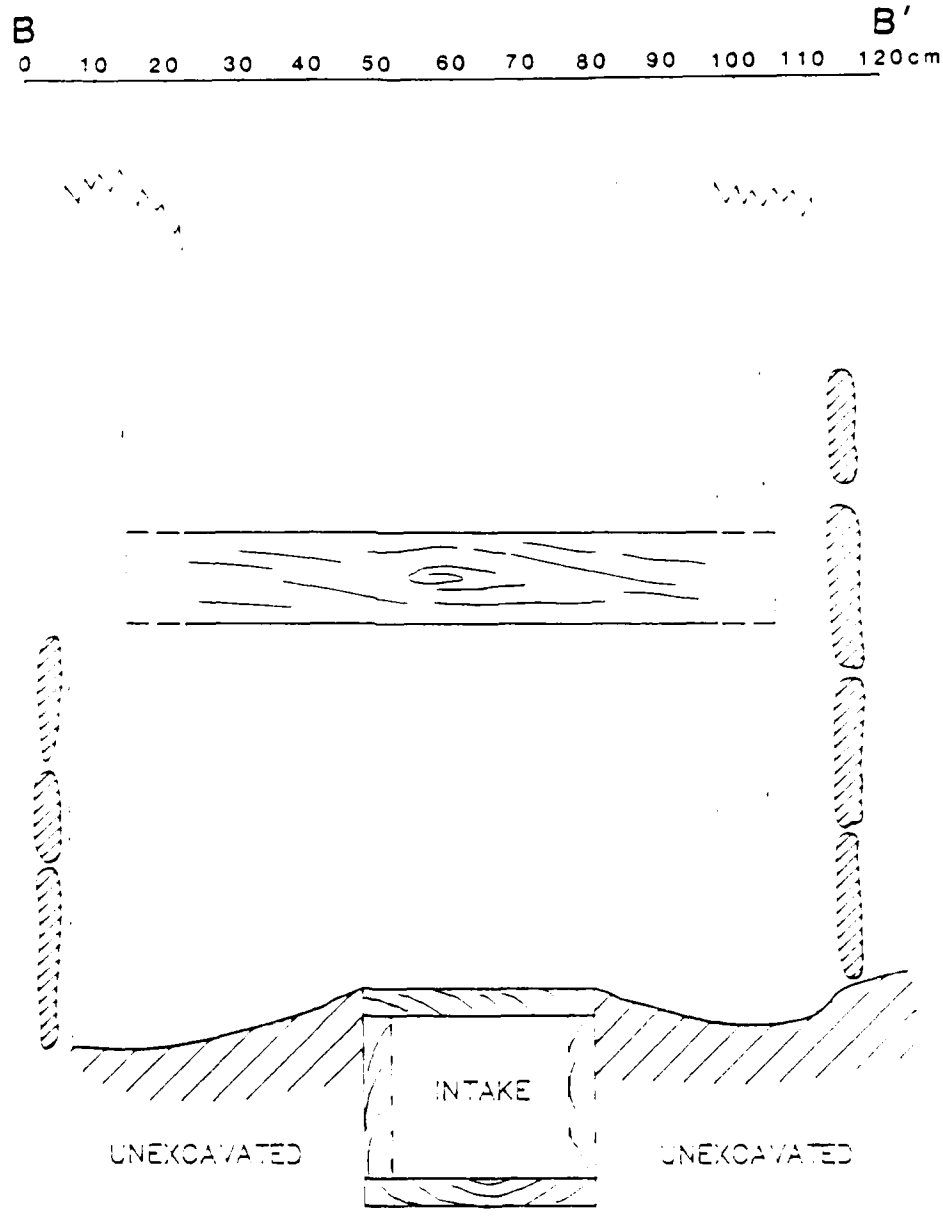
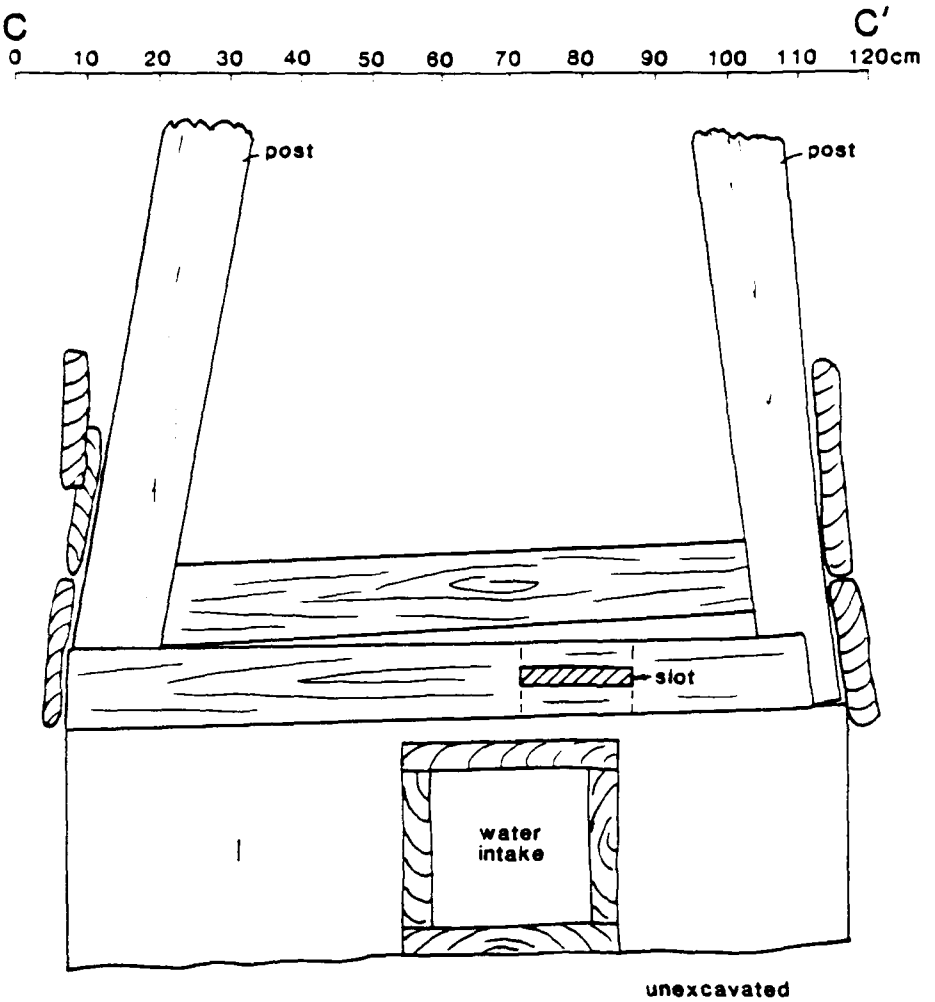
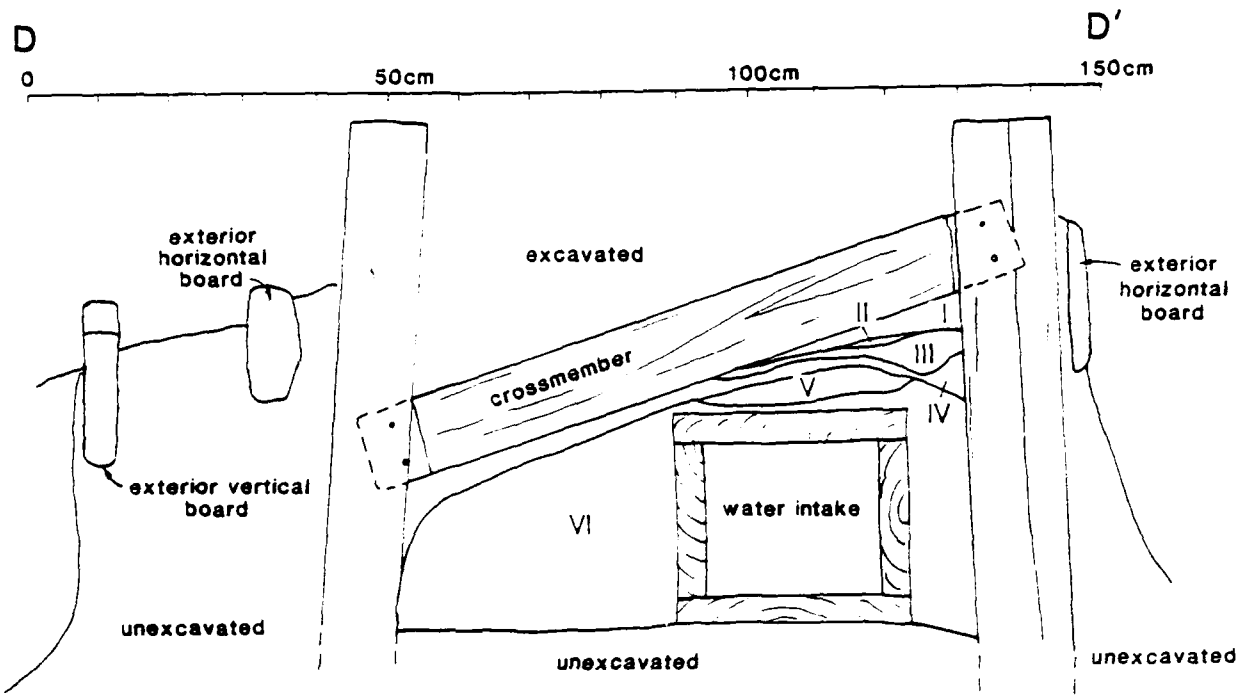



Figure 20. Profile B-B' in Feature 2, showing interior post and brace construction.




I 5YR 4/1 dark gray clayey silt

Figure 21. Profile C-C' in Feature 2, showing interior post and brace construction, with slot in crossmember.




I Thin bands of 10YR 5/2 grayish brown sand, 10YR 5/4 yellowish brown sand, and similar colored sand
II 7.5YR 4/0 dark gray clayey silt
III 10YR 4/3 dark brown sand and coarse sand, with small pebbles and organics
IV 5YR 4/1 dark gray clay with very fine bands of 10YR 4/3 dark brown silt
V 10YR 4/2 dark grayish brown clayey silt
VI 5YR 4/1 dark gray clayey silt lightly mottled with 10YR 4/2 dark grayish brown clayey silt

Figure 22. Profile D-D' in Feature 2, showing interior post and brace construction, and stratigraphic profile.

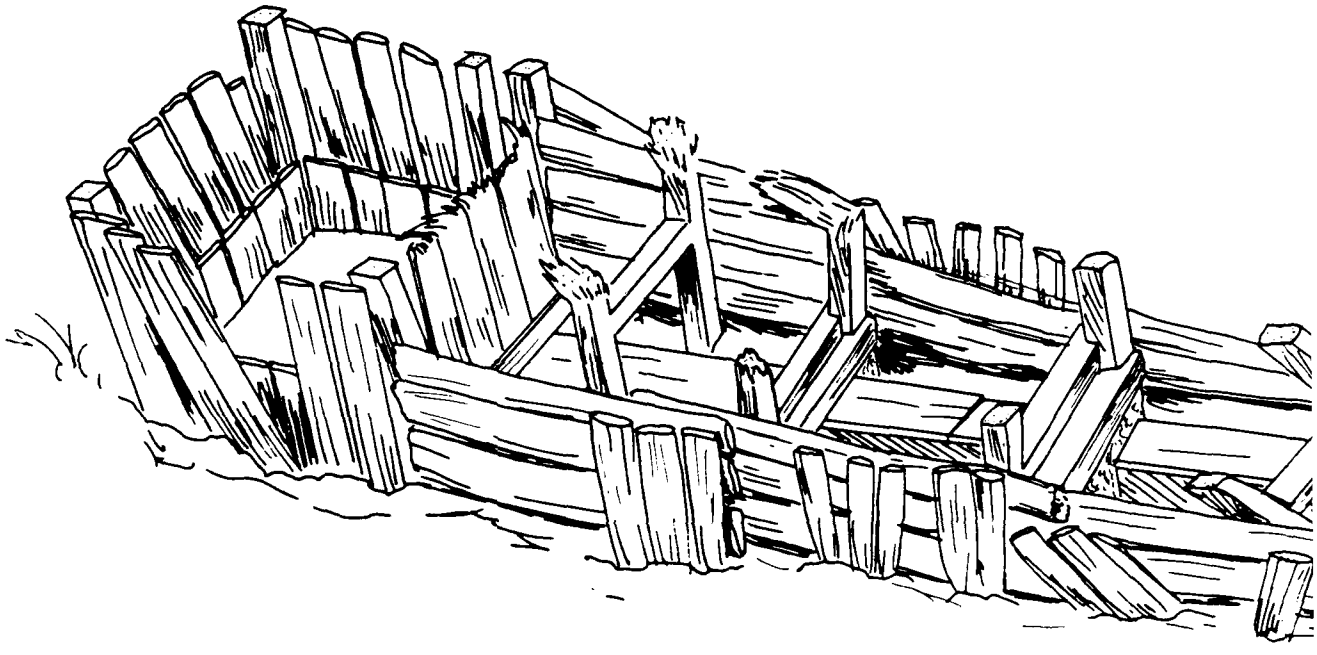
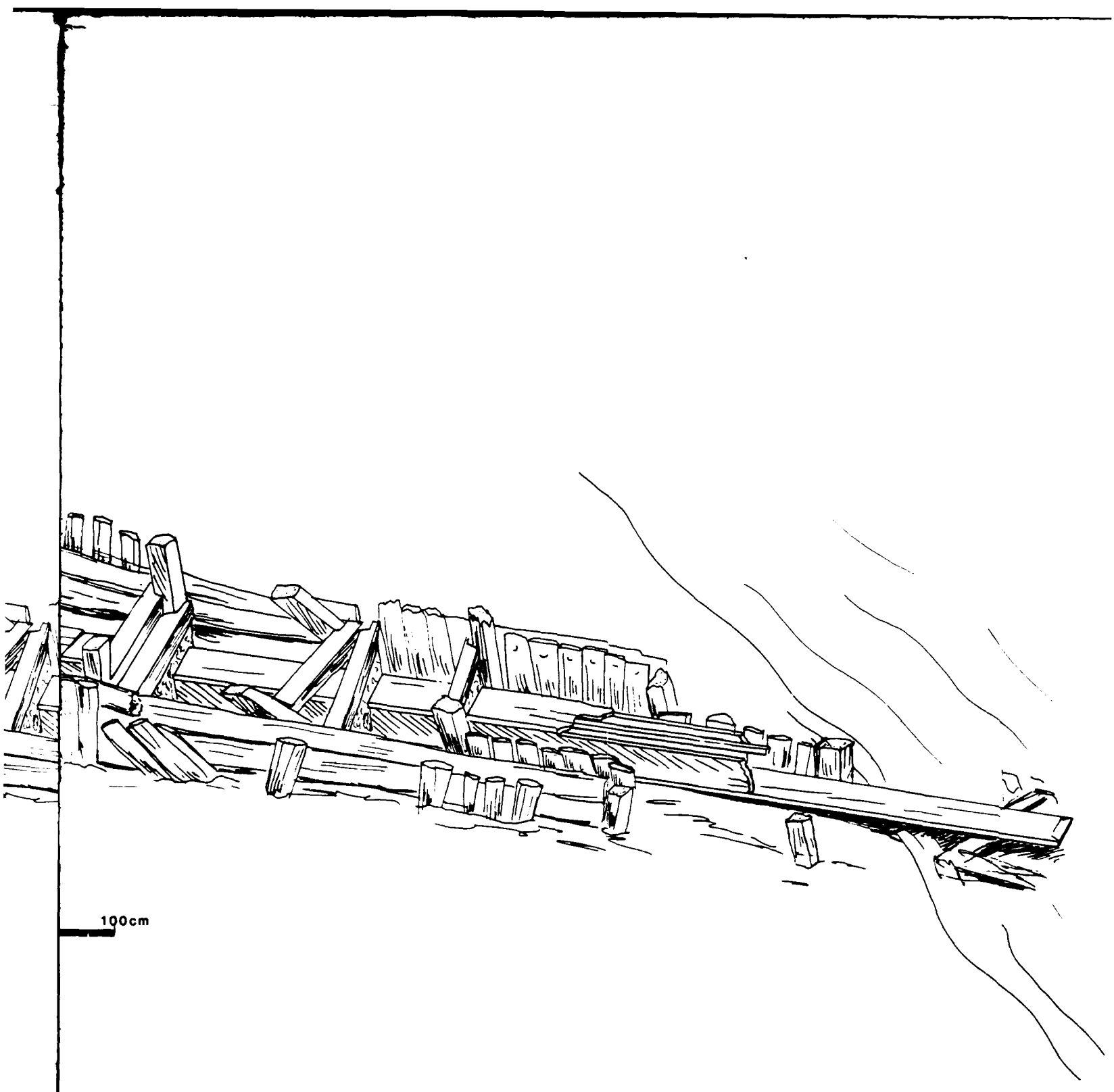



Figure 23. Perspective view of Feature 2, after excavation.


100cm

bottom boards overlapping, and nailed to, the side boards (Figure 19). Each of these boards was about 4 cm thick, making the internal dimensions around 22 cm square. Each side originally was constructed of two, and possibly three, boards; however, only the bottom of the intake extends to its probable riverside terminus. Its total length was 11.4 m, extending from the river into the north end of the retainer tank. The water intake slopes downward from the river into the retainer tank, with the river end at 0.723 m NGVD, 48 cm higher than the end within the retainer tank. This resulted in a 4.2% slope. A 4.5 by 6 cm board extended through the entire length of the water intake. While its north terminal end is missing, the south end extends into the retainer tank 11 cm beyond the end of the water intake. At 10 cm from this end, there is a 1.5 cm vertical hole in the board. While the precise function of this board remains unclear, it may have been attached to a door at the riverside end of the water intake, which could be opened and closed with a handle within the retainer tank. This would prevent the water intake from filling with riverine sediment during the months the rice flume was not in use.

The retainer tank consisted of tall exterior board walls surrounding a shorter interior board tank, with a wooden floor (Figures 16 - 19 and 23). During construction, four sturdy posts, which were to become the corners of the tank, were joined with horizontal crossmembers utilizing mortise and tenon joints. One set of four crossmembers, joining the four posts into a rectangle, were observed about 1.3 m below the top of the tallest surviving post. It is probable that a second set was near the bottom of these posts, and that a missing third was set near the original tops of these posts. This initial framework was constructed prior to its placement into the ground. Vertical hand-hewn boards, at least 2 m in length, were nailed to the exterior of the posts and crossmembers along the south, east, and west sides. Similar, shorter boards, at least 1.1 m in length, were nailed around the interior of the tank, leaving an opening for the water intake. These interior boards were nailed to the top surviving crossmembers, and extended to the wooden floor. They formed an inner tank which began more than a meter below the top of the exterior tank wall. A wooden floor, consisting of six flat sawn boards, lined the bottom of the tank, abutting the interior vertical boards. A 45 cm by 12 cm opening extended through this floor. This opening was aligned with the west edge of the water intake, and exhibited signs of board wear. When completed, the exterior sides of the tank were surrounded by soil to make it virtually watertight. This tank was separated from the rest of the feature by a vertical board wall.

The final component of the feature was the superstructure surrounding the water intake. This superstructure consisted of three sections: a frame of sawed posts and crossbeams; hand-hewn cypress boards connected to this frame, forming the walls; and unattached external hand-hewn cypress boards along each side. At least seven pairs of squared posts extended in a line from the retainer tank toward the river. The southernmost pair was nailed directly to the northern crossmembers of the retainer tank. Each of the next five pairs was joined with one or two crossmembers. The first of these (Figure 20) had one crossmember, which was attached to the posts about 50 cm above the water intake with mortise and tenon joints. The cut flat bottoms of these posts rested on soil about 5 cm below the top level of the water intake. The next three pairs of posts were attached and stabilized by two crossmembers each. These crossmembers were attached to either side of the posts with rabbet joints, with the riverside crossmember resting on top of the water intake, and the tank-side crossmember lying on top of the other crossmember. One crossmember (Figure 21) included unused crossed slots, demonstrating that this board was reused. The sixth pair from the retainer tank (Figure 22) was similar to the previous three, except that only one crossmember was utilized; this was attached to the tank-side of the posts with a rabbet joint. The final surviving pair of posts were shorn at the water intake level; no crossmembers between these two posts have survived.

Once the post and crossmember frame was assembled, horizontal hand-hewn cypress boards were nailed to the posts to form an exterior wall (Figures 17, 18). These boards extended from near the tops of the posts to approximately level with the top of the water intake. They varied in length, although most were about 2.6 m long. Within Unit 13, vertical boards, approximately 60 cm long, with flat sawn tops and hand-beveled ends, were nailed to the interior of the horizontal boards. They sloped inward, with their bottoms about even with the bottom of the water intake. The horizontal and vertical boards formed a wall which separated the rest of the batture from the interior of the rice flume. There was no floor under the water intake or the surrounding superstructure.

The final section of the superstructure was a series of pointed vertical boards driven into the ground around the exterior of the rice flume. These boards extended in an irregular arrangement from the north end of the retainer tank to the north end of Unit 13. They were 5 - 30 cm from the horizontal side boards, and were found at approximately the same depth.

**Feature 3**

Feature 3 was situated in line with Feature 2, and directly between it and the levee constructed prior to 1876 and enlarged in 1920. The visible surface remains included a post, as well as four vertical boards. The 1 by 2 m excavation unit placed in this feature during the 1987 investigations uncovered several pieces of wood, but no in situ remains. Prior to the 1988 excavations, very little was known about this feature.

Excavations began by removing the surface deposits to an even level. This resulted in the removal of the vegetation, and provided a surface that could be mapped. Three excavation units were placed into the exposed deposits to interpret them. The feature was bisected, and the north half was removed as Unit 17. Unit 18 was a 2.1 m by 40 cm trench placed along the south end of the feature. Unit 19 was a 30 by 50 cm unit excavated adjacent to two vertical board stains.

Some structural remains were revealed at the bottom of Level 1 (Figure 24). In addition to the previously identified post and a few vertical boards, a number of vertical board stains were revealed. About ten of these stains were along an irregular 1.4 m line, west of the post, and parallel to the river. Four board stains were in a clump 1 m south of this row. Two additional board stains were in a line perpendicular to the river, and near the west side of the feature. In conjunction with the extant boards, these stains delineate at least the north edge of the feature, and probably the south and west sides, as well.

In addition to the vertical board stains, a number of soil colors was present at the bottom of Level 1. The east half of the feature, from the vertical board stains along the north edge to the vertical boards along the south edge, contained numerous thin bands of sediment. These bands formed an irregular circle around a point 1 m south of the north edge of the feature. This pattern of disturbance continued to just east of the vertical post, and formed the eastern edge of the feature. While the west half of the feature contained less mixing of soils, a variety of colors were still present.

Feature 3 was bisected along an east-west axis, and the north portion, designated Unit 17, was excavated to undisturbed batture soil. The stratigraphic profile of Unit 17, facing south, was drawn (Figure 25). This profile provided valuable information about the construction of Feature 3. While the west part of the profile revealed a random mixture of several different soils over an undisturbed 10YR 3/2 very dark grayish brown silty clay base, the east portion included a 1.9 m wide by 34 cm deep basin-like hole (Stratum I), which had been filled with numerous thin bands of natural riverine sediments.

Unit 18, situated 1.5 m to the south, provided additional information about this hole. Unit 18 was a trench excavated along the inside face of a vertical board at the south end of the feature. The south side of the trench, which was against the board, had a fairly regular soil profile, containing yellowish brown silt, brown sandy silt, and dark gray clay (Figure 26). There was no evidence of a filled hole in the profile. However, the north side of the trench included the same filled hole, about 15 cm deep, that was present in the south wall profile of Unit 17. As with Unit 17, the filled hole in Unit 18 was along the east edge of the feature, corresponding with the numerous bands of sediment observed at the bottom of Level 1.

Unit 19 in Feature 3 was a 30 by 50 cm unit that bisected the two vertical board stains along the west side of the feature. It was excavated to define the nature of the board stains, and to ascertain the stratigraphy on the west side of the feature. The unit profile (Figure 27) was drawn to document the stratigraphy within the unit. The vertical board stains were a 10YR 6/3 pale brown silt surrounded by a thin band of 7.5YR 4/4 dark brown silt. These board stains extended only 3 cm into the unit, and had flat bottoms. The surrounding fill matrix was a 5YR 4/2 dark reddish gray clay. The bottom excavated stratum was 10YR 3/3 dark brown sandy silt. No cultural artifacts were observed in any of the fill from this unit.

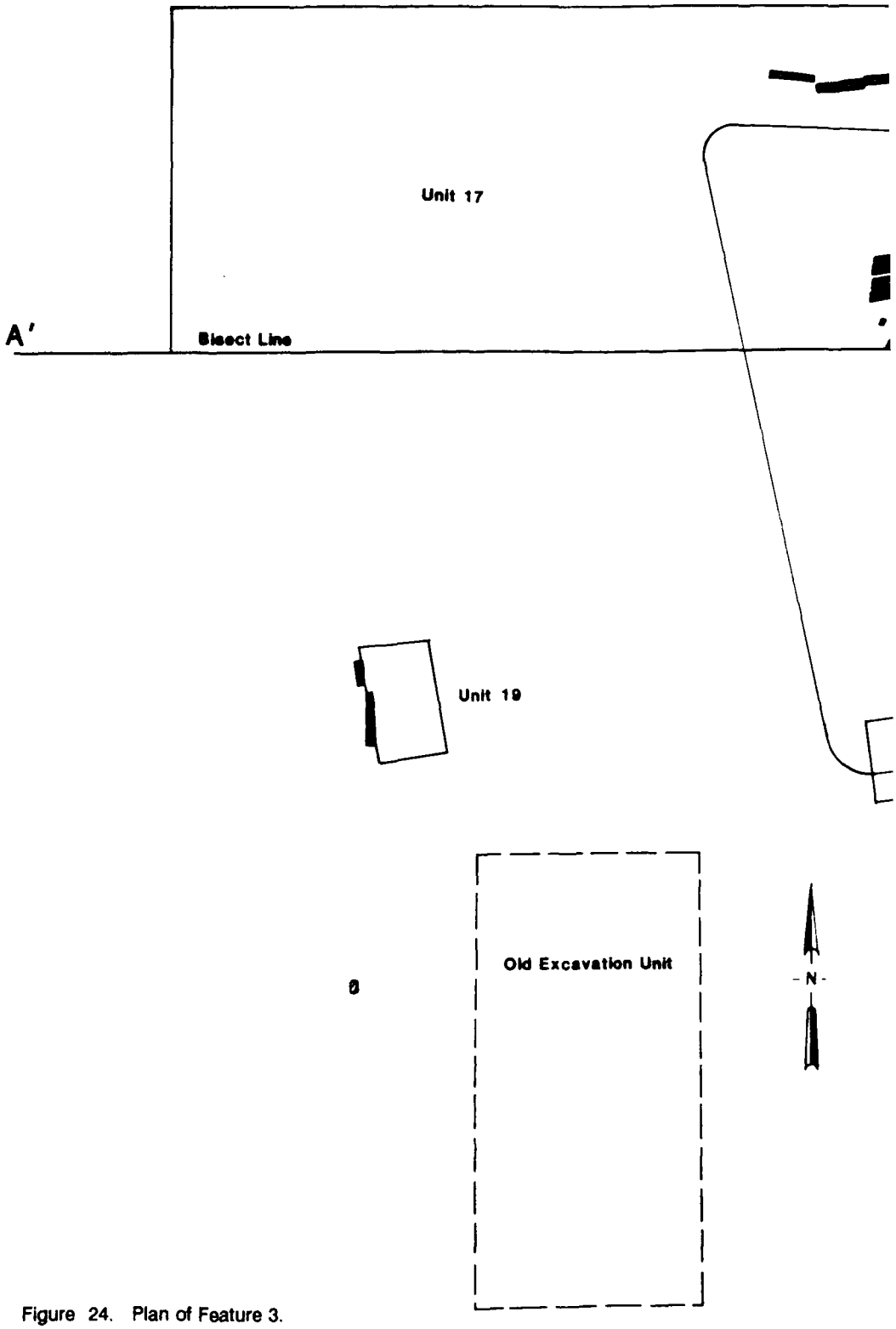
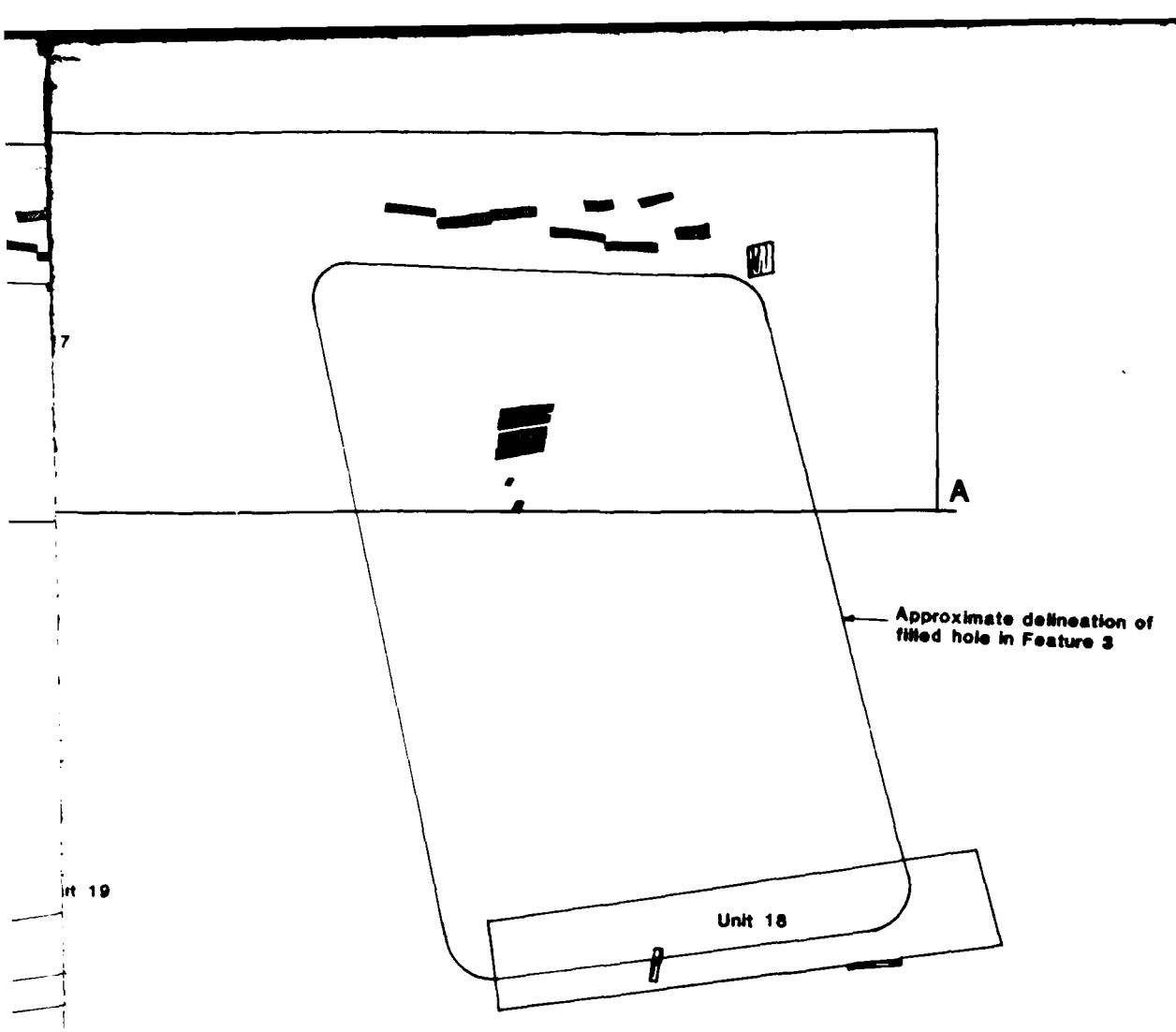
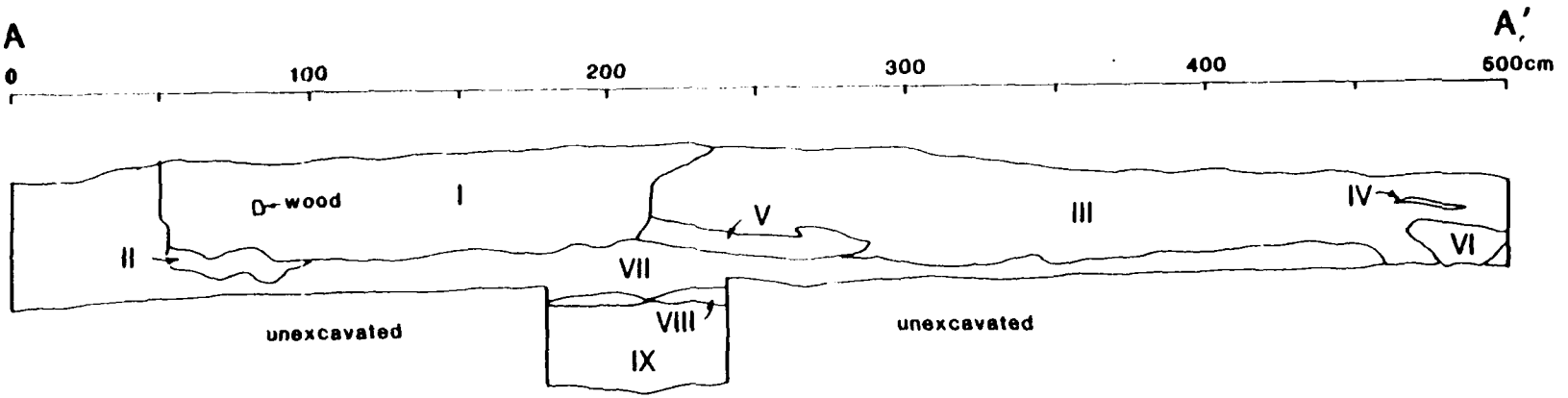



Figure 24. Plan of Feature 3.

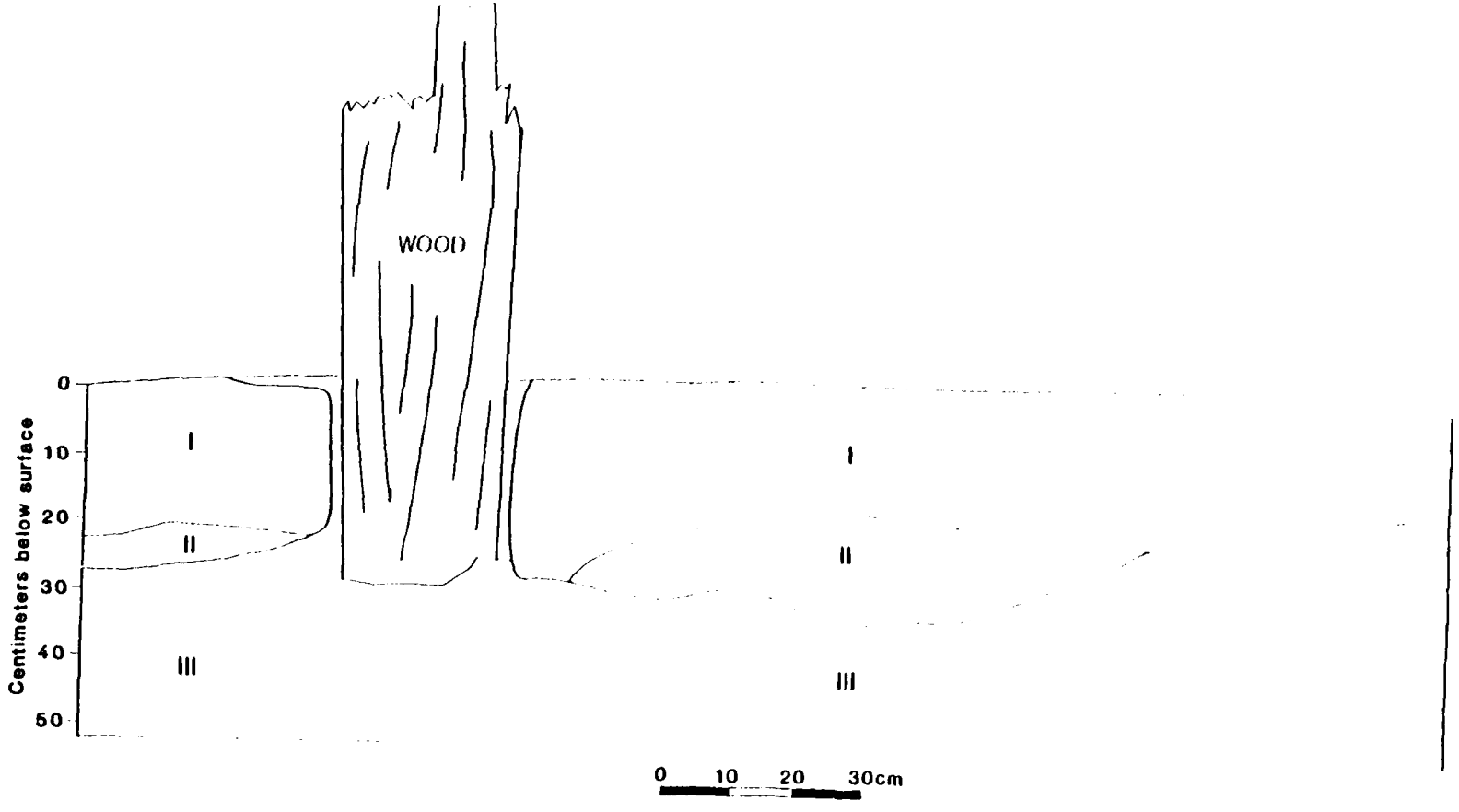

A
Approximate delineation of filled hole in Feature 3
Unit 18
Unit 19
Old Excavation Unit
N
0
.5
1m
KEY
Wood stain
Wood
Brick





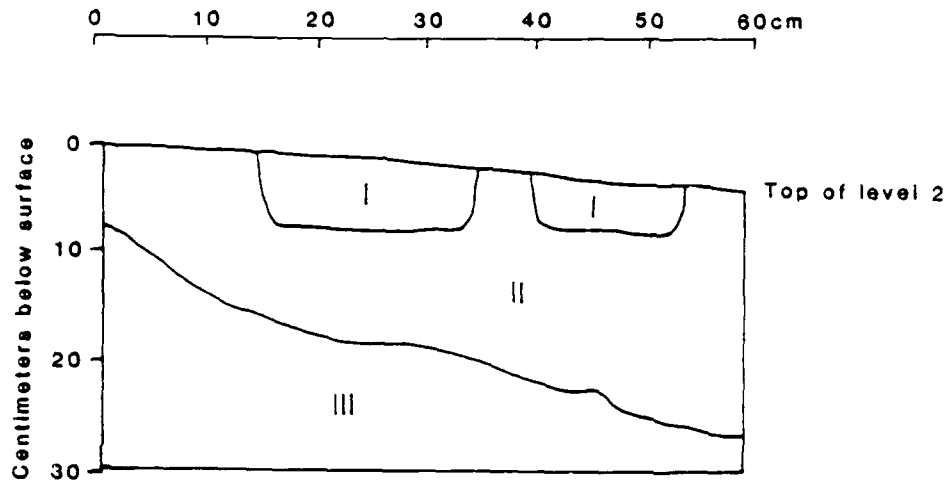

| | |
|---|---|
| I | 10YR 4/3 brown silt, with numerous microstrata of sedimentation with gradual upward slopes toward the limits of the feature |
| II | 10YR 5/3 brown silt |
| III | 10YR 5/1 dark gray silty clay mottled with ferrous oxide |
| IV | 1YR 3/3 dark brown clay |
| V | 10YR 3/3 dark brown silty clay |
| VI | 10YR 3/1 very dark gray silty clay |
| VII | 10YR 3/2 very dark grayish brown silty clay |
| VIII | 10YR 6/1 gray silt |
| IX | 7.5YR 3/0 very dark gray silty clay -- same for at least another meter (augered) |

Figure 25. Stratigraphic profile of Unit 17 in Feature 3, facing south.




I 10YR 5/4 yellowish brown silt
II 10YR 5/8 brown sandy silt with 10YR 5/1 clay bands
III 10YR 4/1 dark gray silty clay

Figure 26. Stratigraphic profile of Unit 18 in Feature 3, facing south.




I Board post holes, 10YR 6/3 pale brown silt, surrounded by an approximately 8 mm band of 7.5YR 4/4 dark brown silt

II 5YR 4/2 dark reddish gray clay

III 10YR 3/3 dark brown sandy silt

Figure 27. Stratigraphic profile of Unit 19 in Feature 3, facing west.

Comparison of the three excavated units within Feature 3 makes it clear that the fill within the east portion of the feature was considerably different from that in the west side. Along the entire east side of the feature there was a hole, filled with thin bands of natural sediment. This hole was virtually devoid of artifacts. However, the west side contained a mixture of comparatively thick soil deposits, from which a number of artifacts were recovered. Based on these units, the following construction sequence for Feature 3 is proposed.

Prior to the construction of Feature 3, the soils at and around the feature were mixed considerably. The reason for this mixing is unclear, although it may have been a preparation of the ground for the feature, or the result of a prior construction which was destroyed, or a disturbance associated with levee construction or maintenance.

The surviving post and vertical boards and board stains indicate that a post and board wall was constructed around at least a portion of the feature. A post at the northeast side of the feature, and probably some other posts, were driven into the ground to form corners. Vertical boards were driven into the ground along irregular lines to form the walls. While it is not verified, it is probable that these boards were secured to each other and to posts, providing stability to the walls. If the surviving board stains 2.5 m west of the filled hole were part of the construction, the entire structure was approximately 3 m (north-south) by 4 m (east-west). No archeological evidence has survived to verify the extent of the wall, the height of the structure, or its appearance.

A 2.9 m (north-south) by 1.8 m (east-west) hole, with nearly vertical walls, was excavated at the east end of the feature, through the previously disturbed soils. This nearly level hole filled virtually the entire east side of the feature. No artifactual remains were observed or recovered from this hole that would indicate its function. Following the abandonment of the feature, this hole was left open, and allowed to fill through natural riverine processes.

### Additional Cultural Remains

Two additional artifacts, a timber and an iron wheel, were observed and recorded at the site; these may be associated with the excavated features. The 20 cm high, 30 cm wide, and 2.41 m long timber (Figure 10) was on the top north edge of the levee constructed prior to 1876 and enlarged in 1920, over the bluff profile, and directly in line with Features 2 and 3. There was no evidence of nail holes or of cultural wear on the timber. While its function remains unclear, this timber may be part of a supporting platform for a water pump, or a randomly deposited flotsam.

A cast iron pulley (Figure 28) was located about 11 m southwest of Feature 1. This 83 cm diameter pulley had a deep V-shaped slot on the exterior side of the rim, and probably was used to turn a cable. Iron pulleys such as this were not used with either rice irrigation systems or fleeting activities. While its exact function remains unclear, it may be associated with early twentieth century levee construction. According to D. O. Elliott, early twentieth century levees often were built using a dragline and a tower machine (Elliott 1932:183-184). Both of these machines used cables turned with iron pulleys for transporting dirt in large buckets from its source to the levee under construction. The recorded pulley was near the levee constructed prior to 1876, which was enlarged in 1920; it may have been lost or discarded on the site during the early 1920s levee enlargement.

### Fleeting Activity at 16SJB29

During the past several decades, the river around the site has been utilized extensively for fleeting barges. This fleeting activity has contributed to the archeological record, and damaged and destroyed portions of that record. While the effect of fleeting on the archeological record will be discussed in more detail in Chapter X, its direct effect on 16SJB29 is summarized below.

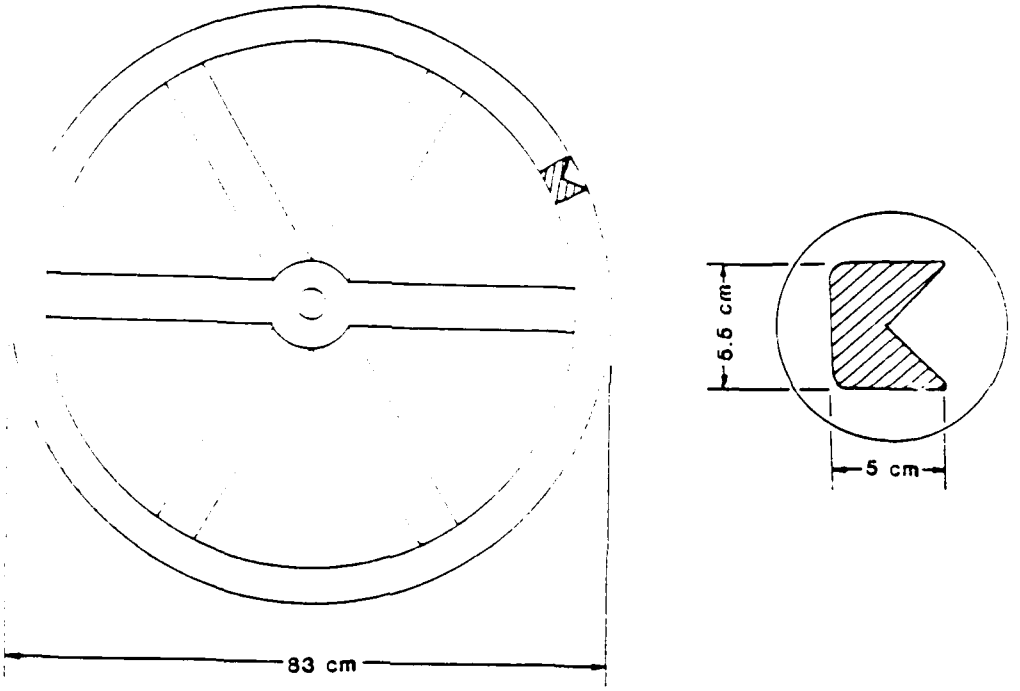



Figure 28. Iron pulley.

Fleeting activity at the site has contributed numerous artifacts to the archeological record. Mid to late twentieth century mooring onto the batture is accomplished with secured mooring chains and cables. These regularly break, and are discarded in the river and on the batture. In addition, some items remain on the batture for later use, and some usable objects occasionally are lost. At 16SJB29, the combination of these activities and events resulted in the presence of a dead man barge mooring with its attached mooring chain, considerable broken cable, broken shackles and pins, a turnbuckle for a barge cover, and much modern refuse scattered along the riverbank. While these artifacts are not significant, they nevertheless do reflect an important recent riverine activity.

The fleeting activity at 16SJB29 also has resulted in considerable damage to historic remains at the site. The chains and cables used to secure barges damage the surface deposits on which they lie. More importantly, however, the barges themselves often are moored very close to the shore, with their bottoms scraping the inundated shelf above the mean low water line. It is along this scoured shelf that most batture archeological sites are found during the low water season. This not only disturbs the soil deposits, it also displaces and breaks wood features. While the damage from individual mooring events may be minor, the damage is accumulative. The damage caused by barges at the site is clear. The upper portion of Feature 2 has been destroyed, and the tops of many of the boards and posts have been pushed toward the levee. In addition, the north portion of the water intake, and any surrounding superstructure, have been lost. Even more damage has occurred to Feature 1, where the majority of the feature has been destroyed. While some of this damage has been from natural causes, much of the surficial remains were destroyed through the regular mooring of barges at the site.

## CHAPTER VII

## LABORATORY METHODS AND RESULTS

A small assemblage of 223 artifacts was recovered from 16SJB29. These artifacts include 82 ceramic sherds, 45 glass fragments, and 14 nails. All artifacts were washed, sorted by material classification, and placed into bags labeled by provenience. During cataloging, these materials were encoded into a computerized site catalog to allow manipulation of part or all of the data sets. This catalog was organized hierarchically. The first and primary classification level was the Category, based on the format currently employed by the Louisiana Division of Archaeology. The second level was the Group, or functional classification, based on behavioral activity patterns (South 1977:93). The third level, Type, classifies materials by their comparable diagnostic attributes. The fourth and final level was the Subtype, which when combined with Category, Group, and Type, provides a unique code for detailed level of analysis.

For ceramics, nails, and glass, descriptions presented here comprise formal archeological classification. Identification and classification of other classes of artifacts are limited to descriptive overviews of the nature of recovered materials. Table 5 shows the material class frequencies represented at 16SJB29. The identification and classification of ceramic artifacts are emphasized here because of the utility of ceramics in chronological reconstructions. While glass artifacts also serve as chronological indicators, glass artifacts recovered from the project area provided substantially less chronological information than the ceramic artifacts. Nails also provided time-sensitive information.

### Typology and Chronology

Standard typological analyses were conducted as a prelude to chronological reconstruction. Artifacts then were assigned dates through comparison of the identified artifacts with others having documented use-popularity patterns. Ceramics, glass, and nails all provided chronological information.

#### Ceramics

A fairly coherent and well-developed classification has been developed for eighteenth century ceramics, based on technological and stylistic variables. Similar classification for nineteenth century ceramics is not as well defined. Gradual changes in paste and glaze, and the simultaneous use of decorative designs on differing ware types, have complicated attempts to delineate a concise ceramic chronology for this period. Therefore, separate chronologies for wares and decorative technologies were established for this study. During analysis, a combined date range was established that considered all of these variables.

The ceramic subassemblages consisted largely of refined earthenwares. During the late eighteenth and nineteenth centuries, changes in technology and stylistic differences for these wares occurred at such a pace that both can be used to provide a tight ceramic chronology. Starting in the eighteenth century, European potters began to compete for the fine ceramics market, which at that time was dominated by Chinese porcelains. The subsequent development of increasingly refined earthenwares reflects their attempts to gain control of this market. Through time, changes in technology and style for earthenwares have demonstrated direct correlation with the technological and stylistic changes in porcelain. Therefore, in any chronological discussion of refined earthenwares, reference to changes in porcelain technology and use popularity patterns is essential.

Some of the earliest forms of refined earthenware developed for the European market were **tin glazed earthenwares**. These wares were considered in three categories. Faience is the general term for tin glazed ware manufactured in France. Similar wares from Holland and England are known as delft. Equivalents in Italy, Iberia, and Mexico are called majolica. Tin glazed earthenware has a soft porous paste, ranging in color from yellow to buff to red. The glaze or enamel is a thick, opaque covering, produced by

Table 5

MATERIAL CLASSIFICATION FREQUENCIES PRESENT AT 16SJB29

COUNTS

| Provenience | Ceramics | Glass | Building Materials | Metal | Shell | Fauna | Wood | Stone | Synthetic | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Featur 1 | 7 | 2 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 12 |
| Feature 2 | 24 | 24 | 5 | 27 | 4 | 5 | 4 | 4 | 1 | 98 |
| Feature 3 | 6 | 6 | 1 | 26 | 1 | 1 | 1 | 0 | 1 | 43 |
| Surface Collection | 45 | 13 | 2 | 10 | 0 | 0 | 0 | 0 | 0 | 70 |
| TOTAL | 82 | 45 | 8 | 65 | 6 | 6 | 5 | 4 | 2 | 223 |

FREQUENCIES

| Provenience | Ceramics | Glass | Building Materials | Metal | Shell | Faunal | Wood | Stone | Synthetic |
|---|---|---|---|---|---|---|---|---|---|
| Feature 1 | 58.3 | 16.7 | --- | 16.7 | 8.3 | --- | --- | --- | --- |
| Feature 2 | 24.5 | 24.5 | 5.1 | 27.5 | 4.1 | 5.1 | 4.1 | 4.1 | 1.0 |
| Feature 3 | 14.0 | 14.0 | 2.3 | 60.5 | 2.3 | 2.3 | 2.3 | --- | 2.3 |
| Surface Collection | 64.3 | 18.6 | 2.8 | 14.3 | --- | --- | --- | --- | --- |
| SITE | 37.0 | 20.2 | 3.6 | 29.1 | 2.7 | 2.7 | 2.2 | 1.8 | 0.9 |

adding tin oxide to a lead glaze. Vessel forms for this ware generally were plates, mugs, jugs, candlesticks, chamber pots, and wash basins (Noel Hume 1970:109-110). However, in the mid-nineteenth century, delftware was manufactured in smaller, thinner forms in an attempt to attract some of the porcelain market. These forms met with little success, because they tended to chip and lose their glaze.

**Creamware** is a refined earthenware characterized by a cream-colored paste and clear to slightly green tinted glaze. Creamwares vary in color from deep buff to light cream color, with the lighter color more recent. A fashionable tableware, creamware frequently was left undecorated; when it was decorated, the primary technique was molded decoration. Applied techniques, such as handpainting, transfer print, and sponge/spatter, were not as popular, but were not uncommon.

**Creamware** was perfected by Josiah Wedgwood ca. 1762; by the 1790s, its popularity had secured England's domination of the world ceramics market. Whereas 'delftware' and white salt-glazed stoneware had failed in their attempts to fulfill the Englishman's desire for Chinese porcelains, the creamware alternative succeeded. Creamware's success can be attributed in part to the timely one hundred per cent tariff imposed on the importation of porcelain, which made the price substantially higher than that of creamware. Its popularity increased partly because of astute marketing techniques (Miller 1980), and partly because of increased availability, which also was related to the high tariff. Although this ware was successful in competing with porcelain, its popularity began to wane in the late 1700s. In 1779, Wedgwood introduced a new whiter ware (Noel Hume 1970:128). While this ware could not compete in the market with porcelain, he hoped that it would substitute for the preferred ware. This ware, termed **pearlware** by archeologists and historians, is characterized by its cream-white paste covered with a thin soft blue to blue/green glaze. The bluing was added to imitate the bluish cast characteristic of Chinese porcelains. Vessel walls tend to be thinly potted; however, the edges and foot rings are sharply defined (Sussman 1977:106).

In the late eighteenth century, Spode developed a 'bone china' that had a whiter paste than the Chinese version. Gradually, this porcelain type replaced Chinese porcelain in the English market. To continue the competition for the porcelain market, potters gradually began to add less bluing to their pearlware glazes until the glaze became almost clear. This clear glazed version generally is referred to as **whiteware**, although no ware distinction was made by the potters between wares with bluing and those without. Throughout this period, decorations on both wares remained the same. The process of change was a gradual progression.

Introduction of the ware commonly referred to as **ironstone** added a new dimension to the refined earthenware progression. This ware was manufactured by the addition of pulverized slag or the scoria of ironstones to the paste (Moore 1944:169). First produced around 1813, ironstone did not gain widespread acceptance until the 1840s. Due to its durability, ironstone became very popular in the Americas, and one variety containing bluing--some say in the paste while others say in the glaze--was instrumental in the revival of a preference for blue glazed 'pearlware.' This 'revival pearlware' had a harder, more brilliant glaze than the earlier version; tinting ranged from deep blue to almost colorless (Sussman 1977). There are many similarities in paste and glaze between whiteware and ironstone. For the purpose of this study, when no distinction could be made, sherds were classified as whiteware/ironstone.

Over the course of this century of earthenware development, independent changes occurred in ceramic decorative technology and style. These technological and stylistic variations occurred simultaneously on earthenwares with overlapping production dates. Because of the previously mentioned difficulties in ware distinction, especially between whiteware and ironstone, documentation of these stylistic attributes is an essential temporal and analytical tool. Stylistic documentation, such as George Miller's chronology on shell edged decorations (personal communication 1985) and [illegible]rbee's (1985) stylistic documentation of ironstone patterns, provides date ranges based on dec[illegible]he following decorative types were present on creamware, pearlware, whiteware, and ironstone sherds:

Edged ware

Edged ware, more commonly called "shell edged," was primarily manufactured in blue and green.

In use as early as 1775, it was one of the first patterns applied to pearlware. Early examples were intricately molded, presumably to represent naturalistic shell rims. Through time, incised and r. ..ded decorations became increasingly simplistic, until the rims became unscalloped. Incisions developed to simply straight lines. Under glaze hand painting applied to enhance molded designs followed a similar progression. In early examples, color application followed the relief of the molding; in later examples, the color was no more than a straight band following the circumference of the rim.

Transfer Printing

Transfer printing was produced by English potters as early as 1750, but it only was applied as over glaze decoration until post-1760. This process started with a design engraved on copper plating. Once the plate was covered with the paint, tissue paper was placed over it, transferring the design to the tissue paper, which in turn was transferred to the ceramic object. When the color was dry, the paper was washed off, leaving only the painted design. Transfer printing enabled the potter to produce identical intricate detailed designs on innumerable matching pieces at a cost far below that of similar hand-painted pieces (Miller 1980:4).

Mocha

Dendritic and/or finger-trailed "common cable" decorative designs applied on a dipped background with banded borders occurred from the 18th through the 19th century.

Flow Blue

Flow Blue is a variation of transfer printing introduced in the early 1820s by Josiah Wedgwood II. Thought by some to have been a mistake of the potters, this decorative design was produced intentionally by placing cobalt transfer printed wares in saggers during the glaze firing, resulting in the flowing of the color outside the lines of the pattern. There are two distinct categories of Flow Blue. 'Old' Flow Blue was used primarily on stoneware; patterns were excessively blurred, often beyond the point of pattern recognition. 'New' Flow Blue was used on ironstones from the late 1800s to early 1900s. Designs were sharper in definition, and often were embellished with overglaze gild. Popularity of cobalt as a primary decorative color was fostered by the 1775 discovery of a cobalt source near Truno, England (Blake 1971:iii). By 1818, most of the 140 Staffordshire potters used cobalt blue as their major decorating color. Prior to that time, the high cost and limited availability of imported cobalt limited its use (Blake 1971:iv).

**Yelloware** is a hard paste earthenware, which can be distinguished by its yellow paste and clear glaze. The process for manufacturing yellowware was introduced to the United States as early as the 1830s by immigrant European potters, and rapidly became popular with American potters. Generally, yellowares from American sites are regarded as having been manufactured domestically. Usually unmarked, yelloware vessel forms include items such as large bowls, chamber pots, spittoons, and ginger beer bottles (Genheimer 1987). The yelloware ginger beer bottle was developed by American potters to compete with the English stoneware version, popular in the late nineteenth and early twentieth centuries. While the form and decoration of the yelloware bottles were indistinguishable from those of stoneware bottles, the porosity of yelloware paste necessitated glazed interior surfaces. Decorations can be divided into three basic categories: simple banding or rings in white, yellow, brown, or blue; rockingham type glaze, the most popular of the yelloware decorative designs, characterized by the dark brown to yellow sponged-glaze effect known as tortoise shell; and a third, less popular, variation that consisted of designs similar to those evidenced on English mocha. In popular use from the mid-1850s until the turn of the century, yellowares still are produced in limited numbers today. However, modern yelloware generally is whiter in paste with a yellowed glaze. Although they are treated separately by some authorities, brownware and yelloware differ essentially only in degree of clay refinement and baking temperature, the lighter ware being more highly fired (Ketchum 1971:93).

**Porcelain** is a highly vitrified ceramic with an alkaline glaze. It first was manufactured in Asia and later in England, continental Europe, and the United States. Within this ware there are two type distinctions. Asian and Continental porcelains are considered 'hard paste,' which is made of the natural clay, and appears sparkling, fine grained, and vitreous when broken. English and American porcelains are 'soft paste,' which is more porous and dull, and is made of artificial clays. However, it should be noted that all modern porcelain is hard paste. Porcelain clay was used to produce items including fine dinnerware, accessory serving pieces, and ornamental pieces such as figurines.

One still later porcelain type, a borderline type between stoneware and porcelain, is referred to as "porcelaneous stoneware" or "semi-china." The main differences in the manufacture of stonewares and porcelain are matters of a few minor ingredients, preparations, and degree of firing. This later porcelain, a more durable type, was produced by the introduction of ball clay into the paste, and was used most commonly for hotel, restaurant, and institutional dinnerware (Worthy 1982:337).

**Stoneware** is a compact, finely grained ceramic. The body is an opaque non-porous paste, produced by high firing temperatures (1300°). Glazes, while commonly used, are considered aesthetic rather than functional. American potters always had the technology to produce their own stonewares, but early coastal settlements did not have ready access to clay sources. It was not until the late 18th century, when improved transportation systems made the use of inland clays economically viable, that serious attempts were undertaken to produce stoneware commercially. Domestic salt glazed stoneware was in limited production during the early 18th century (at the same time salt glaze was declining as a primary pottery type in Europe). It flourished in the early to mid-nineteenth century, but its popularity waned in the latter half of the century.

From 1775 to the 1850s, stoneware vessel shapes and decorative designs were influenced by the highly stylized European forms. During the mid-nineteenth century, several factors were instrumental in the change of stoneware shape and decorative technology. Advancements in glass and refrigeration technology and increased demand necessitated the sacrifice of detail for utilitarian shapes and simplistic decorative techniques. By 1890, most stoneware was undecorated and mechanically mass produced. This enabled small companies to stay in the increasingly competitive container market. Stoneware ale bottles were in production in the latter half of the nineteenth century, and generally have a buff body and yellow glaze (Goodwin, Yakubik, and Gendel 1984:181).

Chronological information for ceramic types and decorative designs is illustrated in Table 6. Frequencies of ceramic sherds are illustrated by feature in Table 7. Eighty-three percent of the ceramic subassemblage is refined earthenwares. This number includes 30 whiteware, 22 pearlware, 10 ironstone, and three creamware sherds. Other ware types include three stoneware, two porcelain, two tin-enamelled, two redware, and two yelloware sherds.

## Glass

Over 51 percent of the glass subassemblage recovered from 16SJB29 was identified as nineteenth and twentieth century bottle glass; this necessitates a discussion of bottle glass development. Diagnostic changes in bottle manufacturing technology and the increased use of bottle embossments elevates the importance of bottle glass as a major tool in assignment of temporal information. During the first half of the nineteenth century, domestic bottle production was limited primarily to small glass houses along the East Coast and throughout the Midwest. Many of these small houses continued to manufacture their products in the traditional blown fashion. As late as the 1870s, a large number of bottles still were produced without the aid of technological advancements. Therefore, the following discussion of nineteenth and twentieth century glass documents advancements as they occurred in chronological context and does not reflect preferences in technological application.

Technological advancements during the early to mid nineteenth century affected virtually all aspects of bottle production. However, the most notable changes occurred in the molding, empontilling, and finishing aspects of production. Prior to the development of machine mold-blown glass, bottles were

Table 6

HISTORIC CERAMIC TYPES PRESENT AT 16SJB29 WITH MEAN DATES, DATE RANGES, AND REFERENCES

| Ceramic Type | Description | Mean Date | Date Range | Reference Source |
|---|---|---|---|---|
| **Porcelain** | Transfer Printed, hard | | | |
| | Plain, hard | | | |
| **Stoneware** | | | | |
| Domestic Brown | Albany slip on buff | | | |
| Industrial | Buff Bodied | 1875 | 1850-1900 | Ketchum 1971 |
| **Ironstone** | White, undecorated | 1857 | 1813-1900 | Wetherbee 1985 |
| | Molded | 1870 | 1840-1900 | Praetzellis 1980 |
| **Creamware** | Annular | 1803 | 1790-1820 | South 1977 |
| | Transfer printed | 1790 | 1765-1815 | South 1977 |
| | Plain | 1791 | 1762-1820 | South 1977 |
| **Pearlware** | Plain | 1805 | 1780-1830 | South 1977 |
| | Mocha | 1805 | 1790-1820 | South 1977 |
| | Transfer printed | 1818 | 1795-1840 | South 1977 |
| | Underglaze Hand painted | 1800 | 1780-1820 | South 1977 |
| | Scalloped rim, curved lines | 1820 | 1795-1845 | Miller 1985 (Personal Communication) |
| | Unidentified Edgeware | 1830 | 1780-1880 | Miller 1985 |
| **Redware** | Fine Black Glaze | | | |
| | Clear, slipped | | | |
| **Early Refined Earthenware** | Mocha | 1843 | 1795-1890 | South 1977 |
| **Whiteware** | Plain | 1860 | 1820-1900 + | South 1977 |
| | Transfer Printed | 1840 | 1820-1860 | Miller1980/South 1977 |
| | Handpainted, polychrome Whiteware/ironstone Colored glaze | 1857 | 1813-1900 + | Goodwin, Yakubik and Gendel 1984 |

| Ceramic Type | Description | Mean Date | Date Range | Reference Source |
|---|---|---|---|---|
| **Tin Enamelled Earthenware** | Faience | | | |
| | Unidentified | | | |
| **Yelloware** | Plain | 1865 | 1830-1900 | Ramsay 1947 |
| | Dipped/Annular | 1865 | 1830-1900 | Ramsay 1947 |

Table 7

HISTORIC CERAMIC SHERD FREQUENCIES FROM WILLOW BEND 16SJB29

| Ceramic Type | Description | Feature 1 | Feature 2 | Feature 3 | Surface Collection | Total |
|---|---|---|---|---|---|---|
| **Porcelain** | Transfer Printed, hard | 1 | | | | 1 |
| | Plain, hard | | | | 1 | 1 |
| **Stoneware** | | | | | | |
| Domestic Brown | Albany slip on buff | | 2 | | | 2 |
| Industrial | Buff Bodied | | | 1 | | 1 |
| **Ironstone** | White, undecorated | | 2 | | 5 | 7 |
| | Molded | | | 1 | 2 | 3 |
| **Creamware** | Annular | | 1 | | | 1 |
| | Transfer printed | | | | 1 | 1 |
| | Plain | | | 1 | 1 | 2 |
| **Pearlware** | Plain | 1 | 2 | | 5 | 8 |
| | Mocha | | | | 1 | 1 |
| | Transfer printed | | | | 2 | 2 |
| | Underglaze Hand painted | | | | 1 | 1 |
| | Scalloped rim, curved lines | 1 | 3 | | 5 | 9 |
| | Unidentified Edgeware | | | | 1 | 1 |
| **Redware** | Fine Black Glaze | | 1 | | | 1 |
| | Clear, slipped | | 1 | | | 1 |
| **Early Refined Earthenware** | Mocha | | | | 2 | 2 |
| **Whiteware** | Plain | | 4 | 2 | 9 | 15 |
| | Transfer Printed | 1 | 2 | 1 | 1 | 5 |
| | Handpainted, polychrome | | | | 2 | 2 |
| | Whiteware/ironstone | 1 | 3 | | 3 | 7 |
| | Colored glaze | | | | 1 | 1 |
| **Tin Enamelled Earthenware** | Faience | 1 | | | | 1 |
| | Unidentified | 1 | | | | 1 |
| **Yelloware** | Plain | | | | 1 | 1 |
| | Dipped/Annular | | 1 | | | 1 |
| **TOTAL** | | 7 | 22 | 6 | 44 | 79 |

either free-blown or mold-blown. Technology for mold produced bottles had existed for centuries; nevertheless, most of these molds were clumsy, crude, and unhinged, making it more expedient to free-blow bottles (Munsey 1970:38). During the seventeenth and eighteenth centuries, there was an increased use of multi-component molds, but they were too uneconomical for constant use. By the late eighteenth and early nineteenth centuries, the use of the hinged shoulder and full height molds gradually started to replace free-blown bottles; these molds were ubiquitous by the mid nineteenth century.

During the late nineteenth century, glass container manufacturing became progressively more mechanized, beginning with the development of semi-automatic machinery (circa 1881), and culminating with the introduction of a fully automated version (1903). The first successful implementation of a fully mechanized process was developed by Michael Owens; by the 1920s, this process had emerged as the number one bottle manufacturing method in North America (Jones and Sullivan 1985:38-39).

Differences between semi-automatic and fully automatic machines were primarily in the method of transferring molten globs from furnace to mold. Semi-automatic machines received the glob manually, while fully automatic machines were fed directly from the furnace, eliminating any manual involvement. Cost and increasing demands, not quality, were the reasons for this change. Machine manufactured bottles, while retaining some quality standards, could be produced at a quicker rate and with less labor. With lower production cost passed onto the consumer, machine made bottles quickly became the preferred product.

Frequencies of glass artifacts are listed by feature in Table 5. Identifiable bottle glass from 16SJB29 consisted primarily of fully automatic machine made bottles. In addition, two examples of fire polished lips (circa 1880), and one iron pontil (1845-1875) were classified. A few fragments of amethyst glass (ca. 1875-1920) also were recovered from Feature 3.

Nails

The identification of various nail types is useful in both temporal and functional analyses. There are three stages in the technological chronology of nails: wrought nails, cut nails, and wire-drawn nails. While wrought nails still are manufactured today, they are used primarily for restoration and reproduction purposes. Hand forged wrought nails were the primary construction fastener during the seventeenth and eighteenth centuries. Their use effectively ended with the introduction of machine-cut nails (Nelson 1963).

Cut nails were introduced during the 1790s. These nails had a machine cut body with a hand made head. Not until technological advancements around 1815 had produced a totally machine made version did machine cut nails begin to replace wrought nails as primary construction fasteners (Nelson 1963).

Wire-drawn nails first were introduced into the United States from Europe circa 1850. These earlier wire nails were used primarily for box construction; they were not adapted for building construction until the 1870s. Although cut nails are preferred by some builders today, in general they were replaced by the wire nail by the turn of the century (Nelson 1963).

Fourteen nails were recovered during excavation of the three features at 16SJB29. The one nail recovered from Feature 1 was a wire-drawn common nail. Of the ten nails recovered from Feature 2, five were wire-drawn nails, three were machine cut nails, and two were cut nails with applied heads. In addition, one large cut spike was also recovered from Feature 2. Construction fasteners in Feature 3 included one wire-drawn nail, two machine cut nails, and one cut spike.

Miscellaneous Artifacts

Numerous varieties of artifacts were listed under the heading of "miscellaneous". Several of these artifacts were classified as hardware items used in either construction or machinery. Recovered construction hardware included bolts/brackets, two spikes, and a hook. Other construction related materials included structural lumber, fence posts, a partial brick, stucco, and fragments of asbestos shingles. Machinery

hardware consisted of two indeterminate metal parts, a partial spark plug, and one rubber machinery gasket. In addition, there were several tin can fragments, a pull tab from a beverage can, and fragments of a cast iron kettle or pot. A sample of coal, slag, and cinders was retained from Feature 3.

### Temporal Analysis

The ceramic, glass, and nail subassemblages were examined within a chronological framework. Although the glass and nail subassemblages aided in this evaluation, the ceramic subassemblage provided the bulk of the temporal information used in this analysis. Mean ceramic dates (Table 8) and earthenware frequency patterns (Table 9) were determined. As illustrated in Table 8, the results of mean ceramic date calculations indicate that ceramic sherds from deeper deposits date later than upper deposits. In Feature 2, a mean ceramic date of 1844 was calculated for the uppermost level. However, twentieth century machine made bottle glass also was recovered from this level. In addition, a piece of modern plastic bag was found in Feature 2, level 3 (60 - 90cm), within the retainer tank. A similar patterning of artifacts is evidenced for Feature 3, in that ceramic mean dates for lower deposits post date the uppermost deposit. This reverse chronology illustrates secondary depositional fill, and suggests that the artifacts are not associated with the structural remains.

### Comparative Analysis

A comparative analysis of the nails from the rice flumes at 16SJB29 and those 16SJB40 was undertaken to distinguish similarities in manufacturing technology based on the use of construction fasteners. As previously mentioned, nails from Feature 2, a rice flume, consisted of ten nails: five wire-drawn nails, three machine cut nails, and two cut nails with applied heads. Although the wire nails were recovered from only the first two levels, the cut nails with applied heads also were found in the second level. In comparison, all nails recovered from the excavations of rice flumes at 16SJB40 were identified as cut nails. Whole nails were machine cut nails. However, a majority of nails were fragmented and missing their heads, thus making identification of head finish impossible. At both sites, large square cut spikes exceeding six inches in length and ranging from 1/2 - 3/4 inches in diameter were found in association with the rice flumes. Although one spike from the 16SJB29 assemblage was identified as a railroad spike, the remainder clearly were cut spikes with rounded heads.

### Summary

The artifactual remains recovered during the surface collection and excavation of features at 16SJB29 represented materials dating from the late eighteenth through the twentieth centuries. A total of 223 artifacts were recovered from surface collections and subsurface excavations at the site. As Table 5 illustrates, ceramic sherds, glass, and metal comprised a majority of the assemblage. The surface collection produced a wide-ranging, chronologically diverse artifact inventory. The deposition of these remains probably resulted from intermittent fluctuations in the river level. Artifacts recovered from subsurface excavations were subject to chronological reconstruction on a level by level basis. The resulting non-sequential chronological patterning of ceramic artifacts illustrates a complete lack of stratigraphic integrity in these subsurface deposits.

Table 8

CHRONOLOGICAL INFORMATION FROM FEATURES AT 16SJB29

| Provenience | Mean Ceramic Date | Hypothetical Date Range |
|---|---|---|
| **Feature 1** | | |
| Level 1 | 1830 | 1820-1865 |
| **Feature 2** | | |
| Level 1 | 1844 | 1810-1870 |
| Level 2 | 1857 | 1820-1900 + |
| Level 5 | 1860 | 1820-1900 + |
| **Feature 3** | | |
| Level 1 | 1840 | 1820-1850 |
| Level 2 | 1867 | 1850-1900 + |

Table 9

THE FREQUENCIES OF REFINED EARTHENWARES FROM FEATURES AT 16SJB29

| PROVENIENCE | Number | Tin enamelled | Creamware | Pearlware | Late Refined* |
|---|---|---|---|---|---|
| **Feature 1** | | | | | |
| Level 1 | 6 | 33 % | -- | 33% | 33% |
| **Feature 2** | | | | | |
| Surface | 4 | -- | -- | 50% | 50% |
| Level 1 | 14 | -- | 9% | 27% | 64% |
| Level 2 | 2 | -- | -- | -- | 100% |
| Level 5 | 1 | -- | -- | -- | 100% |
| **Feature 3** | | | | | |
| Level 1 | 4 | -- | 33% | -- | 67% |
| Level 2 | 1 | -- | -- | -- | 100% |

* Denotes whiteware, ironstone, and whiteware/ironstone.

## CHAPTER VIII

## ARCHEOLOGICAL AND COMPARATIVE SYNTHESIS

### Interpretations of the 16SJB29 Site

Archeological excavations at 16SJB29 resulted in the recordation of three archeological features. These features had been damaged, to varying degrees, through the interaction of a number of natural and cultural processes. However, enough of these features survived for them to be interpreted and related to the local economic history. In this chapter, the features at 16SJB29 are interpreted in light of the local land-use history, including data from local informants. The site is compared to the relevant components of the Vacherie Site (16SJ40), in order to provide a fuller understanding of the river rice industry. Through this synthesis of the available archeological data base, the contributions of 16SJB29 to understanding of the regional theme of rice production are discussed. Finally, these interpretations of the site will be compared to the previous interpretations. Additional information about 16SJB29 and regional rice production is provided in several informant interviews (Appendix III).

The features at 16SJB29 included a rice irrigation flume (Feature 2), the probable remains of another rice irrigation flume (Feature 1), and the remains of a small structure (Feature 3) probably used to house machinery associated with a pump.

Feature 2 was a late nineteenth and early twentieth century rice irrigation flume. It consisted of a wooden water intake, which passed from the Mississippi River into a retainer tank. A wood superstructure, consisting of vertical and horizontal boards secured to a post and crossmember frame, surrounded the water intake. Water flowed from the river, through the water intake, and into the retainer tank. From this tank, it was pumped over the levee and into the rice fields.

David Webre observed this rice flume in operation around 1917-1920. According to Webre, the rice flume, as excavated, was nearly complete. The retainer tank originally was covered with a board and served as a stand for a kerosene pump. Water was drawn vertically out of the tank in a one foot diameter iron pipe. It passed through the pump and over the levee into a canal adjacent to the rice fields. The eroded remains of this canal, which originally extended most of the way to the levee constructed prior to 1876, still exist due south of the rice flume, just south of S.R. 18 (Figure 2). When the water level was sufficiently high, the water was siphoned over the levee to save operating expenses. At high water, the kerosene pump was placed on top of the levee for protection. While Mr. Webre did not know when this rice flume was constructed, he knew it was no longer in operation by the early 1920s (David Webre, personal communication 1988). This terminal date for the use of Feature 2 corresponds to the 1920 enlargement of the levee constructed prior to 1876.

While no historical documents have been located which refer directly to any of the features at 16SJB29 there is sufficient historical evidence to determine an approximate date of construction for Feature 2. As can be seen from the land tenure history (Figure 8), the rice canal into which Feature 2 emptied is located in the western arpent of Section 102 of Township 12S, Range 19E. During most of the 1870s and the early 1880s, this property was the easternmost arpent of Camelia Plantation. During several of these years, considerable rice was grown on Camelia Plantation, although the quantity grown on this particular arpent is unknown. The arpent was purchased by Eugene Roussel in 1883. While the historical record is unclear as to the quantity of rice grown by Roussel, several individuals remember that rice was grown on the property during the early twentieth century. In addition, Theophile Saberre, a grandson of Eugene Roussel, believes that Feature 2 was constructed by Roussel (Theophile Saberre, personal communication 1988; Ernest Fiffie, personal communication 1988; David Webre, personal communication 1988). Feature 2 undoubtedly was built after the construction of the levee that was built prior to 1876, a short distance to the south. While it may have been constructed while its setting was still a part of Camelia Plantation, it is more likely that Feature 2 was constructed between the mid-1880s and the early 1890s, when it was owned by Eugene Roussel. Roussel and his wife continued to own this property, including the rice flume system, until 1930; by that time, rice no longer was grown in the area. This corresponds well with the changing

pattern of rice flume construction that occurred between ca. 1885-1892; this will be summarized later in this chapter and is discussed more fully in Chapter IX.

While not common, the stepped construction of the retainer tank, with an interior tank within the lower portion of the exterior tank, was used elsewhere in St. John the Baptist Parish. A late nineteenth century well (16SJB25) excavated near Lucy, several miles downriver from 16SJB29, was constructed is a similar manner. Horizontal cypress boards were nailed to large corner posts, forming a 1.2 m square exterior shaft. At 1.4 m below the top of this approximately 2.5 m deep well, an interior wood shaft, about 0.9 m square, was encountered, which extended to the bottom of the well. This well probably was constructed prior to being placed into the ground (Garrison et al. 1981: 44, 47, 100, 121); the same is probably true of the retainer tank in Feature 2 at 16SJB29.

Between the 1880s and the 1920s, technological advances led to several changes in the pumps used for river rice irrigation. Late nineteenth century pumps normally were powered with steam, using wood or coal-fired boilers and steam engines. This equipment was comparatively large, and required considerable effort to operate and maintain. These pumps often were replaced in the early twentieth century with kerosene pumps, which were more compact, and less expensive to operate. By the 1920s, tractor-powered pumps were used regularly, replacing many of the kerosene pumps. At 16SJB29, a kerosene pump was used around 1917-1920. Half a mile upriver from the site, Edmond Dutreix used a steam pump for many years. This was replaced for a short time with a kerosene pump, which was difficult to start. By the 1920s, Dutreix used a tractor-powered pump for irrigating his rice fields (David Webre, personal communication 1988; Harold Dutreix, personal communication 1988). In conformity with technological developments, water originally was pumped from Feature 2 at 16SJB29 with a steam engine pump; this was replaced with a kerosene pump in the 1910s.

As described earlier, Feature 1 was a series of horizontal boards, connected to two rows of posts, between which was a linear alignment of vertical boards. Another alignment of horizontal boards, probably associated, was in the river to the north. The exact function of Feature 1, which was located about 13 m west of Feature 2, is difficult to determine. Most of it was destroyed through natural and cultural activities. In addition, none of the informants remembers this feature. However, based on the available data, several possibilities can be proposed. The interior of Feature 1 was filled with riverine sediments, probably subsequent to its active use. This abandonment probably predated 1917-1920, since Mr. Webre has no recollection of the feature; Mr. Webre knew the structure and function of Feature 2 well enough that it is likely he also would have remembered another large adjacent feature if it were present. The proximity of Feature 1 to Feature 2, the definite rice irrigation flume, would imply its function was associated with rice irrigation. Its axis is pointed towards the same rice canal utilized by Feature 2, and it would have intersected that canal at a point between the levee constructed prior to 1876 and the modern levee. In addition, during the late nineteenth and early twentieth century, rice was the major agricultural commodity along this stretch of the river. Considerable effort was expended on the construction of Feature 1, in a location that often was covered by the river. Therefore, it probably was associated with water movement as opposed to machinery, which would need to be moved onto the levee regularly. By process of elimination, then, it would appear that Feature 1 is the lower remains of a rice irrigation flume.

Several factors support the interpretation that Feature 1 is the remains of a rice irrigation flume. Its basic shape, an open passageway extending from the river into a boarded passageway, is similar to that of Feature 2. In addition, the construction techniques employed in both are similar, and include a series of posts, nearly perpendicular to the river, connected by horizontal boards. Casimir Graugnard (personal communication 1988) remembered a water procurement feature on Columbia Plantation, a short distance downriver from 16SJB29, that probably was similar to Feature 1. A ditch was dug from the river much of the way to the levee constructed prior to 1876. It was lined on three sides with posts and boards to prevent its collapse. Water flowed freely into this simple ditch and was pumped from the landward end, over the levee, and into a reservoir, for use in the sugar house. The lined ditch allowed the water to be pumped over the levee at a steep angle; it then flowed downhill into the reservoir. This design made it easier for water to be pumped, and siphoned when possible, over the levee (Casimir Graugnard, personal communication 1988). Feature 1 may have operated in a similar manner, i.e. water flowed freely to the landward end of the feature, from which it was pumped or siphoned over the levee.

If Feature 1 was the remains of a simple rice flume, then a few factors probably led to its abandonment. Based on the surviving remains, Feature 1 was not an overly strong structure, and it probably would not have survived repeated use over several years. In addition, the floor at the landside end was rather high, about 1.50 m NGVD. While this normally was sufficiently low in the spring for water procurement, it did not provide a reliable water source. It is likely that Feature 1 was constructed to supply immediate water needs for rice production. Sometime after it was completed and in use, the more labor intensive Feature 2 was constructed as a permanent rice flume. Once completed, Feature 2 would have replaced Feature 1, and Feature 1 would have been abandoned.

As a water procurement feature, Feature 2 had several advantages over Feature 1. Its construction was much more substantial than Feature 1, and it was able to withstand many years of natural riverine forces. It was much lower, with the higher riverside end of the water intake at 0.723 m NGVD, almost 0.8 m lower than the high end of Feature 1. This was well below the normal water level, and virtually guaranteed that water was available whenever needed. In addition, the sturdy retainer tank in Feature 2 was able to support a pump, facilitating water procurement.

In summary, Feature 1 probably was a simple rice flume that temporarily supplied water for rice irrigation prior to the construction of Feature 2. It was a trough cut into the batture, with its sides boarded to maintain its shape. The vertical boards within the feature may have served to direct the water flow, protecting the rest of the feature from some detrimental wave action. Once the more labor intensive Feature 2 was built, Feature 1 was abandoned. In addition, some of the lumber from Feature 1 may have been reused in Feature 2; one crossmember in Feature 2 (Figure 22) had crossed slots that were not integral to the feature.

Feature 3 was a vertical board and post enclosure, the east half of which contained a rectangular basin-like hole. It was situated directly between Feature 2 and the levee constructed prior to 1876, near the riverside toe of that levee. Most of this feature was destroyed through natural riverine processes, deterioration, and possibly the 1920 enlargement of the levee that was constructed prior to 1876. The artifacts recovered indicate that it was filled during the late nineteenth or early twentieth century. This, along with its relationship to the other features at 16SJB29, indicate its contemporaneity with Features 1 and 2.

Because of the extensive disturbance at Feature 3, the failure of informants to recognize the feature, and the paucity of historical references to it, the interpretation of this feature is tentative. However, its location directly between Feature 2, the rice flume, and the levee constructed prior to 1876, indicates that it probably was part of the rice irrigation complex, and thus associated with Feature 2. According to informants, the only large equipment used for rice irrigation was the flume, or at times just a pipe leading into the river, the pump system, and any additional pipes for drawing the water over the levee (David Webre, personal communication 1988; Harold Dutreix, personal communication 1988). Based on this pattern, Feature 3 probably was associated with the pumping system for Feature 2. Because of its fairly large size, the presence of coal and coal cinders in the fill, and the fact that it was not remembered by Mr. Webre, who was familiar with a subsequent kerosene pump, it is probable that this feature housed a portion of a steam engine pump system. This system would have included a coal-fired boiler, a steam engine, and a pump. If Feature 3 did house a portion of the pump system, it would have been used sometime between the construction of Feature 2, possibly as early as the 1880s or early 1890s, and the 1910s, when it was replaced with a kerosene pump.

### Comparison of 16SJB29 With Other Rice Irrigation Systems

Between 1850 and 1930, there were several major changes to river rice irrigation systems. Prior to the 1850s, little artificial rice irrigation occurred, with most rice farmers dependent on natural riverine flooding to irrigate their fields. This changed in the 1850s, with the development and increased use of gravity-fed rice flumes. These rice flumes were built through the artificial levee, and emptied into landside pits or reservoirs, often borrow pits. Water then was siphoned when needed from these pits into rice fields. This basic system, which was dependent upon the annual spring floods, was widely utilized by river rice farmers until around 1885-1892.

Between 1885 and 1892, several events directly affected the form of river rice irrigation systems. In the 1880s, rice farmers began to use water-lifting to pump water from the river. Machines enabled rice farmers to obtain water for irrigation whenever it was needed. The farmers were no longer dependent upon high water for rice production.

Another event virtually ended the construction of rice irrigation flumes through the artificial levees. In 1890 and 1892, laws were passed that prohibited the construction of irrigation flumes through the levees and mandated the removal of existing flumes. While not all of the rice flumes were removed, these laws, in conjunction with the increased use of pumps, effectively ended the rice irrigation pattern of placing rice flumes through the artificial levee.

The change in the pattern of rice irrigation systems can be shown clearly through a comparison of the Vacherie Site (16SJ40) and 16SJB29. Archeological excavations were conducted by R. Christopher Goodwin and Associates, Inc. at the Vacherie Site (16SJ40) in 1987 (Goodwin, Hewitt et al. 1988). These excavations provided the most complete documentation of southeastern Louisiana rice irrigation features to date. Through a comparison of the Vacherie Site with 16SJB29, the changing patterns of river rice irrigation systems, which occurred around 1885-1892, and continued into the twentieth century, can be understood.

Eight, and possibly nine, of the sixteen archeological features excavated at the Vacherie Site were directly associated with rice irrigation and drainage. One, Feature 118, was a stacked pile of cypress boards, some with embedded cut nails, and a block. Based on their presence within the site complex, the prominent landward rice industry, and their age and configuration, these boards were interpreted as raw material for rice flume construction or repair (Goodwin, Hewitt et al. 1988: 221). Another, Feature 120, was a 2.8 m long, 30 cm diameter iron pipe. While possibly used as a culvert, this pipe may have been a late nineteenth or early twentieth century pipe utilized for pumping water from the river into pits on the landward side of the levee (Goodwin, Hewitt et al. 1988: 253). Iron pipes with a similar diameter to this commonly were used in the Willow Bend area, including at 16SJB29, for pumping water from the river or from rice flumes into pits or rice field canals (David Webre, personal communication 1988; Harold Dutreix, personal communication 1988).

The remaining seven irrigation features excavated at the Vacherie Site were rice irrigation flumes. As originally constructed, these rice flumes were gravity fed flumes that passed through the levee into pits. For these flumes to operate, it was necessary for the river level to be high. Based on historical documentation and on archeological evidence, all of these rice flumes were constructed and used in the 1850-1890 period (Goodwin, Hewitt et al. 1988).

While Feature 100 at the Vacherie Site was originally a rice flume that passed through the levee, it subsequently was reconstructed, and that portion which passed under the levee was removed. A cypress retainer tank (1.15 m x 1.12 m x 0.67 m) was constructed near the riverside toe of the levee. The cypress water intake was refitted with an iron pipe, which passed from the river and into the water retainer tank. A steam powered pump then pumped water for irrigation from the retainer tank, over the levee, and into a pit (Goodwin, Hewitt et al. 1988: 234-236). This system conformed to both the 1890 and 1892 laws, as well as to the late nineteenth and early twentieth century rice irrigation pattern of using a pump system rather than a gravity-fed flume system. This rice irrigation flume was altered during the late nineteenth century, and used into the early twentieth century.

The next form of rice irrigation flume is clearly shown in Feature 2 at 16SJB29. This rice flume was constructed to draw water from the river into a deep retainer tank near the artificial levee. Depending on the river level, a pump was placed either on or adjacent to the retainer tank, or on top of the levee. Water was pumped, and when possible siphoned, over the levee into the rice fields. This system conformed to the 1890 and 1892 laws, utilized the more efficient pump and siphon system, and allowed the rice fields to be irrigated regardless of the river level. Feature 2 probably was built during the late 1880s or early 1890s, and it was used until the early 1920s.

The final early twentieth century rice irrigation pattern was the use of iron pipes, which passed water directly from the river into pits or fields. Feature 120 at the Vacherie Site, an iron pipe, may have been a portion of this type of irrigation system. In addition, this system has been documented for the 1920s in the Willow Bend area. It was used by Edmond Dutreix about a half mile upriver from 16SJB29 (Harold Dutreix, personal communication 1988), and probably by other rice farmers in the area.

Five of the seven wood irrigation flumes excavated at the Vacherie Site (16SJ40) were located within individual small farms, while two were within the Magnolia Plantation tract, immediately upriver from the small farms. Based on the locations of the flumes recorded and excavated in 1987, each of the small rice farmers at Vacherie owned an individual rice flume, which was used to irrigate that farmer's own fields. At the larger Magnolia Plantation, it was necessary to operate at least two flumes to disperse adequate amounts of water throughout the extensive rice fields. There was no evidence of any communal use of the rice flumes (Goodwin, Hewitt et al. 1988: 316-317).

If this same pattern existed at Willow Bend, then several other rice flumes operated within the small farm tracts upriver from 16SJB29 during the late nineteenth and early twentieth century. One other rice flume (16SJB37) was recorded about 550 m upriver from 16SJB29. It was a gravity-fed flume that passed through the levee that was constructed prior to 1876, and it probably was built prior to 1890. In addition, Edmond Dutreix's early twentieth century rice irrigation system operated a short distance upriver from 16SJB37. It consisted of an iron pipe, which passed water from the Mississippi River, through a pump, and into a pit. From this pit, it was siphoned into the rice fields as needed (Harold Dutreix, personal communication 1988). Although none have been located to date, other rice flumes probably were built in the Willow Bend area during the late nineteenth and early twentieth century. Some may have been similar to the one used by Edmond Dutreix; once the pump and iron piping were removed, little remained of this system that could be recovered archeologically. Others may have been buried by natural riverine sediments, or destroyed through cutting, or flood control construction. Since some of the rice farmers, such as Edmond Dutreix, rented other small farms for rice production; it is possible that some rice flumes may have serviced more than one property.

### Evaluation of Previous Interpretations of 16SJB29

Site 16SJB29 was archeologically tested and evaluated in 1987. At that time, the site was interpreted as a possible nineteenth century ferry landing; Features 2 and 3 were believed to be the remains of a support for a large pier that extended into the Mississippi River. This interpretation was based primarily on the surficial relationship of the exposed large posts in Feature 2, as well as on the linear alignment of Features 2 and 3 (Shannon et al. 1988). This interpretation is in sharp contrast to the current interpretation of Site 16SJB29 as a late nineteenth and early twentieth century rice irrigation complex.

The original misinterpretation of the site was the result of a compilation of several problems. Natural riverine processes alternately buried and exposed the site. By 1987, riverine activity had buried most of Feature 2, which had been exposed in 1984, when the site was first recorded. Barge mooring, which has occurred at the site for many years, damaged Features 2 and 3 considerably, destroying much of these features, and distorting much that remained. In addition, historic Mississippi River batture archeology is a maturing discipline.

Part 2 of this report should enable archeologists to anticipate archeological remains on the batture in the St. John the Baptist Parish region better; it also provides a guide for future archeological investigation priorities. In that section, the significant economic themes that have affected the batture will be examined. Based on the historical and archeological documentation of these themes, archeological expectations for the batture are defined. Natural and cultural activities that have affected the batture are examined, to determine their impact on the archeological record. Finally, by summarizing what is already known about batture features, priorities for future archeological investigations are outlined.

# PART II

# CHAPTERS IX - XI

## REGIONAL ARCHEOLOGICAL EXPECTATIONS AND PRIORITIES ALONG THE MISSISSIPPI RIVER

# CHAPTER IX

# RIVERINE ECONOMIC DEVELOPMENT IN THE ST. JOHN THE BAPTIST PARISH REGION

## Significant Themes in the Region

This chapter reviews the economic history and development of the region with emphasis on significant themes, and their related archeological implications. Major historic economic themes which were important to the region as a whole include indigo, sugar cane, and rice production; and, Mississippi River traffic. Certainly the lumber industry played an economic role in the development of the river parishes between Baton Rouge and New Orleans. However, poor historical and archeological documentation about the historic lumber industry in the region prevents a thorough presentation as part of this study. Likewise, erroneous archival data concerning the locations of derelict rivercraft, combined with years of overbank flooding, impede accurate evaluation. Economic themes that were important to the history of Louisiana in general, but played minor roles in the region, e.g., cotton and cattle, also are not discussed here. In addition, historic brickmaking, smithing, coopering, dry goods retailing, etc., and other related small industries that were part of the rural plantation setting, are not given individual attention.

A compilation of archeological expectations is presented for each economic theme discussed. These expectations are based on the economic histories and on previous investigations. From these expectations, an outline of priorities for further archeological research is presented. Research priorities change over time as new information is obtained, as new questions are asked of the data, and as research interests change. Therefore, it cannot be assumed that stated research priorities encompass the full range of potentially valuable research for a given subject. However, it is useful to outline clearly those areas of research that are considered important at a given point in time.

## Indigo

### Review of Indigo Production

Many economic achievements of colonial Louisiana were a result of commercial agriculture. Although attention has been focused primarily on the tobacco, cotton, rice, and sugarcane industries, the contribution of indigo to the regional economy has received little more than perfunctory attention by scholars. Holmes' 1967 study of the history of indigo as a plantation staple in Louisiana is the only encompassing study performed on this subject. Other accounts only briefly mention the significance that indigo played in the history of Louisiana. A summary of indigo production and its importance to the archeological record is presented below.

Indigo cultivation survived as a part of the geography of Louisiana for almost a century, and shared in the evolution of the plantation and economic system of the state. It became a feature on the landscape because as a commercial commodity, it offered easy and quick returns. Indigo was advantageous in that it could be grown in conjunction with other staples, and if the fields were resown, it produced approximately two to four harvests annually. The French encouraged the collection of wild indigo for trade in the early 1700s; however, the crop was not manufactured successfully as a dye until after 1725 (Surrey 1968:157). The plant retained its commercial identity in Louisiana for over seven decades, with its primary period of influence from 1725 to 1802.

During this period, the technology for the cultivation and manufacture of indigo was obtained from Central America, the Caribbean, and, by the mid-eighteenth century, from South Carolina. Wild indigo was a perennial legume that was easy to cultivate. However, it did not produce as high a quality dye as domesticated varieties. Domesticated seeds also offered a greater yield and were obtained from the trade areas of Guatemala and the West Indies. Three grades of indigo were recognized: flotant or flora, violet or gorge de pigeon, and copper. The copper variety offered the greatest fiscal return because the dye pack was denser than the other types of indigo (Beeson 1964:215).

The landscape of colonial Louisiana received a distinct signature from the plantation crops that were cultivated during the period. Plantations along the Mississippi River from St. Bernard Parish to Pointe Coupee Parish attempted indigo cultivation. Indigo was planted on level land and frequently on the higher ground behind the riverine floodplain where rice was grown (Winberry 1979:95). The land was prepared by burning, and the seeds were sown. The land was neither plowed nor worked in any manner, since the seed was not edible to birds or animals.

In order to extend the indigo season, several consecutive sowing episodes were planned. The seeds were planted from April into May, and the plants were harvested when they reached two to three feet in height. Cuttings would extend from July to October, and even longer if warm weather permitted (Floyd 1959:33). As a result, three to four cuttings could be expected annually.

Labor intensity increased as the plant matured. Daily inspection of the plants was necessary because the leafy plants were prone to grasshopper and insect infestation. In order to protect the plants, the insects had to be removed manually. The labor ratio of indigo production resulted in one worker for every hundred pounds of cut indigo. An acre of land produced a little over fifty pounds of indigo and a slave worked approximately two acres of indigo in addition to providing his own provisions (Winberry 1979:96). In 1738, the indigo yield for Louisiana was 70,000 pounds. Although it is not known how many slaves were actually involved in the production cycle of indigo, one may surmise by using the above ratio that the labor force for the cultivation of the plant could have been as high as 700. Production steadily increased; by 1754, there were forty-seven planters who had produced 82,000 pounds of indigo in Louisiana. The height of production occurred in 1793, when 400,000 to 500,000 pounds of indigo were produced (Holmes 1967:340). Approximately 4,000 to 5,000 slaves may have worked in the indigo fields of Louisiana during this time.

Harvesting occurred after the plant had bloomed. Slaves would cut the plant with a scythe and tie them into bundles. They then would transport the bundles on their backs to the indigo works. The indigo manufacturing sites were usually located about a quarter-mile away from any dwellings (Beeson 1964:215). This was necessary because the fermentation process of indigo produced a foul odor and also attracted mosquitoes and flies. This endangered humans and livestock alike. The run-off from indigo manufacturing was also hazardous. Thus, environmental laws were common in the areas where indigo was produced. One such law passed in 1793 stated:

> It is hereby ordered & directed: That every person who shall make Indigo, shall cause the weed to be burned, as soon as it possibly can be burnt, after coming out of the Vat or Steeper, and no person shall be permitted to convey the water, from his or her vat into any Creek or other Waters, made use of by the Inhabitants, for the use of their Family or Stock, and if any Indigo works have already been erected, without attention to this important measure, such works shall be removed, or so differently constructed as to remedy this great evil of injuring the water (Regulation of Gayoso de Lemos, Natchez, February 28, 1793, Holmes 1967:29-30).

The indigo manufacturing site was located near a water source which was used as a source of power to drive the turning wheels of the beating vats and for saturating the plant. Water was procured from the river through the use of a conduit. Holmes reports that William Dunbar, a noted Southern scientist and indigo planter, described the dimensions of such a canal or wooden conduit as from eighty to one hundred feet long, from twenty-five or thirty feet wide, and built on a down grade to bring water to a complex of two or three vats (Holmes 1967:344). These vats were either open-air or located under a twenty-foot high shed. The first vat, or "steeper," was located nearest the water source.

Each vat varied in size, and all three vats varied according to the amount of indigo raised on a given plantation (Floyd 1959:43). The vats could range in size from forty feet long, eighteen feet wide, and three feet deep, to twelve feet square and four and one-half feet deep (American Farmer 1822:350). The vats were built in a stepped fashion (Figure 29). The second vat was located lower than the first and was called the "battery." This vat had a beam that extended over it from which extended a wooden rod with paddles or open buckets. The third vat was the "settling" vat, which usually was the smallest of the three. The vats were constructed out of cypress boards which were approximately two and one-half inches thick and joined

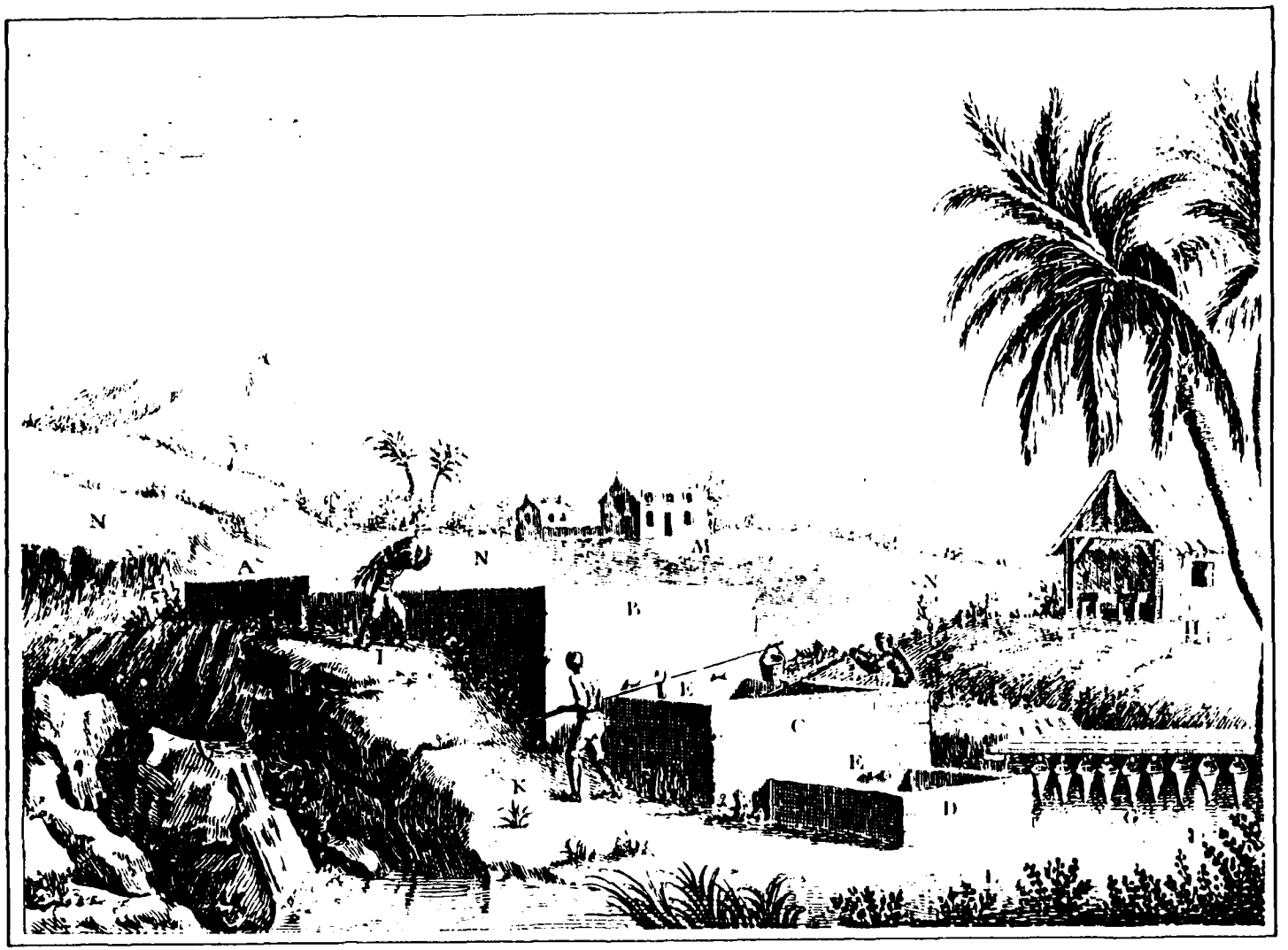



Figure 29. An indigo plantation in the West Indies, depicting the vat assemblage (Gillispie 1959).

by oak studs. The planking was secured by seven inch spikes and the vats remained functional for approximately eight years (Beeson 1964:216). Vats also may have been constructed of clay, or if small quantities of dye were being produced, jars, troughs or even canoes could have been utilized (Floyd 1959:43). Several essential items were necessary in the production of indigo. Table 10 provides a summary of the characteristic components of indigo cultivation.

On an indigo plantation the items of greatest monetary value were the slaves and the manufacturing equipment. A 1773 inventory conducted on an indigo plantation along Bayou Teche stated that "two pairs of vats with a chain pump machine to draw up the water and a horse mill to thrash the indigo" was estimated to be worth approximately 150 piastres (one piastre equalling one U.S. dollar). The property, forty by forty arpents and forty by twenty arpents, along with the principal house and warehouses were valued only slightly more at 200 piastres (Dart 1926:570-571). Once the manufacturing equipment was obtained, the labor was the most expensive component in the production of indigo dye.

Indigo manufacturing required four processes: steeping, beating, condensing, and drying. A sluice was opened to allow water to flow over the cut indigo placed in the "steeper" vat. The indigo was weighted down by wooden poles or split bamboo gratings (American Farmer 1822:350). After about an 8 to 24 hour long fermentation period, depending on the temperature, the water was drained into the "battery" vat and the decayed plant matter was discarded or used as fertilizer. To the liquid in the "battery" was added lime or some other precipitant, and then equine-driven or man-operated paddles beat the liquid for several hours (Eaton 1975:20). The color and hue of the liquid was tested by a "beater" who placed a sample of the liquid on a queensware plate, a silver ewer or some other container (Figure 30). If the dyeing residue had completely separated from the liquid, then, the battery liquid was drained and the residue was allowed to settle into the third vat. If only two vats were utilized, the residue would settle in the bottom of the "battery" where it remained for several hours. The thick indigo matter was removed using a wooden shovel, and placed on drainage boxes lined with Osnaburg or a similarly stiff cloth like horsehair (Sydnor 1938:13). After a period of time, the residue was placed in conical filtering bags shaped like a "monks cowl" or "Hippocrates sleeves" which were suspended from a scaffold of low racks (Gillispie 1959:Plate 36). Water was allowed to filter out of the bags and the indigo was transferred to a covered drying shed. The open-air shed (caption H in Figure 29) was a simple frame construction with a straw floor. It housed a set of shallow boxes in which the indigo was placed to dry completely (Figure 29). When the dye had dried, it was cut with a knife into small soap-sized squares, and wrapped in cloth (Figure 30). The indigo squares may have been placed in a cowhide bag and loaded in a barrel for transport (Floyd 1959:145). A single run of the above described manufacturing technique would produce between ten to fifteen pounds of dried indigo blocks (Sydnor 1938:13).

Rather little information has survived about the placement of most Louisiana indigo plantations. Few references to the Louisiana indigo industry specify the drainage systems along which it was grown. Some, however, indicate it was grown both along the Mississippi River, and along smaller waterways. Holmes mentioned the indigo planters at Pointe Coupee in 1775 (Holmes 1967:340); this was along the Mississippi River north of Baton Rouge. Meyer illustrated a 1723 Dumont de Montigny plan of Choachas Plantation, along the Mississippi River in Plaquemines Parish; this plan verifies indigo was produced at the plantation as early as 1723 (Meyer 1965:6). On the other hand, Holmes listed several navigable waterways in the Florida Parishes and in Mississippi along which indigo was grown in the 1790s. These included St. Catherine's Creek, Pine Ridge, Second Creek, Sandy Creek, Bayou Pierre, Big Black River, Cole's Creek, Homochitto River, Buffalo Creek, and Bayou Sarah (Holmes 1967:342-343). He also mentioned indigo production at Galveztown, along the Amite River (Holmes 1967:337). The indigo plantation discussed by Dart (1926) was along Bayou Teche. Based on this information, indigo production in Louisiana occurred along both the Mississippi River and numerous smaller navigable waterways. While not confirmed, it is possible the smaller waterways were preferred because of somewhat easier water procurement.

Several factors led to the decline of indigo production in Louisiana. Even though planters managed to market their staple for a while, the decline was rapid after 1793. Supply and demand wrecked havoc with the Louisiana indigo crop when the British East India trading company flooded the market. They dumped 250,000 pounds of Asian indigo and supplied the London market with an additional 5,500,000 pounds by 1810. Insect infestation, adverse climatic conditions, and soil exhaustion encouraged the planters to turn

Table 10

CHARACTERISTIC COMPONENTS OF INDIGO CULTIVATION
1725-1802

**I. Cultivation Attributes**

Mules, *Horses*

Scythe, Sickle Hand Binding

Small Pick Axes

**II. Processing Attributes**

Wooden/Clay Vats

Wooden Threshing Sticks/Split Bamboo Gratings

Wooden/Iron Shovels

Wooden Paddles

*Horse Mill*

Drying Racks/Trays

Thin Bladed Knives

Barrels

**III. Terrain and Water Usage Attributes**

Wooden Water Conduit

Water Canal

Wooden Sluice Gate

Chain Pump Machine

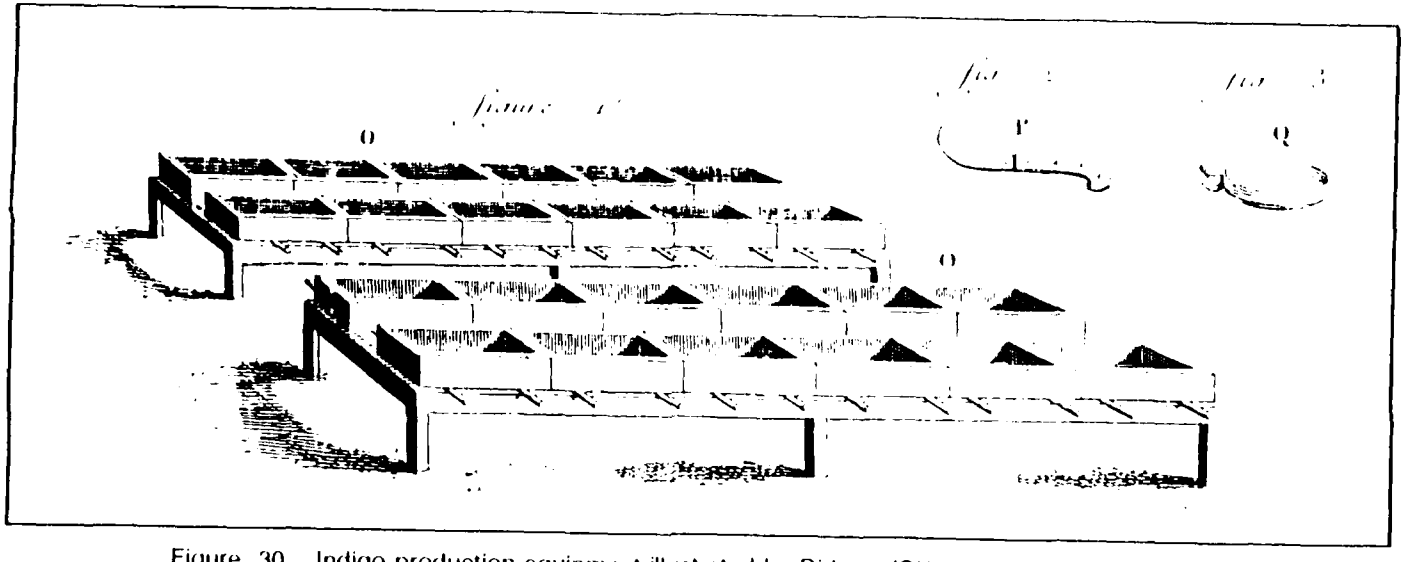



Figure 30. Indigo production equipment illustrated by Diderot (Gillispie 1959), including a) drying trays, b) cutting knife, and c) sampling ewer.

toward more lucrative crops. Along the Mississippi River below Baton Rouge, sugarcane fields soon altered the landscape. Also, the restrictions placed on the slave trade by the Americans after 1803 and the higher costs of obtaining Negro slaves that resulted (Holmes 1967:347-349) were factors in the decline of indigo production. Indigo production declined in the other indigo production regions and artificial dyes consummated the end of this technology. South America, the Caribbean, and the Atlantic Coast states also ended production by the mid 1800s.

Archeological Expectations. The era of colonization in Louisiana provides a difficult task for archeological investigation, especially in connection with agricultural pursuits such as indigo cultivation. During this period of history, many changes were occurring on the landscape. These were primarily utilization and occupation changes. Failures by planters led to subsequent endeavors in agriculture or technology that modified both the landscape and the material culture. These changes indicate that the characteristic components of indigo cultivation may have become fugitives from the archeological record. However, there are some features that might be recovered in the archeological record. These are described below.

Table 11 is a summary of those archeological features that may be associated with indigo production in the parishes near St. John the Baptist Parish. Many of these features are connected with the phases of indigo production involved in water procurement or usage, and they may have been located on or near the banks of the river. These include wooden water conduits, chain pump machines, and indigo vats. Because many farmsteads were diversified, the following structural features may not be indigo specific: residences, slave quarters, and affiliated facilities. Rice and sugarcane production may have utilized some of the same features, and as indigo declined as a favorable commodity, its fields were destroyed by subsequent agricultural and technological pursuits. While an assortment of archeological remains may be linked to indigo, those which are likely to be recovered are dwellings, structures used in the indigo production and drying process, and structural remains related to water use.

Priorities for Further Research. Priorities concerning the indigo industry include the investigation of water procurement features such as wooden conduits, sluices, and chain pump machines. The configurations of these features need to be examined, and they should be compared with the later water procurement systems associated with sugar production and rice irrigation.

While the historical documentation provides a sketchy outline of indigo production in southeastern Louisiana, to date no archeological evidence of this indigo production has been identified. The identification and recordation of these indigo features should be a priority for further archeological investigation along the batture of the Mississippi River, and along other navigable waterways in southeast Louisiana.

Landward indigo industry features and deposits also need to be studied. These features would include the indigo vat systems, which could be near the river, and dwellings and structural complexes. In addition, the layout of indigo plantations, and differences between indigo and other types of plantations, need to be examined archeologically. Through these investigations, a fuller understanding of the indigo industry will be obtained.

## Sugar

### Review of Historic Sugar Production

Sugar productivity was the largest industry in south Louisiana between 1830 and 1900. The following review of the sugar cane industry in Louisiana summarizes the important innovations, technologies, and activities that were used to develop the industry. From this summary, archeological expectations concerning the historic sugar industry in Louisiana are derived. Archeological research priorities are outlined identifying the type of remains that can contribute to our understanding of the Louisiana sugar industry.

Before sugar cane could be grown and processed in Louisiana, certain inherent environmental and technological problems had to be solved. The single most pressing problem was the length and

Table 11

## ARCHEOLOGICAL EXPECTATIONS OF INDIGO PRODUCTION

| Indigo Production Remains | Archeological Expectations |
|---|---|
| Location | On eighteenth century plantations along the Mississippi River and other navigable waterways. |
| Domestic residences | Not indigo specific. Moderate to large structural remains; associated auxiliary remains such as sheds, a privy, a well, walkways, and gardens; refuse deposits; moderate to large quantity of artifacts, including many kitchen-related artifacts; utilitarian through high socio-economic level wares. |
| Slave quarters | Not indigo specific. Located away from main house, one or two room structural remains; few associated auxiliary remains; small quantity of artifacts with high percentage of low socio-economic level artifacts; utilitarian wares. |
| Drying sheds and racks | Located near indigo vats, post hole remains of frame open-air shed, possibly with four to eight posts; interior of shed may contain several sets of four to six small postholes for the drying trays; production equipment, such as cutting knives and barrel remains. |
| Indigo vats | 400-800 m from residences; adjacent to water source; possibly with a reservoir and wooden water conduit; drainage ditch leading from lower vat to stream, river or backswamp; stepped terrain; two or three stepped compartments, with lower one smaller than others; lower portions of wood vats; thick coarse earthenware vat fragments, possibly stained with indigo; large spikes for constructing wood vats; vat system possibly surrounded by postholes for open-air shed. |
| Chain pump machine | Precise form unknown. Adjacent to water source; numerous chain fragments; postholes for support structure likely, possibly associated with wooden water troughs. |
| Equipment | Mostly not indigo specific. In fields or near production complex; scythes; sickles; small pick axes; other harvesting and transportation equipment. |
| Additional archeological evidence | Soils may be altered by prolonged contact with indigo and indigo production bi-products. This may be observable by soil color, odor, or chemical testing. |

consistency of the growing season. Sugar cane (Saccarhum officinarum) is a tropical plant, originating in New Guinea. Sugar cane requires fourteen to twenty-four months to mature fully. Since the growing season for south Louisiana is only nine months, the cane could not reach full maturity, and the immature canes produced low quality juices. Cold weather also altered the sucrose content, which hindered the crystallization or granulating process. The first Louisiana sugar planters understood these drawbacks, and through trial and error, managed to overcome them.

The cultivation of sugar cane and the making of cane products such as syrup, molasses, and granulated sugar began in Louisiana during the early eighteenth century. From the beginning, sugar cane was considered by the founding French as a likely domestic cultigen for the subtropical regions of south Louisiana. Iberville himself unsuccessfully attempted to grow sugar cane at Fort de Mississippi before 1720 (Sitterson 1953:6). "The poor quality of the plants and the lack of capable farm workers caused this project to fail" (Gardeur 1980:4). There is no further documentation concerning the cultivation of sugar cane in Louisiana until the 1740s, when the Jesuits brought cuttings to New Orleans from Saint Domingue. During the early 1750s, Claude Joseph Villars Dubreuil, illustrious builder, inventor, planter, and commander of the local militia, successfully planted Jesuit sugar cane cuttings, and built his own sugar mill to experiment with the granulation process from the cane juice (Gardeur 1980:4; Goodwin, Armstrong et al. 1987:118). Dubreuil realized that he could bring the Louisiana cane to artificial maturity. It is uncertain how Dubreuil managed to purify the cane juice to attempt granulization. It is clear, however, that Sieur Dubreuil, and the men who purchased his estate and sugar equipment after his death, Jacques Delachaise, and Sieur Masan granulated the cane into raw sugar (Wilson 1980:60; Gardeur 1980:7). "Apparently sugar was being successfully granulated in Louisiana long before Etienne de Bore improved the process in the 1790s" (Wilson 1980:60). After Dubreuil, other planters near New Orleans tried planting sugar cane as a cash crop. Their success was modest, possibly because their production was small scale. In 1785, an Isleno Spaniard named Solis, who resided in Terre aux Boeuf (lower St. Bernard Parish), imported a wooden mill from Havana and became the first person to convert the juice of locally grown sugar cane into molasses, or "tafia" as it was called (Fossier 1957:47). Solis, and later Mendez who purchased the Solis plantation, grew the cane and produced the tafia to distill rum. It was Mendez's sugar maker, chemist Antoine Morin, who in 1795 successfully granulated sugar from Louisiana cane for de Bore (Sitterson 1953:5; Gardeur 1980:17-22). De Bore's success was significant because it was done on a large scale. The sugar industry in Louisiana followed de Bore's example, making sugar a large scale investment and operation.

Cane culture underwent experimentation and innovation during the antebellum nineteenth century. In 1817, Ribbon Cane, sometimes referred to as Black Java or Batavian Striped, was introduced. The heartier Javanese Ribbon variety was better suited to the south Louisiana environment. Different planting and harvest seasons were tried. Eventually, most planters began planting in January, and cutting the cane in October. The antebellum nineteenth century sugar planters became more knowledgeable and efficient at growing cane. New cultivation techniques included digging drainage canals, rotating fields with other crops to maintain soil integrity, windrowing (making deep furrows for planting cane cuttings) to protect against severe weather, and spacing the cuttings further apart for better drainage (Sitterson 1953:13-127; Begnaud 1980:31,32). The use of fertilizers such as guano was tried with poor results. At the larger plantations, the narrow gauge railroad was used to transfer the cane from the fields to the sugarhouse, and then to the riverfront for export. This reduced both transportation time and cost. During the antebellum decades, the plow replaced the hoe as an implement for cane cultivation. Originally, the plow was used exclusively for preparing the soil for planting. As a cultivating tool, the plow doubled the amount of acres a field hand could cultivate (Sitterson 1953:128). Because iron ore is not indigenous to the delta region, iron products were scarce. Even during the mid-nineteenth century, "tools were in amazingly short supply" (Reeves 1980:70).

Unlike rice, which required artificial irrigation, the Louisiana cane fields received enough moisture from rainfall. However, cane cultivation and sugar production did require some water management. Sugar processing required water (more so after the introduction of the steam powered sugar mill), so canals and retaining pools were constructed near the sugarhouses (see Figure 31). Proper drainage was critical for the increasingly large cane fields. By the 1840s, a steam powered drainage wheel was designed to throw the excess water from a drainage ditch into the backswamp (Figure 32). Drainage wheels were considered valuable, and were often listed in sugar plantation inventories. Sugar making was a complex procedure and

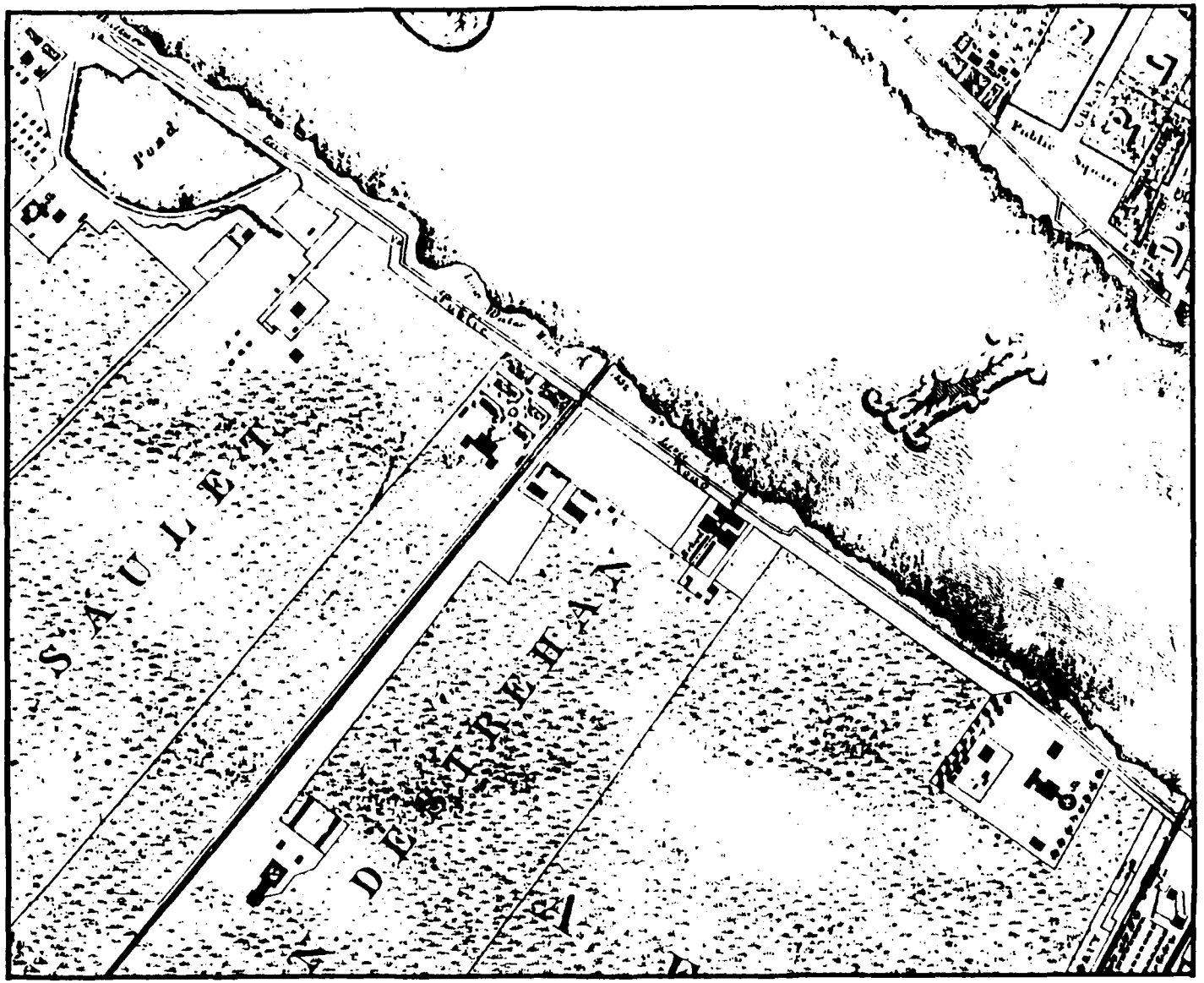



Figure 31. Excerpt from Charles Zimpel's 1834 Topographical Map of New Orleans and Its Vicinity, showing sugarhouses, canals, and retaining pond.

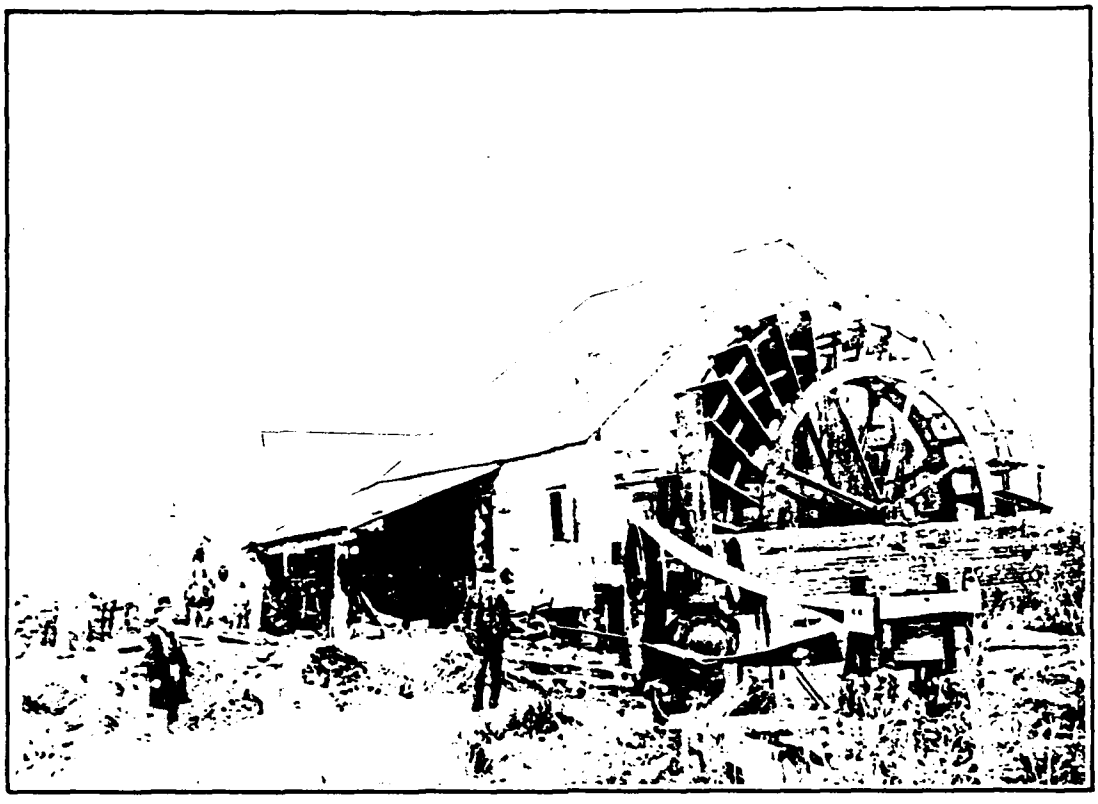


Figure 32. Plantation drainage wheel (Archives, Southeastern Louisiana University).

required many specialized structures, machines, and tools. The early Louisiana sugar makers incorporated the existing milling technologies of the large sugar colonies of the French West Indies. Figure 33 is a reprint of an engraving by Bernard, showing an eighteenth century sugar making facility. As Figure 34 indicates, the first Louisiana sugarhouses were round. In the early nineteenth century, most Louisiana sugarhouses were made of wood (Sitterson 1953:135). Of Dubreuil's sugarhouse, the first built in Louisiana, Wilson (1980:58) states:

> The circular building housing the sugar mill is an early example of the type that became a conspicuous and architecturally significant feature of sugar plantations in the late eighteenth and early nineteenth centuries.

The purpose of the circular shape was to allow draft animals to turn the mill's grinding rollers (Figure 33). Excerpts from Zimpel's 1834 map (Figure 34) show round colonial sugarhouses situated along the Mississippi River near New Orleans. The invention of the steam engine played a significant role in the technological advancement of the sugar cane industry. Steam powered sugar mills (in Louisiana the first one was constructed in 1817) changed the design of the sugarhouses from round to rectangular. While, the first steam powered sugar mills in the State were expensive, 1027 of the 1,291 sugar mills in Louisiana were steam powered by 1861 (Begnaud 1980:35).

A typical antebellum sugarhouse was two-stories high, and measured approximately 100 to 160 feet long by 50 to 60 feet wide. It housed the mill, the furnace and kettle apparatus, the drying or cooling room, and the draining and hogshead shed. The section containing the mill and the kettles occupied a space approximately 35 feet by 50 feet, and was partitioned from the other sections of the house (Sitterson 1953:137).

The colonial sugar mills used three vertical wooden rollers 20 to 25 inches in diameter to squeeze the juice from the cane. Animal power was used to turn the gears with the middle cylinder providing the grinding rotation. In the 1820s, the wooden rollers were replaced by horizontal iron rollers, which extracted more juice from the cane. Steam replaced the beasts of burden to power the rollers. The rollers in the horizontal mills were 4 to 5.5 feet long, and 25 inches in diameter. They were arranged triangularly, and the power was applied to the upper roller. The mill was placed 8 to 10 feet above the floor to allow the juice to flow into retaining vats. These vats were large rectangular cypress boxes and often were lined with copper or lead. The retaining vats allowed the manual removal of the heavy impurities such as wax, pith, and rind from the juice. After the cane juice was semi-purified, it was cooked in open kettles. The large open kettles were set in brickwork over a furnace. There were four (sometimes five) different size kettles for each stage of refinement. The largest, called the grande, heated the juice slowly. Lime was added carefully to the grande kettle, and the resulting scum removed. The amount of lime and the proper temperature were crucial factors affecting the quality of the raw sugar. Expert "sugar boilers" or "sugar makers" were hired solely for this clarifying and reduction process. The next size evaporation kettle was the flambeau, "so called because the point of the flame touched the kettle" (Heitmann 1987:12). The sirop kettle reduced the juice to syrup, and the last kettle, the batterie, "struck" the concentrated syrup into granules.

Norbert Rillieux's vacuum pan apparatus, first patented in 1834, improved the evaporation process. Rillieux's invention made for a more controlled heating procedure, which improved the quality of the raw sugar. The vacuum-pan apparatus required substantially less fuel, cutting fuel costs as much as 53 percent. Before the vacuum pan apparatus, 14 cords of wood per day were required to fuel the kettle furnaces (2.5 cords per hogshead) (Sitterson 1953:152). The multiple effects system, introduced in the 1840s, further improved the vacuum pan apparatus, by utilizing escaping steam from one pan to supply heat for an adjoining kettle.

After heating and reducing, the crystallized mass was cooled and placed into hogsheads. The opened hogsheads were left to drain in the draining room. According to Heitmann (1987:13), sugarhouses built after 1830 had two draining sheds located at right angles to the sugarhouse. Molasses was the by-product of the draining hogsheads. After draining, the hogsheads were sealed for export. Along the Louisiana "River Parishes," the cargo of hogsheads was loaded for transport via rivercraft, mostly to northern markets.

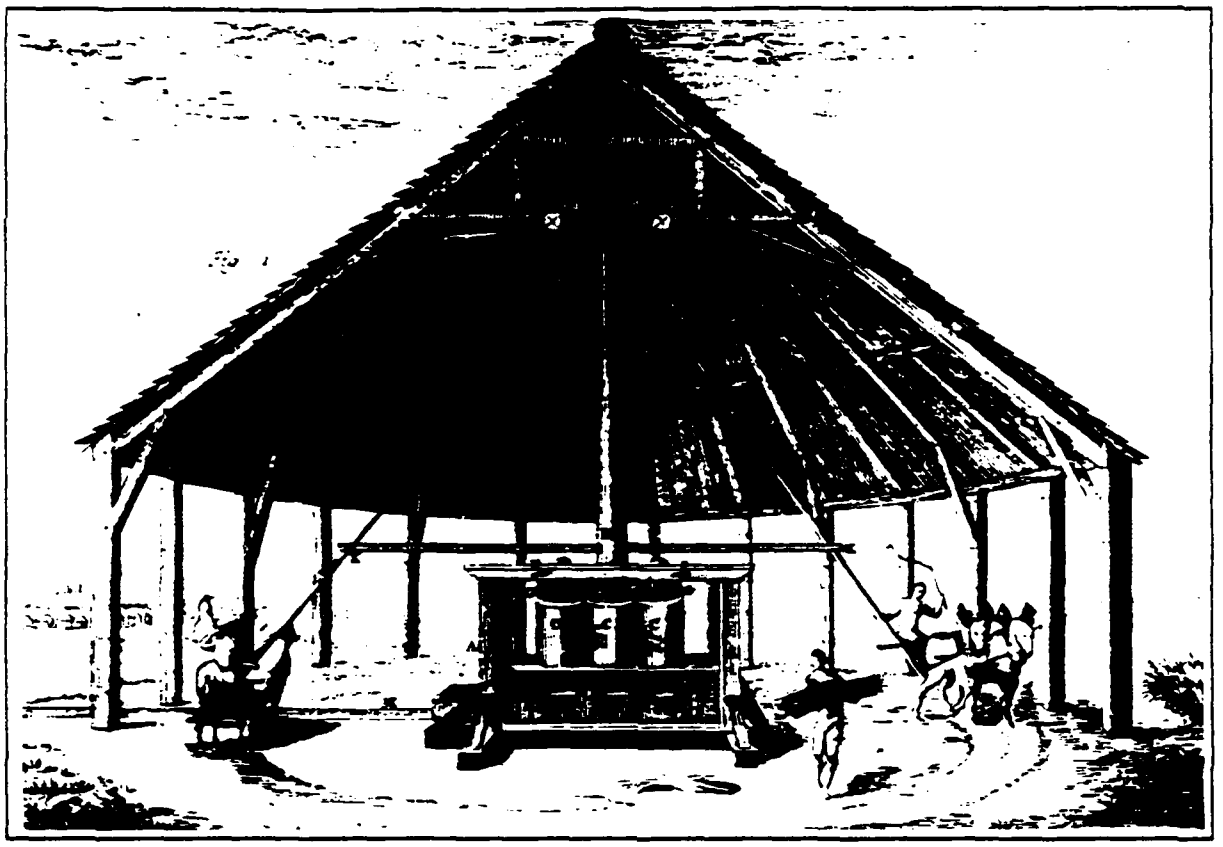


Figure 33. An eighteenth century animal-powered sugar mill (Engraver Bernard, Louisiana State University).

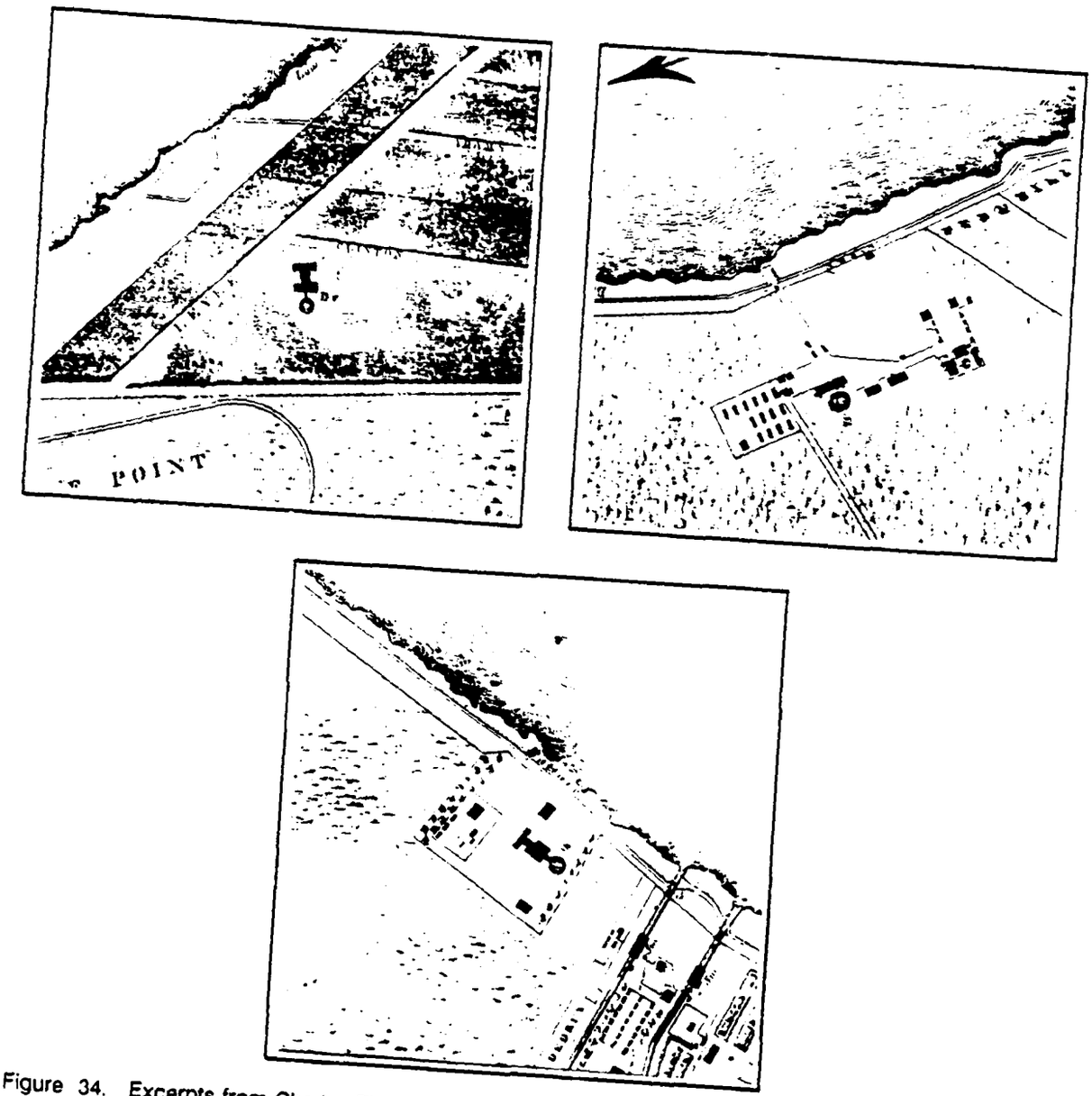



Figure 34. Excerpts from Charles Zimpel's 1834 Topographical Map of New Orleans and Its Vicinity, showing circular sugarhouses along the Mississippi River.

The landscape of the early Louisiana sugar plantations was modeled after the large French West Indies slave plantations. The Mississippi River plantations in south Louisiana were arranged in a linear settlement pattern, extending perpendicular from the river (Kniffen 1968; Rehder 1971). The linearity was achieved from the alignment of the overseer's house and a double row of slave cabins along a centralized road that extended perpendicular from the river. The sugar house and outbuildings complex were located at the end of the road, usually equidistant between the levee crest and backswamp (Figure 35). Thorpe (1853:746-747) explained the reason for such a spatial arrangement:

> [the buildings were situated] to divide up as much as possible the distance that must be traversed in hauling the wood from the "swamp," the cane from the fields, and the crop to the River for shipment.

The Louisiana sugar plantation was a self contained community. Each plantation grew its own vegetables, raised its own cattle, hogs, and chickens, maintained its own store, chapel, brick kiln, and workshops (blacksmith, machine, carpentry), etc. After the Civil War, the traditional linear layout of the antebellum sugar plantations did not change (Prunty 1955:460). Slave cabins were reused by field laborers, and the overseer's house was taken over by the plantation manager. The architectural features of sugar plantation residential complexes including the great house, the overseer's house, and slave cabins from both the eighteenth and nineteenth centuries have been documented elsewhere (Smith 1941; Rehder 1971; Wilson 1980; Goodwin, Yakubik, and Gendel 1983; etc.). The major difference between antebellum and the postbellum sugar plantations focused in the sugarhouse. Many of the old sugarhouses were never rebuilt. The materials from these abandoned sugarhouses, especially metal and brick, were either reused or sold.

The slave-based Louisiana sugar industry changed after the Civil War. Sugar planters, who previously used large contingencies of slaves to plant huge fields, could not afford to pay for such labor after the Civil War. During Reconstruction, the shortage of labor was a critical determinant in the foreclosure and subdivision of many of the large antebellum plantations. The number of sugar plantations in Louisiana was reduced from approximately 1,200 in 1861 to 175 in 1865 (Begnaud 1980:42). The lack of reinvestment capital stimulated the Louisiana sugar industry to consolidate milling. The Central Factory system was introduced in the 1880s. This system provided those planters who could not afford to invest in their own sugarhouse (since most were destroyed during the Civil War), the ability to grow cane and to process it at a large centralized sugar factory. Between 1880 and 1900, many cane planters rented their lands to small farmers. Many plantation owners found it more cost efficient to buy sugar cane from small farmers than to pay the high labor costs of growing their own. By 1890, about one third of the Louisiana cane being milled was grown by tenant cane farmers (Sitterson 1953:161,162).

Innovations in cane agriculture improved crop yields after the Civil War. Drainage became more efficient with the invention of the Menge pump (1880), and some planters used an underground tile drainage system. The use of better fertilizers such as cotton seed meal, and better varieties of cane, such as Lapice, Purple Elephant, and Palfrey, made for heavier yields. Various agricultural implements and machines were invented to improve cane cultivation, including disc cultivators, stubble diggers, cane scrapers, cane coverers, cane shredders, cane hooks, light draft plows, and rotary hoes. Loading the harvested cane required a large contingency of field hands. To further cut this labor cost, rope (or cane) slings, derricks, and car loaders were devised to hoist the cane to the carrier platform and feeders. A steam plow was introduced. However, because of the high costs of repairs, the English manufactured steam plow fell into disuse. Mechanical harvesters also were invented. The first cane harvesters were ahead of their time, and became more widely used during the twentieth century (Louisiana Planter and Sugar Manufacturer 1906 XXXVI:353-54). During the late nineteenth and early twentieth century, the growing of sugar cane became more scientific. The L.S.U. Audubon Sugar School, Tulane University, and sugar chemists from the U.S.D.A experimented with all aspects of the sugar industry. Experiments showed that it was more advantageous to plant in the fall instead of the spring, that seed from the best stalks produced the better cane, and that two stalks of cane planted in rows five to six feet apart provided the best results. By 1890, it was determined that 48 pounds of nitrogen, and 36 pounds of phosphoric acid per acre were the proper amounts of fertilizer. Experiments with farm machinery proved that the disc cultivator was superior to the plow. Cane shredders, such as the Newell shredder, the Ross cutter, and the Krajewski cane crusher,

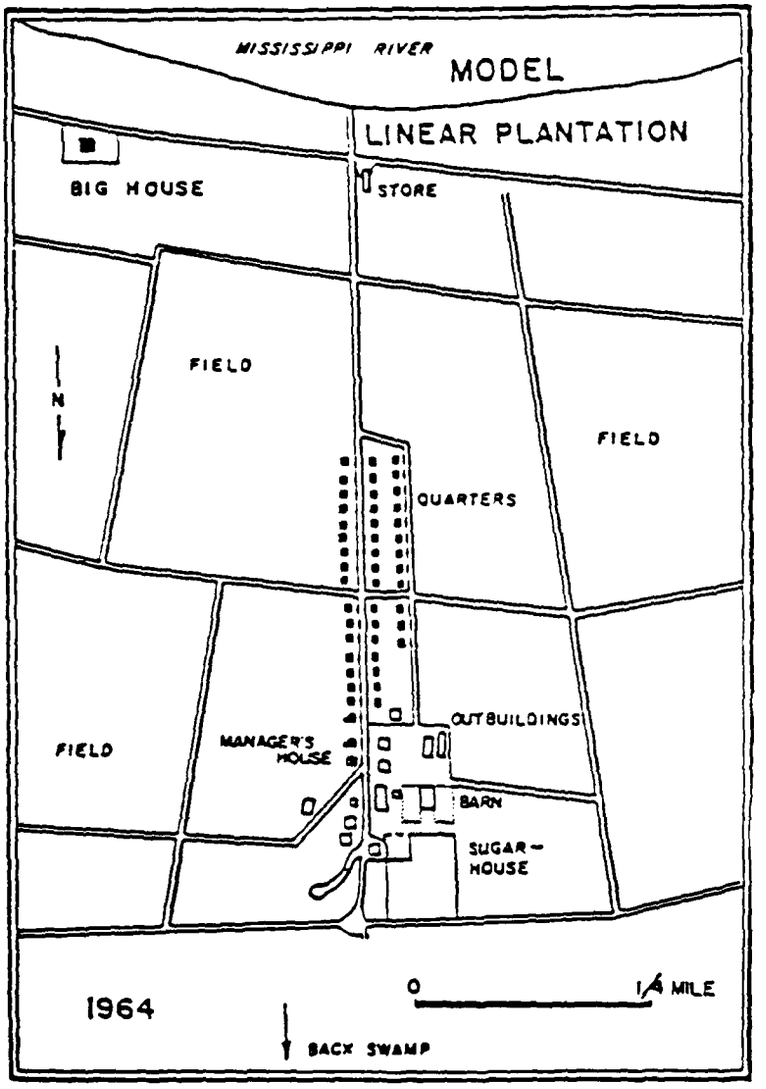



Figure 35. Idealized model of Louisiana sugar plantation along the Mississippi River (after Rehder 1971).

prepared the cane for milling, and were widely used. Advances were further promulgated by a severe decline in the Louisiana sugar industry between 1912 and 1930. The decline was caused by a devastating mosaic sugar cane disease, poor weather, and by falling prices (Begnaud 1980:45). By 1930, disease resistant cane varieties such as the D74 variety, and newer fertilizers, once again produced higher yields per acre.

Despite these setbacks in sugar agriculture, large scale sugar manufacturing increased throughout the late nineteenth and early twentieth century. In 1898, there were 347 sugar factories in Louisiana; in 1910, there were 214; and, in 1930 there were 60. By 1910, the larger cane factories were milling 42 percent of the cane grown in the state. The early twentieth century Louisiana sugar factories were technologically more advanced and cost efficient, achieving both greater sugar recovery and a better grade of sugar. Sitterson (1953:25) states:

> The modern sugar factory of the early twentieth century was a far cry from the sugarhouses of the early post-Civil War years. Larger, lighted with electricity, and equipped with the new mills and machinery, all laid out to emphasize more effective operations, it was truly a forerunner of the contemporary raw sugar factory. Equally as important as the new and larger machinery in distinguishing the new from the old was the important place now given to applied science.

The trend towards large sugar factories coincided with more sophisticated processing techniques. One noteworthy technological innovation was the hydraulic pressure control regulator. Invented in 1874 by New Orleanian John S. McDonald, this device prevented mill breakage, and increased juice extraction. Double mills also were tried. By 1888, there were more than seventy double mills in operation in Louisiana. The modern multiple milling train was modeled after this fashion (Sitterson 1953:282,283). During this time, the Hepworth centrifuge was introduced to decrease sugar drying time. Refineries (like Columbia near the project area) required a large water supply for the huge boilers and condensers. Steam-powered pump houses were designed and constructed along the batture to provide the water. In addition, flumes occasionally were used to bring low water closer to the pump (Casimir Graugnard, personal communication 1988).

Chemistry and engineering continued to influence the sugar refining industry between 1880 and 1920. The use of bone black as a filtering agent was abandoned by 1900. Sulphurous acid gas was accepted as the most efficient clarifying agent. The filter press increased juice extraction from the remaining scum after clarification. Throughout the twentieth century, the large Louisiana sugar factories expanded their operations, using modern machinery and agrochemical techniques to produce larger quantities and a better grade of raw and refined sugar products.

## Archeological Expectations

Because Louisiana sugar plantations were distinct, self-contained agricultural communities which brought together different people of varying status, and because there were many technological aspects to historic sugar making, there exists the theoretical possibility of recovering a wide-range of specialized assemblages at sugar plantation sites. Table 12 summarizes the expected archeological remains for sugar plantation sites between Baton Rouge and New Orleans. Table 13 lists the characteristic components of sugar industry assemblages by period along the Mississippi River. Except for the postbellum pumphouses, the majority of the structures and agricultural features existed landward of the protection levee. Nevertheless, these once landward cultural areas today may exist within the unprotected batture because of bankline change. Some of the early Mississippi River sugar plantation structures in Louisiana were constructed surprisingly close to the riverbank. Figure 31 shows the proximity of the Foucher sugar plantation to the river in 1834. Considering the changes in the position of the Mississippi River from historic times, the remains of some of the early sugar plantations including round sugarhouses are likely to be along the batture or in the river. After 1835, most Louisiana sugar estate complexes were positioned further from the riverbank.

Table 12

## ARCHEOLOGICAL EXPECTATIONS OF THE SUGAR INDUSTRY BY PERIOD ALONG THE MISSISSIPPI RIVER

| PRE-1835 | 1835-1890 | 1890-1930 |
|---|---|---|
| | I. Domestic and Service Plantation Structures | |
| **Big House** - Located away from lave cabins and industrial complex; large foundation remains; some with large porch and columns; auxiliary structures such as wells, privies, and kitchen; improved walkways and road; gardens; refuse deposits; numerous artifacts, including large percentage of kitchen-related artifacts; utilitarian through expensive ceramic wares. | **Big House** - Similar to pre-1835 remains; postbellum big houses generally were smaller than antebellum big houses. | **Big House** - Similar to pre-1890 remains; houses generally smaller than in antebellum; adjacent garage; internal plumbing, heating, and electricity. |
| **Overseer House** - Located near or somewhat removed from slave cabins and industrial complex; small to medium foundation remains; auxiliary structures such as wells and privies; refuse deposits; moderate quantity of artifacts; primarily utilitarian wares. | **Manager's House** - Similar to pre-1835 remains. | **Manager's House** - Similar to pre-1890 remains; adjacent garage; internal plumbing and electricity. |
| **Slave Cabins** - Located near industrial complex, in linear arrangement along road; one or two room foundation remains; communal auxiliary structures such as wells and privies; refuse deposits; low quantity of artifacts, including high percentage of architectural artifacts; primarily utilitarian wares. | **Slave Cabins** - Similar to pre-1835 remains; set back from public road; increasing individualism in postbellum; increasing quantity of artifacts because of age; primarily utilitarian wares. | **Agricultural Labor Cabins** - Similar to pre-1890 remains; primarily former slave cabins; possibly internal plumbing and electricity. |

**Kitchen** - Located near the Big House; one or two room foundation remains with a large oven or fireplace; well; refuse deposits with numerous food remains; utilitarian wares, cooking wares, and implements.

**Chapel** - Located near the public road, within large plantation complex; small rectangular foundation remains, one storied; low quantity of artifacts other than architecture-related; personal and religious items.

**Store** - Located near the public road and the river; near historically identified landing; medium foundation remains; wide variety of artifacts; packing remains such as crate nails.



**Sugarhouses** - Located near the levees; separate mill, furnace, and storage structures:

Mill - Circular structural remains consisting of postholes from wooden structures, and brick foundations from brick structures; minimum of 10 m in diameter, normally larger.

Furnace - Rectangular foundation remains, possibly brick piers, with brick chimney and furnace remains; minimum of 7 x 10 m.

Storage and Drying Sheds - Rectangular brick foundation remains for brick sheds, or rectangular posthole arrangements for wooden sheds; interior posthole arrangements for drying racks.

**Kitchen** - Similar to pre-1835 remains.

**Chapel** - Similar to pre-1835 remains.

**Store** - Similar to pre-1835 remains.

## II. INDUSTRIAL PLANTATION STRUCTURES

**Sugarhouses** - Located away from the river, nearly equidistant between the levee and the backswamp. Primarily large rectangular structures housing the steampowered mill, furnace, and drying rooms; brick or wood structures about 15 - 20 m x 30 - 50 m; artifact expectations include architectural remains; tools and hardware, boiler parts, ladles, screens, vats, and kettle fragments. This style of sugarhouse began to be utilized in 1817; by the 1830s, its use was widespread.

**Store** - Similar to pre-1890 remains; decreasing dependency on riverine cargo transportation.

**Sugarhouses** - Located in similar location to 1835-1890 sugarhouses; very large sugarhouses with 15 - 30 m x 30 - 60 m brick or concrete foundations; above ground expression probably with intact features expected; artifact expectations include architectural artifacts, boiler parts, vacumn apparatus parts; metal tools and hardware, steam machinery parts, metal vats, pans, screens, pumps, hydraulics and piping.

These three structures would be adjacent to each other. Expected artifacts include architectural remains, metal hardware and tools and course unglazed earthenware, sugar cone and urn fragments, fragments of cooper lining for cypress vats.

**Brick Kilns** - Located near river or levee; rectangular brick foundation remains of varying size, with flues in brick floor, and brick walls; numerous brick wasters, glazed bricks or "shiners," fire bricks, and possibly tiles in vicinity; all bricks handmade.

**Stables and Barns** - Located near industrial complex within plantation, close to the river, and the public road; normally at least 5 x 7 m, with brick foundation, or rectangular arrangement of posts; in addition to architectural remains, artifactual expectations include tools, harness equipment, horseshoes, hardware, wagon parts, and barrel fragments; few kitchen-related artifacts are expected.

**Workshops** - Carpentry, blacksmith, and machine shops often were located near the industrial complex, close to the river; the size of these workshops varied considerably, depending on the industrial need; wood postholes and brick foundations are expected; artifacts would include tools, hardware, and machinery parts, based on the specific type of workshop encountered.

**Brick Kilns** - Similar to pre-1835 remains.

**Stables and Barns** - Located near industrial complex, farther from river than during earlier period; expectations similar to pre-1835 remains.

**Workshops** - Located near inland industrial complex; expectations similar to pre-1835 remains.

**Stables and Barns** - Similar to 1835-1890 remains, with increasing variety of sizes, shapes, and construction materials; above ground remains probably; wide variety of tools and equipment expected.

| | | |
|---|---|---|
| | **Drainage Wheel** - Located either near the industrial complex for supplying water to sugarhouses, or near backswamp to drain fields; some portable; wheels 3 - 5 m diameter; expected foundational remains include brick or wood base for wheel, and brick platform for steam engine; artifacts include equipment fragments, tools, and architectural remains. | **Drainage Wheel** - Similar to 1835-1890 remains.<br><br>**Pump House** - Located on landside of levee, near public road; wide variety of construction materials and techniques; above ground remains likely; metal piping, boilers, steam engine, and pump fragments expected. |
| | **III. SUGAR CANE FIELD REMAINS** | |
| **Drainage canals with crossditches.** | **Drainage canals with crossditches.** | **Drainage canals with crossditches.** |
| **Linear configured cane fields.** | **Linear configured cane fields.** | **Linear configured cane fields.** |
| **Rotated crop fields.** | **Rotated crop fields.** | **Rotated crops fields.** |

Table 13

CHARACTERISTIC COMPONENTS OF THE SUGAR INDUSTRY ASSEMBLAGES BY PERIOD ALONG THE MISSISSIPPI RIVER

| Pre 1835 | 1835-1865 | 1865-1900 | 1900-1930 |
|---|---|---|---|
| **I. Cultivation Attributes** | | | |
| plow, hoe, harvest knife, shovel, hatchet, saw, carts, oxen, horses | plow, hoe, cane, cutter, shovel, hatchet, saw, drainage wheel, steam engine, boiler, carts, oxen, horses, mules, narrow gauge rail cars | rotary hoe, cane cutter, disc cultivator, cane coverer, cane shredder, cane hooks, light draft plow, horses, mules, rail cars, cane sling, derricks, car loaders | rotary hoe, cane cutter, disc cultivator, cane coverer, cane shredder, cane hooks, light draft plow, trucks, tractors, horses, mules, rail cars, cane sling, derricks, car loaders, mechanical harvesters, hoeing machines, cane pilers |
| **II. Processing Attributes** | | | |
| feeders, rollers, gears, sprockets, sugar cones (containers), brick furnace, kettles, retaining vats, ladles, filters, hogsheads | feeders, iron rollers, large gears, sprockets, steam engine, boilers, vacuum apparatus, multiple effects apparatus, brick furnace, kettles, retaining vats, ladles, filters, hogsheads | feeders, iron rollers, large gears, sprockets, steam engine, boilers, vacuum apparatus, multiple effects apparatus, brick furnace, kettles, retaining vats, ladles, filters, hogsheads, hydraulic regulator, hepworth centrifuge | feeders, iron rollers, large gears, sprockets, steam engine, boilers, vacuum apparatus, multiple effects apparatus, brick furnace, kettles, retaining vats, ladles, filters, hogsheads, hydraulic regulator, hepworth centrifuge, multiple milling train |

Another factor that reduces the possibility of recovering intact sugar plantation remains is the fact that historically, the immovables and appurtenances associated with sugar plantations, especially sugarhouse equipment, rarely was abandoned, but rather was sold, confiscated, or reused. As a result, the discovery and recordation of archeological remains from sugar plantations by previous investigators in the lower Mississippi River delta region have resulted in a modest albeit extensive inventory of artifact assemblages.

Previously Recorded Sugar Sites

Considering the number of historic sugar plantations that lined the Mississippi River between Baton Rouge and New Orleans, the number of recorded archeological sugar plantation sites is proportionately low. In addition, a substantial proportion of the cultural remains that have been recovered from Louisiana sugar plantations lack integrity due to previous disturbance. "Although numerous, the cultural remains of plantations along the Mississippi River rarely have been recorded as archaeological sites" (McCloskey et al. 1981:11). To date, most archeological remains recovered from investigations at historic Louisiana sugar plantation sites date from the late antebellum and postbellum decades. Except for survey investigations at Wilton and Helvetia Plantations in St. James Parish (16SJ20 and 16SJ21) (Pearson et al. 1979), and data recovery investigations at Elmwood Plantation in Jefferson Parish (16JE138) (Goodwin, Yakubik and Goodwin 1983), there have been few plantation assemblages collected in south Louisiana that represent a colonial period occupation. Most of the cultural remains recovered from Louisiana sugar plantation sites consist of ceramic and faunal remains from the residential areas. Most of the structural features analyzed have provided architectural and geographical data respectively. Archeological data concerning sugar making in Louisiana is conspicuously lacking. For example, Castille's 1981 archeological investigation of sugarhouse remains at Hermitage Plantation in Ascension Parish (16AN24) was reportedly unprecedented at the time: "The sugarhouse ruins represent one of the few recorded sugarhouse foundations along the Lower Mississippi River with above ground expression. No such structures have ever been recorded archaeologically in Louisiana" (Castille 1981:5). Since that time, there have been few archeological investigations at Louisiana sugar plantation sites that have recovered substantial remains from industrial areas including historic sugarhouses. While many components of sugar plantations have been located since the late 1970s, most of these archeological resources have not been tested extensively. Previous studies that have documented important archeological data about sugar industry regions are listed in Table 14.

Priorities for Further Research

While numerous sugar plantations lined the Mississippi River prior to 1835, comparatively few archeological remains from these plantations have been excavated. While some archeological data from the domestic residences have been recorded, both the domestic and industrial aspects of these plantations remain poorly understood. Archeological deposits from all components of pre-1835 sugar plantations need to be excavated to build the data base. Through these excavations, the historical development of sugar plantations, along with cultural adaptations to the sugar industry, can be understood better.

Sugar plantations which operated between 1835 and 1890 have been documented more fully than the earlier ones. A number of archeological excavations have recorded portions of these plantations, providing a growing body of useful data. However, most aspects of these sugar plantations have not been recorded adequately. Further archeological investigations should examine all of the industrial aspects of these plantations, as well as chapel and store remains. Also, additional examples of intact remains associated with big houses, manager's houses, slave cabins, and kitchens should be excavated. While these components are more fully understood, many aspects remain undocumented.

Most aspects of the 1890-1930 sugar plantations are fairly well documented, and most of the archeological remains are not priorities for further investigation. Two aspects warrant addition investigation, however. Drainage wheels have not been adequately recorded; information about drainage wheels would provide valuable comparative data for the as yet unrecorded pre-1890 drainage wheels. In addition, the 1890-1930 sugar industry can be documented through informant interviews. This is a valuable tool for

Table 14

MAJOR PREVIOUS ARCHEOLOGICAL INVESTIGATIONS AT LOUISIANA SUGAR PLANTATION SITES ALONG THE MISSISSIPPI RIVER

| Plantation Site | Riverbank Parish | Investigators | Plantation Remains Features and Structures | Archeological Data |
|---|---|---|---|---|
| Wilson and Helvetia Plantation 16SJ20 and 16SJ21 | Eastbank, St. James | Pearson et al. (1979) Coastal Environments, Inc. | Residential; numerous archeological localities. | Pre-plantation (pre 1800) era remains of petite habitants. Artifact analysis revealed occupation continuum spanning 200 years. |
| Hermitage Plantation 16AN24 | Eastbank, Ascension | McCloskey et al. (1981) Castille (1981) Coastal Environments, Inc. | Residential and industrial complexes; great house still standing. Postbellum sugarhouse remains. | NRHP great house. Results of survey tested linear settlement model suggested by Rehder (1971). |
| Tally Ho Plantation 16IV135 | Westbank, Iberville | Bryant et al. (1982) Cultural Resources Laboratory Texas A&M University | Surface scatters and remains from backhoe trenches. | Archival work demonstrated postbellum sugar plantation activities. |
| Elmwood Plantation 16JE138 | Eastbank, Jefferson | Goodwin, Yakubik, Goodwin (1983) R. Christopher Goodwin & Associates, Inc. | Residential complex; in situ kitchen house features. | Ceramic, glass, faunal, and structural analysis indicated 1780-1835 occupation. To date, the ceramic analysis conducted at 16JE138 is the most comprehensive in south Louisiana. |
| Lakeland Plantation 16PC33 | Westbank, Pointe Coupee | Goodwin, Gendel, Yakubik (1983) R. Christopher Goodwin & Associates, Inc. | Barn features. | Information provided data on late 19th - early 20th century sugar plantation site types. |
| Bourbon Plantation 16SJ38 | Eastbank, St. James | Goodwin, Yakubik, Gendel (1984) R. Christopher Goodwin & Associates, Inc. | Sugarhouse features. | Circular brick derrick foundation identified adjacent to postbellum sugarhouse remains. |

| | | | | |
|---|---|---|---|---|
| Roseland Plantation 16SC52 | Eastbank, St. Charles | Yakubik, Franks et al. (1986) R. Christopher Goodwin & Associates, Inc. | Sugarhouse features. | Disturbed postbellum sugarhouse remains. Study included comprehensive slave and black ethnohistory. |
| Bohemia Plantation 16PL135 | Eastbank, Plaquemines | Goodwin, Jeter et al. (1986) R. Christopher Goodwin & Associates, Inc. | Industrial complex features. | Pedestrian survey discovered brick walls and foundations of ca. 1850s-1910 sugarhouse complex. Recommended as eligible for NRHP. |

understanding the industry. Well preserved archeological sugar plantation remains from this period can be usefully compared with oral histories to learn more about the industry and how people's memories correlate with the archeological record.

Finally, the surface patterning of sugar field remains should be recorded. Through this recordation, field pattern adaptation to changing technologies can be examined. While postbellum and modern field patterns are available for recordation, antebellum field remains are very rare, if not totally destroyed. These earlier field remains are a priority for further archeological investigation.

In summary, there are several priorities for further research concerning the southeastern Louisiana sugar industry. All of the components of pre-1835 sugar plantations need to be examined archeologically, so the data base can be developed. Industrial components, chapels, and stores from the 1835-1890 period need examination, along with well preserved examples of the various domestic remains. Drainage wheels from the 1890-1930 period should be excavated. Valuable data about the 1890-1930 sugar industry can be obtained through informant interviews coupled with the examination of well-preserved sugarhouse remains. Through the archeological examination of these priorities, much previously unrecorded important information about the Louisiana sugar industry can be obtained.

## Rice

### Review of Historic Rice Production

A thorough study of the development of the Louisiana rice industry already exists (Goodwin, Hewitt et al. 1988); it is not the intent of this section to rewrite that history. Rather, a summary of the history of rice cultivation along the Mississippi River between Baton Rouge and New Orleans will be presented. Its emphasis is on those activities and technological developments that affected the archeological record.

Providence rice is used in this report to distinguish rice cultivation that had no controlled water supply. Flooding of the rice fields was dependent on rainfall and on the annual spring overbank flooding of rivers and bayous. Providence rice was widely cultivated from the eighteenth century through most of the antebellum period. During this period, rice was grown primarily for subsistence needs rather than as a cash crop (Williamson 1940:11). Compared to sugar, it required little machinery, cultivation, or labor. It was fairly versatile, and could be grown both on the dry upland portions, of the natural levee and along the outer edge of the natural levee, where the wet clay soils prohibited the growing of sugar or maize.

The cultivation of Providence rice by French colonists transformed the landscape along the Mississippi River and the bayous. The settlers cleared the swamps along bayous and small crevasses. Additional land was cleared after the construction of artificial levees along the Mississippi River. Drainage canals were dug one arpent (approximately 192 feet) apart. They ran perpendicular to the natural-levee crest into the backswamp (Lee 1960:116).

Depending on the variety of rice grown, rice fields were prepared for cultivation with a hoe or plow, during the late fall or early spring. During much of the spring, the rice fields were inundated to prevent the growth of weeds. By late summer, the fields were drained to allow the rice to ripen.

In the river parishes, farmers would make openings in the levees to assist the natural flooding of rice fields during periods of high water. When it became necessary to drain the fields, the water was removed by the drainage canals, which emptied into the backswamp. If the terrain favored it, the water was returned to the river, the river stage being lower at the time of drainage than when the fields were flooded (Williamson 1940:11).

Providence rice was ready for harvesting in September. After being harvested by hand, the rice was dried, bundled, and prepared for threshing. The simplest threshing procedure was to beat the dried rice with ordinary sticks. Once it was threshed, the rice was winnowed, using large basket-trays made of cane; this procedure allowed the chaff to blow away. More sophisticated methods included true flails and animal

treading. After it was threshed, the rice was milled. This process removed the outer hull of the rice kernel. Finally, the grain was polished, removing a portion of the inner hull.

The principal tools used in milling rice were the mortar and pestle. Made of wood and adapted from the Indians, these items were common where Providence rice was grown. Sometimes two or three people labored at the task, alternating strokes with individual pestles.

A wooden rotary pit-mill also was used for removing the husk. This machine was introduced into Louisiana in the 1740s, probably from South Carolina. It consisted of two pieces of wood, each about two feet in diameter. Their surfaces were serrated with channels that diverged from the center. The rotary action of the upper board against the lower removed the outer husk, but the inner husk had to be removed with a mortar and pestle. The pit-mill became common along the Mississippi River below Baton Rouge, and in the bayou region (Davis 1965:72; Lee 1960:109-110, 113).

During the antebellum period, Louisiana rice farmers generally operated on a small scale. The average number of acres planted in rice was less than two hundred, with many rice farmers cultivating no more than fifty acres (Goodwin, Hewitt et al. 1988:155). Consequently, most antebellum rice farmers lived on basic farmsteads, rather than elaborate plantations. In addition to the creole-style dwelling which fronted the river, there were probably one or two outbuildings and perhaps a small area under fence for livestock. The residence and outbuildings usually were fenced; the fields were not. The rice fields extended from the residence toward the backswamp.

River rice became the principal method of cultivation around 1850. It was widespread along the Mississippi and its distributary bayous south of Natchez, Mississippi. River rice was more of a commercial product than Providence rice, and it was cultivated on a larger scale. It became especially widespread after the Civil War, when former sugar planters and farmers of limited means turned to rice agriculture because it required considerably less capital and labor than the cultivation of sugar cane.

River rice fields were flooded by irrigation ditches which received water from cuts in the levee or from flumes. Growers of river rice secured their water for irrigation from the Mississippi River or from the bayous. Along the Mississippi River, the fields of individual rice farmers extended perpendicular to the river, normally in narrow strips. Flume-ditches, or canals, ran from the river to the backswamp, and normally were at least four feet wide and four to five feet deep. One or more cross ditches, the number determined by the topography, extended at right angles to the canal(s) and passed through the rice fields. Larger fields were divided by rice levees. These rice levees were laid out to correspond with the natural levee slope. They were started with a plow and completed with shovel or hoe. Drainage ditches were blocked with either plank gates or earthen dams. If the canals were a considerable distance apart, check- or length-levees were constructed (Shutts 1951:28; Lee 1960:128, 130). Through the opening or closing of plank gates within the canals and ditches, different portions of the fields could be flooded or drained, as needed. A final ditch ran across the back of the rice field and parallel to the river. Its levee was higher than the field levee on the down-slope side. A floodgate allowed for the passage of water through the back-levee. Together they enclosed the field.

From around 1850 until the late nineteenth century, rice irrigation flumes commonly were constructed from the Mississippi River, through the artificial levees, and into canals which were used to irrigate and drain the rice fields. These rice flumes were gravity-fed, with the riverside end higher than the landside. Their use depended on a high river level, which occurred annually in the spring. Often the rice flumes emptied into borrow pits, which were formed during artificial levee construction. From these pits, the water could be siphoned into the rice field canals as needed.

River rice required one of two methods to ready the fields for sowing. These two methods were known as "wet" and "dry." The wet method was only appropriate for the heavy clay and acidic soils along the lower slope of the levee, while the dry method worked better on the upper slope of the levee, where the soil was comparatively dry and sandy. If the farmer used the wet technique, he usually plowed in April, and then broadcast pre-germinated seeds onto the flooded fields. The fields then were drained, and they were not inundated again until the rice was about six inches tall. If the farmer used the dry method, he plowed

the fields during the fall and winter, and harrowed it in the spring prior to planting. The rice seed was either broadcast or mechanically placed in rows during late March and early April. When the river crested, and the rice plants were about three inches tall, the fields were flooded. This watered the rice, and inhibited weed growth.

Shortly after the end of the Civil War, a steam-powered rice mill was introduced into Louisiana from South Carolina. This mill was small-scale, and it operated on the mortar and pestle principle. Besides replacing horses with steam-power, the only change in the new mode of operation was the use of larger, iron-covered mortars and pestles. Substantial steam-powered rice mills were constructed in New Orleans around 1870; at least five were operating in the city by 1877. As more were constructed along the Mississippi River, farmers gradually abandoned the smaller steam-powered mills. Approximately two-thirds of these large mills were located in New Orleans.

Threshed rice was placed in large bags, and transported to commercial rice mills, normally in New Orleans, on riverboats. A riverboat would stop adjacent to the batture in front of the rice farm or plantation. A gangplank was lowered onto the batture, and the bags of rice carried onto the boat by stevedores. Once the rice was loaded, the gangplank was raised from the temporary landing and the riverboat proceeded on its journey. These temporary landings were placed directly onto the unimproved batture, and they were located at any convenient location in front of the rice farm (Harold Dutreix, personal communication 1988; David Webre, personal communication 1988).

Although the functions of outbuildings changed, their outward appearance generally did not. Barns once used to shelter animals now had their floors used for threshing rice. The principal distinction between small-farm and plantation landscapes was the residence of the owner or manager--the "big house," and a rectangular cluster of cabins that once had housed slaves. The primary distinguishable difference between these plantations was the location and composition of the slave cabins.

Between 1885 and 1930, several changes occurred to river rice production. These changes included a restructuring of water procurement methods for irrigation, as well as the development of improved threshers and hullers. Lee (1960:158-160) stated that around the 1860s, some waterwheels and steam pumps were used in St. John the Baptist Parish for irrigation; however, their use did not become widespread for many years. It was not until the mid-1880s that steam pumps began to be used widely along the Mississippi for rice irrigation. While the early steam pumps were rather crude and ineffective, their use enabled irrigation water to be obtained whenever it was needed. Through using the pumps, rice farmers no longer were dependent upon a high river level to be assured adequate water for irrigation.

Coupled with the increased use of water pumps, laws were passed in 1890 and 1892 that regulated the placement of rice flumes through and over the artificial levees. The 1890 law stated:

> That all existing rice flumes dahls and other conduits placed in or through the public levees of the State for the purpose of irrigation lands shall be taken out and removed from said levees by the Police Juries during the months of September, October, and November of the present year 1890, at the cost and expense of the owner of the land.... All persons desiring to irrigate their lands for the purpose of rice culture or for any other lawful purpose by means of water from the water course of this State, on which public levees are or may hereafter be built shall have the right of so doing by means of cast iron pipes placed under such levees during the months of September, October, November, and December of each year and at no other period during the year.

The law further regulated the construction of cast iron irrigation pipes, mandated that all levee cuts be supervised by the police jury, established annual license fees for pipes placed through the public levees, and explained penalties for violation of the act (Louisiana Act 144, 1890).

Three laws were passed in 1892 that affected rice irrigation flume systems. The first of these stated:

> That no rice flumes, dahls, pipe or other foreign substance for purposes of irrigation or otherwise shall be allowed to be placed in the public levees of this state after the first day of October 1892, and that the police juries of the several parishes of the State are hereby required to see that all rice flumes, dahls, pipes or other conduits now existing in the public levees of the State are taken out and removed therefrom before the first day of January 1893.

The law further provided for some minor exceptions, and established the penalties for violation of the act (Louisiana Act 5, 1892). The next law began to regulate the use of siphons placed over the levees, mandating that the discharge end be at least 27 feet from the landside toe of the levee, and perpendicular to the levee (Louisiana Act 63, 1892). The third law further regulated the use of siphons placed over the levee for irrigation and other purposes. According to this Act,

> It shall be unlawful to irrigate flood or in any manner cover with water for purposes of irrigation or otherwise any land situated upon the Mississippi River within a distance of five hundred feet from the base of any public levee or levees located thereupon.... All syphons placed and used for purposes of irrigation or otherwise over public levees upon lands bordering on the Mississippi River in this State, shall be so constructed as to conform to the shape of the pre-existing levee, and shall be made of such length and be laid in such manner as to deposit their water at a distance of no less than twenty seven feet from the base of the public levee so crossed. No public levee shall be cut or otherwise altered for the purpose of admitting the passage or of conforming to the shape of any syphon crossing the same.

The law also made it the duty of police juries within their respective parishes to cause the removal of all pre-existing siphons that did not conform to this law, and to cause the restoration of the levees to their original form. In addition, it established penalties for violation of this law (Louisiana Act 98, 1892). While these laws were not always obeyed, as evidenced by rice flume remains which still pass through the levee, they did contribute substantially to the changing pattern of rice irrigation water procurement. Coupled with the benefits associated with using pumps, by the early 1890s these laws virtually ended the use of gravity-fed flumes for irrigation.

These 1892 laws remained unchanged until 1920, when the laws were modified. The 1920 law once again prohibited the placement of rice flumes, dahls, pipes, or other conduits through the levees, and required their removal. This implied that some rice farmers continued to violate the 1892 laws. In addition, this law further regulated siphons and irrigation. Siphons were to be placed at right angles to the axis of the public levees; they could not alter the levee, but rather had to span the levee or conform to the pre-existing levee shape; water intake could not be less than 30 feet from the riverside toe of the levee, and the discharge end had to be at least 60 feet from the landside toe of the levee; the intake and discharge ends were to be guarded to prevent any local erosion; no irrigation was permitted within 150 feet of the landside toe of the levee; and, all flooded lands had to include low, level drainage ditches to prevent flooding of the levees or highways (Louisiana Act 132, 1920). This law further protected the levees, as well as public roads.

There were at least two different forms of late nineteenth and early twentieth century river rice irrigation systems. The earlier system involved a further development of the former gravity-fed flumes. In this system, a channel was cut from the river toward the riverside toe of the artificial levee. This channel was boarded, and often included a metal or wood water intake, which passed from the river and into a retainer tank. A pump was placed near the landside end of the channel, and the river water, which flowed naturally into the retainer tank, was pumped at a steep angle over the levee. While this system involved considerable effort to construct, the fairly steep angle at which water was carried over the levee enabled it to be pumped or siphoned efficiently. The river water either was pumped into borrow pits, from which it was siphoned into the rice fields, or it was pumped directly into the rice fields. Because the pumps enabled irrigation water to be obtained whenever it was needed, retaining water in borrow pits was no longer necessary. While the use of borrow pits did continue, the use of pumps simplified irrigation in those areas along the river where there were no borrow pits.

The second major type of late nineteenth and early twentieth century irrigation system did not utilize a rice flume. Rather, the pump was placed a short distance above the waterline, and an iron pipe, attached to the pump, was placed directly into the river. Water was pumped directly from the river, over the levee, and into borrow pits or rice fields. As with the other contemporaneous irrigation system, when the water level was sufficiently high, water was siphoned over the levee to save pump maintenance and fuel expenses (Harold Dutreix, personal communication 1988).

Between the 1880s and 1930s, several types of increasingly effective pumps were developed. While waterwheels occasionally may have been used, the first pumps commonly used by rice farmers for irrigation were steam powered pumps. These large pumps, including a boiler, a steam engine, and an attached pump, were fired with wood, and later coal. During the 1910s, they were often replaced with kerosene pumps, which were smaller and less expensive to operate. By the 1920s, diesel engines replaced many of the kerosene pumps, and some pumps were driven by diesel powered tractors (Goodwin, Hewitt et al. 1988; David Webre, personal communication 1988; Howard Dutreix, personal communication 1988). Steam engine boilers, with their associated furnaces, were at times placed on large, often brick, foundations, which are occasionally recovered archeologically (Goodwin, Armstrong et al. 1988:85). In addition, the boilers themselves occasionally were discarded when they were replaced (Shannon et al. 1988: 333). Little archeological evidence remained when the kerosene or diesel pumps were removed.

Along the Mississippi River during the last quarter of the nineteenth century, a "plantation huller" was adopted for household use. Derived from a coffee huller and still in use today, it consists of a horizontal, tapering grooved cylinder. A ribbed shaft revolves within the cylinder. The rice hull was separated from the grain by the kernels rubbing against each other, against the rough iron walls of the cylinder, and against the ribbed surface of the core. The grain then was screened and fanned, before passing through the huller a second time to be polished. A small steam or diesel engine powered this machine. A larger huller, the Engellery, which was developed in 1891, was introduced in the commercial mills at the beginning of the twentieth century. Similar in construction to the "plantation huller," it was used to polish grain after the hull had been removed by the stone mill (Davis 1965:297; Lee 1960:181, 185).

A new thresher was introduced about 1916. It included a self-feeder and chaff-blower. This machine gradually replaced animal and flail threshing. It remained in use until the adoption of the combine, which harvested and threshed at the same time (Lee 1960:180-81). Mechanical threshers operated in the Willow Bend area by the early 1920s (Harold Dutreix, personal communication 1988).

River rice cultivation remained extensive along the river until the 1920s. The local depression which occurred late in that decade seriously curtailed rice production. In addition, a major flood occurred in 1927, which destroyed most of that year's rice crop. Rice production during the 1930s approximated that of the early 1860s. World War II brought an end to the depression, but the river-rice industry was slow to recover. Labor methods suitable for the land along the river could not compete with the highly mechanized prairie-rice operations, and farm equipment was in short supply. Prior to World War II, and except when labor was in short supply during World War I, river rice continued to be harvested by hand. While some rice has continued to be grown along the river since World War II, most of the land is now used for sugar cane and vegetable farming.

Despite the fact that most rice plantations now are used for other purposes, structures remain that are indicative of rice cultivation. An abandoned barn often housed a "plantation huller." Before World War I, every plantation had a landing on the river where large steamers could tie up. These vessels were the primary conveyors of rice to the commercial mills in New Orleans. These landings were abandoned as more and more growers came to rely upon the railroad for transporting their harvest. This change in transportation often brought about a relocation of the threshing ground, from the levee slope to the railroad tracks. This pattern continued until the introduction of the combine. The larger growers undoubtedly had an elevator for loading the rice aboard railroad cars (Lee 1960:192, 194; Davis 1965:297).

The previous overview of rice cultivation is based on historical information. Three stages in river rice cultivation are suggested. While not fully discussed in this overview, the attributes characterizing these three stages are summarized on Table 15. Technologies have been stressed in order to distinguish expectations

Table 15

CHARACTERISTIC COMPONENTS OF RICE CULTIVATION ASSEMBLAGES BY PERIOD ALONG THE MISSISSIPPI RIVER

| Pre-1850 | 1850-1885 | 1885-Present |
|---|---|---|
| **I. Cultivation Attributes** | | |
| Oxen, Creole Ponies, Mules | Oxen, Creole Ponies, Mules | "Rice" Mules; Tractors |
| Upland or Moldboard Plow | Wheeled, Wooden Moldboard Plow | Moldboard Plow; Gangplow; Disc Plow |
| Wooden Harrow Hand seeding | Wooden Harrow Hand Seeding | Iron Harrow seeders; Endgate Seeders; Airplanes |
| Sickle Hand Binding | Sickle Hand Binding | Sickle; Combine Mechanized Twine Binder; Combine |
| Bird-Watching Stands | Bird-Watching Stands; Two-Wheeled Wooden Cart | |
| **II. Processing Attributes** | | |
| Flailing/Animal Treading | Flailing/Animal Treading<br>3' Wooden Blocks | "Wisconsin" Threshing Machine |
| Threshing Sticks | Threshing Sticks: Threshing Machines | |
| Wooden Mortar and Pestle | Wooden Mortar & Pestle; Iron-Covered Mortar and Pestle | Mortar & Pestle; Plantation Huller; Engellery Huller |

| | | |
|---|---|---|
| Wooden Rotary Pit-Mill | Wooden Rotary Pit-Mill (Few Horse- or Steam-Powered Mills) | Engellery Polisher |
| **III. Terrain and Irrigation Attributes** | | |
| Openings in Levee | Openings in Levee; Sluice-Gate and Flume; Horse-Powered "Persian Wheel" Pump; Steam Pump | Steam-Powered Pump (Both Vertical and Horizontal); Intake Pipes; Kerosene Engines; Diesel Engines; Centrifugal Pumps<br><br>*Pump Sheds; Pit Reservoirs* |
| Drainage Canals with Cross-Ditches | Boxed Flumes/Pipes Flume Ditch with Cross-Ditches; Check- or Length-Levees; Cross-Levees Plank Gates | Siphon Flume Ditch Cross-Ditches; Check- or Length-Levees; Cross-Levee Plank Gates |
| Irregularly Configured Fields | Irregularly Configured Fields; Larger, Uniform Field Pattern (Such as the Checker-Board Pattern) | Irregular and Checker-Board Field Patterns (Few Contour Levees) |

that might be represented in the archeological record. Further discussion of the economic conditions effecting these changes are presented in depth elsewhere (Goodwin, Hewitt et al. 1988).

## Archeological Expectations

Several factors affect the archeological expectations for rice cultivation features in the parishes around the project area. First, many of the activities associated with rice production produce no identifiable archeological remains. For example, methods for harvesting and binding rice, as well as the type of plow used for field preparation, are rice production activities which produce no recognizable archeological deposits. In addition, some archeological remains associated with rice production have been masked or destroyed by subsequent agricultural land-uses. Many fields once used for rice cultivation have been modified for other crop production, normally sugar. Canals, cross ditches, and rice levees, once an integral part of rice fields, have been incorporated into sugar fields, filled, or leveled. Finally, numerous natural and cultural activities have modified or destroyed many of the features associated with rice production. These effects are discussed in Chapter X.

Table 16 summarizes those archeological features associated with rice production along the Mississippi River in the parishes near St. John the Baptist Parish. Through an examination of this table, several factors become clear. Most of the archeological expectations are associated with rice irrigation. These include rice irrigation flumes, iron pipes, pump sheds, and various remains associated with the pumps. The farmstead structural remains generally are not associated directly with rice production. Similar structures often were used with sugar or other crop production. In addition, farmers often grew sugar on the higher fields near the river, and rice in the lower, poorly drained fields near the backswamps. In those cases, a "rice" dominated farmstead complex would not develop. Finally, as mentioned earlier, most of the rice field remains would be altered or destroyed through subsequent agricultural activities. In summary, while a variety of archeological remains may be associated with [illegible] rice farms, the majority of those that are likely to be recovered archeologically are related to rice irrigation systems.

## Previously Excavated Rice Features

Until recently, no extensive archeological excavations have been directed toward recording significant aspects of the lower Mississippi River rice industry. The first major excavation of rice industry features below Baton Rouge was conducted at the Vacherie Site (16SJ40) in 1987 (Goodwin, Hewitt et al. 1988). The second was at Willow Bend, 16SJB29, the site recorded during this study. At both of these sites, the recorded rice industry features were associated directly with rice irrigation. As previously discussed, several gravity-fed rice irrigation flumes were excavated at the Vacherie Site. These rice flumes originally passed through the artificial levee, and were typical of the riverine rice flumes constructed between 1850 and around 1890, when technology and laws altered flume construction patterns. One of the rice flumes at Vacherie subsequently was altered to reflect the late nineteenth and early twentieth century pattern for rice flume construction. The 16SJB29 excavations recorded a well-preserved siphon rice irrigation flume, which conformed with the expected pattern for late nineteenth and early twentieth century rice irrigation flumes. Through the recordation of these two sites, along with informant interviews, the most durable types of rice irrigation features, the rice irrigation flumes, have been recorded. In addition, the probable remains of an impermanent pump house or similar structure were recorded at 16SJB29.

## Priorities for Further Research

There are several archeological priorities for further research concerning the rice industry in the river parishes between Baton Rouge and New Orleans. These consist of those archeological features and deposits associated with rice production that have the potential to provide important additional information about that rice industry. Several considerations limit the number of archeological features and deposits which need further archeological examination. These considerations center around the research potential of the site. First, additional examples of those types of rice features which have been excavated

Table 16

## ARCHEOLOGICAL EXPECTATIONS OF RICE CULTIVATION BY PERIOD ALONG THE MISSISSIPPI RIVER

| PRE-1850 | 1850-1890 | 1890-1930s |
|---|---|---|
| I. Farmstead Structures - (Not rice specific; inland from levee.) | | |
| **Small Domestic Residences** - Likely somewhat away from any slave cabins; proximate to barns and sheds; small to moderate house remains; auxiliary structures such as wells and privies; refuse deposits; moderate quantity of artifacts including many kitchen related artifacts; utilitarian through moderately high status wares. | **Small and Large Domestic Residences** - Likely away from slave cabins and production buildings; moderate to large structural remains, auxiliary structures such as wells and privies; kitchen; improved walkways and road; gardens; refuse deposits; moderate to large quantity of artifacts, including many kitchen related artifacts; utilitarian through high status wares. | **Small and Large Domestic Residences** - Set away from former slave cabins, tenant farm houses, and production buildings; small to large structural remains; auxiliary structures such as wells and privies; improved walkways and road; gardens; refuse deposits. moderate to large quantity of artifacts, including many kitchen related artifacts; utilitarian through moderately high status wares. |
| **Multifunctional Barns and Sheds** - Likely near main house or possible slave cabins; large to small structural remains; artifacts primarily architecture, various hardware, and farm production and maintenance equipment. | **Multifunctional Barns and Sheds** - Near slave cabins; large to small structural remains; artifacts primarily architecture, various hardware, farm production, and maintenance equipment. | **Multifunctional Barns and Sheds** - Near former slave cabins, tenant farm houses, or main houses; large to small structural remains; artifacts primarily architecture, various hardware, farm production, and maintenance equipment. |
| **Few Slave Cabins** - Somewhat removed from main house; one or two room structural remains; communal wells and privies; possible small communal kitchen; small quantity of artifacts with high percentage of low socio-economic level artifacts; utilitarian wares. | **Slave Cabins** - Set away from main house and public roads; one or two room structural remains; communal wells and privies; small quantity of artifacts with high percentage of low socio-economic level artifacts; utilitarian wares; linear configuration along plantation road; increased individualism after the Civil War. | **Some Former Slave Cabins** - Set away from main house; one or two room structural remains; wells and privies; small to moderate quantity of artifacts with high percentage of low socio-economic level artifacts; utilitarian wares. |

**Tenant Farm Houses** - Small houses on individually leased land tracts; small multifunctional barns and sheds in vicinity; refuse deposits; small to moderate quantity of artifacts with high percentage of low socio-economic level artifacts; utilitarian wares predominate.

II. Rice Field Remains (Inland from levee.)

**Drainage Canals with Crossditches (for irrigation).**

**Field Configuration** - Irregular

**Drainage Canal with Crossditches (for irrigation).**

**Field Configuration** - Irregular; larger, uniform field pattern (such as the checker-board pattern).

**Rice Levees** - 25 - 50 cm high levees in rice fields used to divide the fields into irrigation sections.

**Plank Gates Between Rice Field Sections** - Located in drainage canals adjacent to rice levees; vertical boards or framework may survive.

**Drainage Canals with Crossditches (for irrigation).**

**Field Configuration** - Irregular; checker-board Field Patterns.

**Rice Levees** - 25 - 50 cm high levees in rice fields, used to divide the fields into irrigation sections.

**Plank Gates Between Rice Field Sections** - Located in drainage canals adjacent to rice levees; vertical boards or framework may survive.

III. Irrigation (Batture and levee remains.)

**Openings in Levee**

**Openings in Levee**

**Sluice Gates** - Located at openings in levee or on boxed flumes/pipes; wood or iron gates on frames may survive.

**Siphon Flumes (such as at 16SJB29)** - On batture, perpendicular to the river.

**Pit Reservoirs** - Normally on riverside of levee; adjacent to boxed flumes, siphon flumes or pipes; often borrow pits.

**Boxed Flumes/Pipes (such as at 16SJ40)** - On batture; passing through levee or into borrow pit.

**Some Pit Reservoirs** - Normally on riverside of levee; may have boxed flumes, pipes, or pump fragments adjacent to reservoir; may use borrow pits.

**Some Iron Pipes** - About 12 inch/30 cm diameter.

**Horse Powered "Persian Wheel" Pump Remains** - Foundation adjacent to water source; associated with ditch or wood trough; precise form unknown.

**Few Steam Engine and Boiler Parts**

**Few Steam Boiler Platforms** - Brick or wood platforms; associated steam engine boiler and parts; iron pipes

**Pump Sheds** - On batture or levee; small foundation remains, possibly made of square or rectangular post arrangement; brick or wood platform for pump; artifacts primarily architectural, machinery parts, and associated equipment.

**Machinery Parts**

**Iron Pipes** - About 12 inch/30 cm diameter.

**Steam Engine and Boiler Parts**

**Steam Boiler Platforms** - Near siphon flume or iron pipes; brick of wood construction.

**Coal and Coal Cinders**

**Pump Sheds** - Brick or wood platforms; associated steam engine boiler and parts; iron pipes.

**Machinery Parts**

archeologically normally do not need to be excavated. For example, through the excavation of both the Vacherie Site (16SJ40), as well as 16SJB29, Mississippi River rice irrigation flumes for both the 1850-1890 and 1890-1930s periods have been recorded; further excavation of similar features is unlikely to provide additional information valuable to understanding of the riverine rice industry. Possible exceptions would include a rice irrigation flume which was exceptionally complete, or one that exhibited a previously unrecorded style.

Another consideration centers around rice irrigation machinery parts, including pieces of steam engines, which would be expected on the batture or levee. Most of these machinery parts probably are not in situ, and cannot be associated directly with specific rice irrigation complexes. Unless these machinery parts are found in their original context, they are unlikely to provide additional information important to better understanding the rice industry.

Several features that formed important components of rice irrigation systems require little more than surface recordation. While the surface relationship of reservoir pits, rice canals and cross-ditches, as well as rice levees may provide useful information about the spatial patterning of rice complexes, extensive excavation of these features is unlikely to provide additional significant information about the rice industry.

Keeping these considerations in mind, there are at least six priorities for further archeological investigations concerning the riverine rice industry in the parishes between Baton Rouge and New Orleans. Three of these are associated with the batture and artificial levees, and three with landward activities. Batture and artificial levee features which are priorities for further research include early water lifting devices, pump sheds, and sluice gates. No early water lifting devices in the parishes under consideration have been identified or excavated. While they would date between 1860-1890, the range and form of these features remains unknown. Likewise, while pump houses were common in the late nineteenth and early twentieth century, they are rarely mentioned in the documentary record, and their archeological remains have not been adequately recorded. Sluice gates were utilized, often with gravity-fed rice flumes, to control the flow of water through the artificial levees, or from borrow pits into the rice canals. Their construction has not been recorded.

The three landward classes of rice industry features and deposits which currently need further investigation are the farmstead domestic and structural complexes, the layout of rice field remains, and the construction of plank gates. Farmstead complexes, including barns and outbuildings, that are related directly to the rice industry, have not been excavated. These should be studied, and compared with sugar plantations and other types of farmstead complexes, to determine any distinctions between the different complexes, and to establish why such differences exist. The spatial relationship of irrigation ditches and rice levees should be examined and compared between sites to determine chronological and regional variations, as well as to identify the factors which caused these variations. In addition, the construction of plank gates, which separated different sections of rice fields, should be recorded to record how the flow of water was controlled between sections of rice fields.

## Landings, Wharves, and Levee Structures

### Introduction

Cultural activity along the Mississippi River batture and levee during the historic period centered around rivercraft landings. As the focal transportation byway, and therefore, the economic and cultural lifeline of the region, the Mississippi River was central to the importation and exportation of people and cargo. The following section presents an archival study of historic Mississippi River landings, wharves, and levee structures that were situated between Baton Rouge and New Orleans.

Landings

In an attempt to discern the types of historic rivercraft landings that were used along the lower Mississippi River during the historic period, an extensive archival search was conducted at the New Orleans Public Library, the libraries and archives at Louisiana State University, Tulane University, The University of Southwestern Louisiana, The University of New Orleans, the Louisiana State Museum, The Historic New Orleans Collection, the New Orleans District, U.S. Army Corps of Engineers library, and in the Special Collections of the New York City Public Library. Despite the exhaustive research, little data were available on the subject. The negative research results were due to the fact that during the historic periods, almost all of the historic rivercraft landings along the Mississippi River were actually flat areas of batture ground, and not structures at all.

During the steamboat era (1825-1910), there were 1,069 recorded Mississippi River landings between Baton Rouge and New Orleans (Cayton 1881:17-35). Of this total number, approximately 22 contained actual landing structures; wharves, ramps, walkways, or platforms (Hunter 1949:346). Hunter (1949), commenting on the published lists of historic river landings including Cayton's 1881 compilation, stated:

> This meant that virtually every plantation touching the riverbank on either side had its own landing. Many of the minor way points enumerated in these lists were hardly recognizable as landings except by the experienced eyes of rivermen.

The dynamic effects riverine processes had upon the delta soils of the Mississippi River batture are not conducive to building substantial structures. Taking this factor into consideration, along with the changing height of the Mississippi River, the explanation of why the historic rivercraft landings along the Mississippi River were almost exclusively flat areas of batture ground becomes clear. Only at crucial landings called "points," where trading posts, churches, or post offices were situated, were landing structures actually constructed. Even store landings were merely flat portions of batture (David Webre, personal communication 1988; and, Casimir Graugnard, personal communication 1988). Jacob A. Dallas, who in 1857 illustrated two articles about the lower Mississippi River for Emerson's Magazine and Putnam's Monthly, wrote, "The rise and fall of the river being so great, permanent wharves are impossible" (Dallas 1857:59). The river boats themselves contained landing ramps or gangplanks, which were simply lowered onto the batture dirt landing. Hunter (1949:350) explained:

> The ease with which steamboats could make a landing at most points along the shore without the aid of docks or wharves of the kind customary on the seaboard added much to the flexibility of steamboat operations while keeping capital investment and expenses low. A few gangplanks or, later, a landing stage were all the terminal equipment required by the western steamboat. Over the gangways deck hands and roustabouts carried cargo between boat and shore where the bare ground served in most instances as the only place of deposit.

Figure 36 depicts a Mississippi River landing with a steamboat being loaded with hogsheads ca. 1890. Where the river was too uneven in height with the riverbank, floating wharf-boats were used (Figure 37). "This [wharf-boat] being tied to the bank, rises and falls with the floods, and is thus safe and convenient. It is the center of activity, and is usually thronged upon the arrival or departure of boats" (Dallas 1857:59).

The Mississippi River landings were places where people congregated. Besides a place for travelers and cargo, the river landings were like mini-markets; some people made their livelihood selling products to the boats such as wood for the steamboat engines, and fresh game and fish. In 1827, William Bullock, traveling upriver on the Mississippi from New Orleans, described a typical steamboat excursion in his journal. He stated, "They [steamboats] generally stop twice a day to take in wood for the engine, when fresh milk and other necessaries are procured, and the passengers may land for a short time" (Bullock 1827:xii). Figures 38 and 39 are sketches by Dallas (1857) depicting a steamboat being loaded with wood, and a Mississippi River woodyard, respectively.

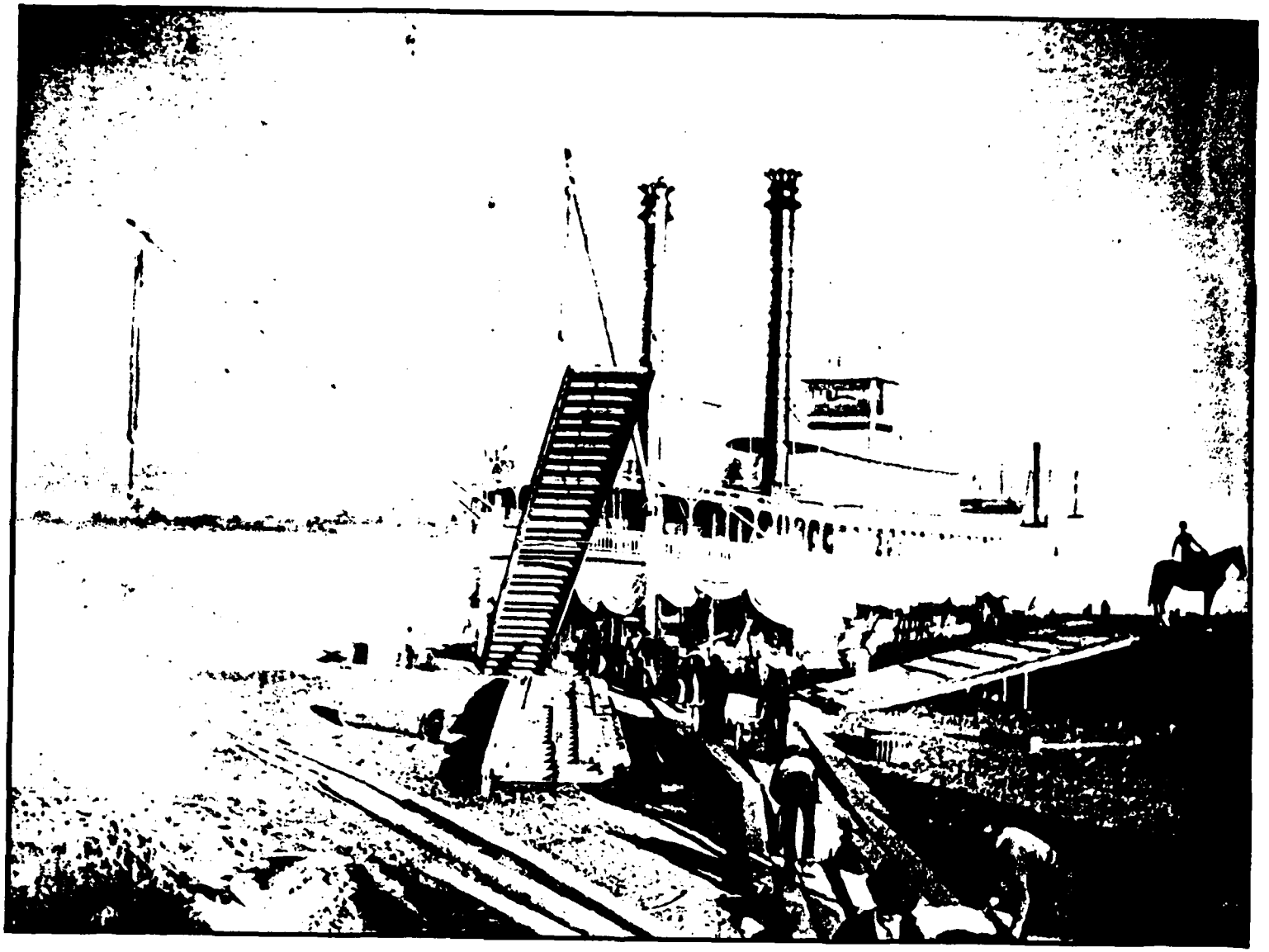


Figure 36. Photograph ca. 1890 depicting Mississippi River landing with a steamboat being loaded with hogsheads (The Historic New Orleans Collection).

Figure 37. Sketch by Jacob A. Dallas entitled "Steamboat Approaching a Wharf Boat." (Published in Emerson's Magazine and Putnam's Monthly, October 1857).

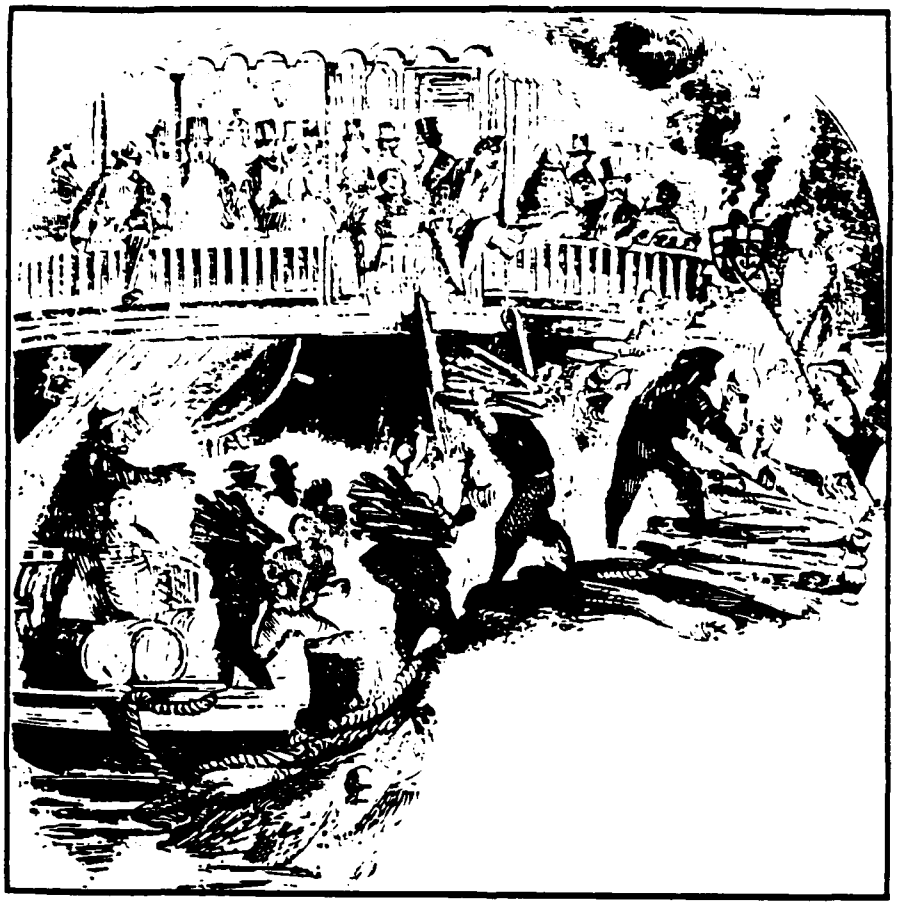


Figure 38. Sketch by Jacob A. Dallas entitled "Steamboat Wooding at Night." (Published in Emerson's Magazine and Putnam's Monthly, October 1857).

Figure 39. Sketch by Jacob A. Dallas entitled "Woodyard on the Mississippi." (Published in Emerson's Magazine and Putnam's Monthly, October 1857).

Of the Mississippi River landings between Baton Rouge and New Orleans, 44 were situated in west St. John the Baptist Parish between river miles 40 and 50 above New Orleans (Cayton 1881:17-35) (Table 17). Often, a plantation could actually have more than one landing. For example, two landings were listed for L. D. Martin's Mathilda Plantation (which later became Columbia). The property had a sugar cane landing called "Mathilda" and a store landing registered as "Martin, L. Souvenir Store" (Table 17). Captain Jesse K. Bell Rea (1882) described how historic landings were named:

> Landings derive their names from several sources: (a) from the name of the person owning the property; (b) from the name given a landing by the owner of the property; (c) from woodyards which supplied steamboats with fuel; (d) from the larger towns along the course of the river; (e) from the small post office stations and stores located between the larger towns; (f) from some physiographic landmark, as a bluff, etc.; (g) from the name of a wrecked steamboat (Rea 1882:527).

Wharves

Figure 40 shows the 22 major historic landing points along the Mississippi River between Baton Rouge and New Orleans. These landing points were plotted according to contemporary Mississippi River directories: The Western Pilot, compiled by Samuel Cummings (1821 - 1859), Conclin's New River Guide (1849), the Journals of Joseph W. Fawcett (1844 - 1892), and Cayton's Landings on All of the Western and Southern Rivers and Bayous (1881). The river directories were published for pilots and boatmen attempting to travel up and down the treacherous "western" rivers such as the Ohio, the Missouri, the Kentucky, and the Mississippi. Some of the descriptions mentioned landing structures. Unfortunately, none of the landings shown in Figure 40 were described. Those landings that were mentioned outside of the region did provide interesting data. For example, in 1844, Joseph W. Fawcett described in his journal a Mississippi River landing in Kentucky:

> The first place we rounded to at on the Mississippi was Mills Point in Kentucky. A few white frame houses, a floating wharf and a long foot bridge from the dry land out to the floating wharf is the sum and substance of this place (Fawcett 1844:16).

Part of the reason historic landings (and therefore associated structures) were not described meticulously may lie in the fact that many of these places were considered disreputable. Fawcett reiterated: "Montgomery Point which is no place at all hardly and only noted for being a favorite place for ruffians and cutthroats" (Fawcett 1844:18). Dallas expressed similar sentiments:

> About these wharf-boats congregate all the idle and good-for-nothing fellows of the town, who having no steady occupation, hope to pick some job which will keep them supplied with the two things needful - whisky and tobacco (Dallas 1857:49).

Although no design information has been recorded on historic landing structures, considering the speed of the Mississippi River currents, the landing structures located at these Mississippi River points most likely were marginal wharves. That is, they were designed parallel to the river, unlike piers which extended perpendicular to the river (Greene 1917). Greene defined the differences between wharves and piers:

> A wharf is a structure at which vessels may land and load their cargos and passengers. It may be either marginal or projecting, but in most localities the name is applied only to marginal structures, thus distinguishing them from piers (Greene 1917:1).

The materials that were used to construct the landing point wharves also were unknown. The historic steamboat warehouse landing at the Tally Ho Plantation in Bayou Goula was a wooden marginal wharf that was positioned on a curve in the batture bankline according to an 1897 levee map (Figure 41). To maintain its stability against the rapid Mississippi River currents, a riprap gravity wall probably was built beneath the water. Greene explains the design and capability of a riprap wall:

Table 17

## LANDINGS LISTED IN 1881 IN WEST ST. JOHN THE BAPTIST PARISH BETWEEN 40 AND 50 MILES ABOVE NEW ORLEANS (Cayton 1881)

| Landings | River Mile |
|---|---|
| Alliance - Schexnyder Bros. | 45 |
| Abadie, F (small profit store) | 50 |
| Ashland or U. Webre | 41 |
| Azlin F. Webre & Company | 42 |
| Becknell, W. M. (store) | 41 |
| Becknell, M. T. widow (store) | 48 |
| Becnel R. H. Bayley & Co. (store) | 47 |
| Bicok Bros. | 46 |
| California - Octave Hymel | 40 |
| Camelia LeBeouf & Russel | 45 |
| Carrol Brandish Johnson | 48 |
| Carre, J. B. | 43 |
| Centennial Store E. Legarre | 43 |
| Chauff, T. | 46 |
| Cheubeau, Dr. J. G. | 41 |
| Dumez & Billon (store) | 42.5 |
| Edgard P. O. | 42 |
| Fruit Plantation or J. G. Moll | 40.5 |
| Goldmine - Octave Hymel | 40 |
| Joseph M. White Camelia Store | 43 |
| Landaiche, or Cooperage Store | 44 |
| Lasergne, A. & Bonnet Carre P. O. | 40.75 |
| Legal Tender Store, or M. Demas | 44 |
| Lopez J. M. St. Eveline Store | 45.5 |
| Marmillion, E. B. & V. B. | 44 |
| Martin L. or Souvenir Store | 45 |
| Mathilda - L. D. Martin | 45 |
| Merrinque, Mrs. A. | 49 |
| Mellet F. Hard Times | 43.5 |
| Rose Place - F. W. Edmonson | 46.5 |
| Rodrigue H. (store) | 40.5 |
| St. Eveline | 45.5 |
| St. Peter's store | 42.5 |
| Tassie's | 46 |
| Tiger Store | 41 |
| To Be or Not To Be Store | 42 |
| Union Store | 48 |
| Webber U. | 40.75 |
| Whiterose - J. B. Caire | 46.5 |
| Whitney - Bradish Johnson | 49 |
| Wendhal, Stevenson, J. | 49 |
| Willow Grove Store | 50 |
| Zachery, Mrs. | 41.5 |
| Zoelley, Mrs. | 41.5 |

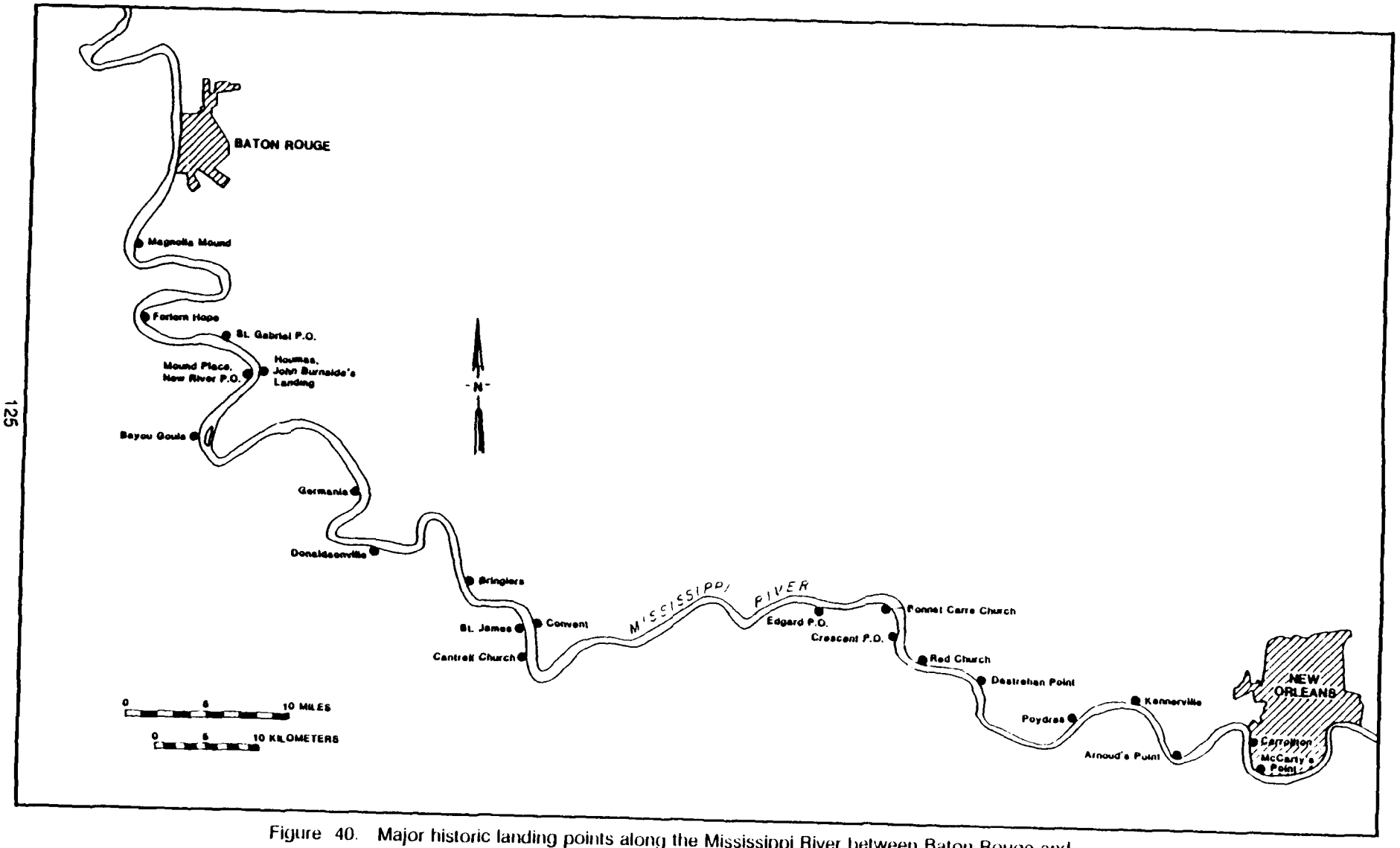



Figure 40. Major historic landing points along the Mississippi River between Baton Rouge and New Orleans (Clayton 1881; Conclin 1849; Cummings 1621-1859; Fawcett 1844-1892).

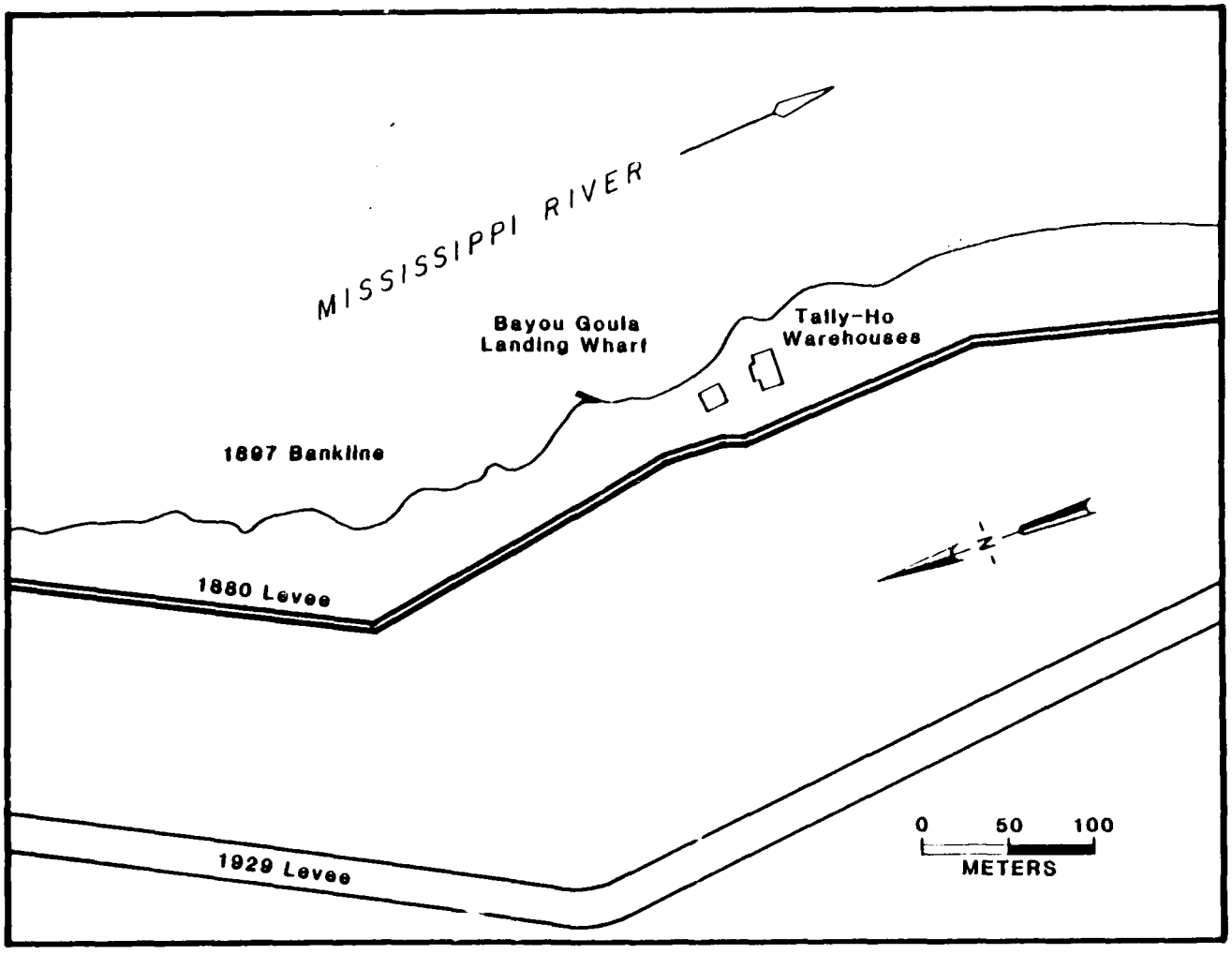



Figure 41. Bayou Goula landing, showing wharf and warehouses (after Board of State Engineers Hanlon Levee Map of Bayou Goula 1897).

> A bank of riprap forms a simple form of retaining wall which cannot be overturned and strongly resists movement by sliding. It is often very much cheaper than a gravity wall of concrete or stone masonry....A riprap wall reduces the required width of the platform, takes a major portion of the earth-thrust, reduces the stresses in the bracing piles or tie rods, and gives lateral support and stiffness to the piles (Greene 1917:49-51).

Figure 42 illustrates the design of the riprap wall and wharf platform. Besides a marginal wharf on the river, the landing area at Bayou Goula maintained a wooden platform that was an extension of the warehouse. The platform was designed to keep the cargo (like hogsheads) dry. It is uncertain when wooden warehouse platforms first were used along the Mississippi River. However, considering the volatility of the rising river, such platforms were probably scarce, were used only on unusually high ground, or were situated away from the river.

Levee Structures

Besides the importation and exportation of people and products, the historic riverbank also was a place of community activity where social functions were held. Between 1880 and 1925, showboats, such as the New Era, and the New Sensation would stop annually at the larger landings and perform for the locals (Bryant et al. 1982; Gaudet 1984). Figure 43 is a photograph of the showboat, New Sensation, situated along a Mississippi River landing. Oral informant Casimir Graugnard talked about the showboats, stating:

> There was never a year that a showboat would not make known its intended arrival and they would present one or two nights of nice, live stage shows and sell a lot of simple things to make money. But they were very interesting. They were very lively (Graugnard, personal communication 1988).

The elevated levee was used as a place for relaxing. Benches and platforms were constructed to watch the boats, and meet family and friends where the night breezes from the river were welcomed (Ferachi et al. 1974:24; Graugnard, personal communication 1988). Marcia G. Gaudet (1984), who compiled the folklore of St. John the Baptist Parish, described the riverbank setting:

> The levee was an important part of the social life along the river. Many property owners built platforms with benches on the levee, with stairs going to the platform. It was there that most of the visiting and socializing took place, especially in the summer months (Gaudet 1984:28).

Figure 44 is a 1906 photograph taken along the river in east St. John the Baptist Parish near Reserve. The photograph shows a levee platform and staircase.

After the great flood of 1927, the maintenance of the Mississippi River levee and batture areas was increased by the U.S. Army Corps of Engineers. Since that time, the levee and batture areas have become restricted; industrial development such as barge moorings and petrochemical pipeline rights-of-way have limited the access to the riverbank areas, while the batture vegetation has grown steadily. The higher post-1927 levees also permanently changed the river vista, further cutting the batture out of daily life. The batture and levee are no longer a communal place of repose for the people living along the various Mississippi River towns.

Priorities for Further Research

The available historical and archeological data indicate that outside commercial centers such as New Orleans and Baton Rouge, few archeological remains of landings, wharves, and structures built on levees have survived. The expected remains are discussed below and summarized on Table 18.

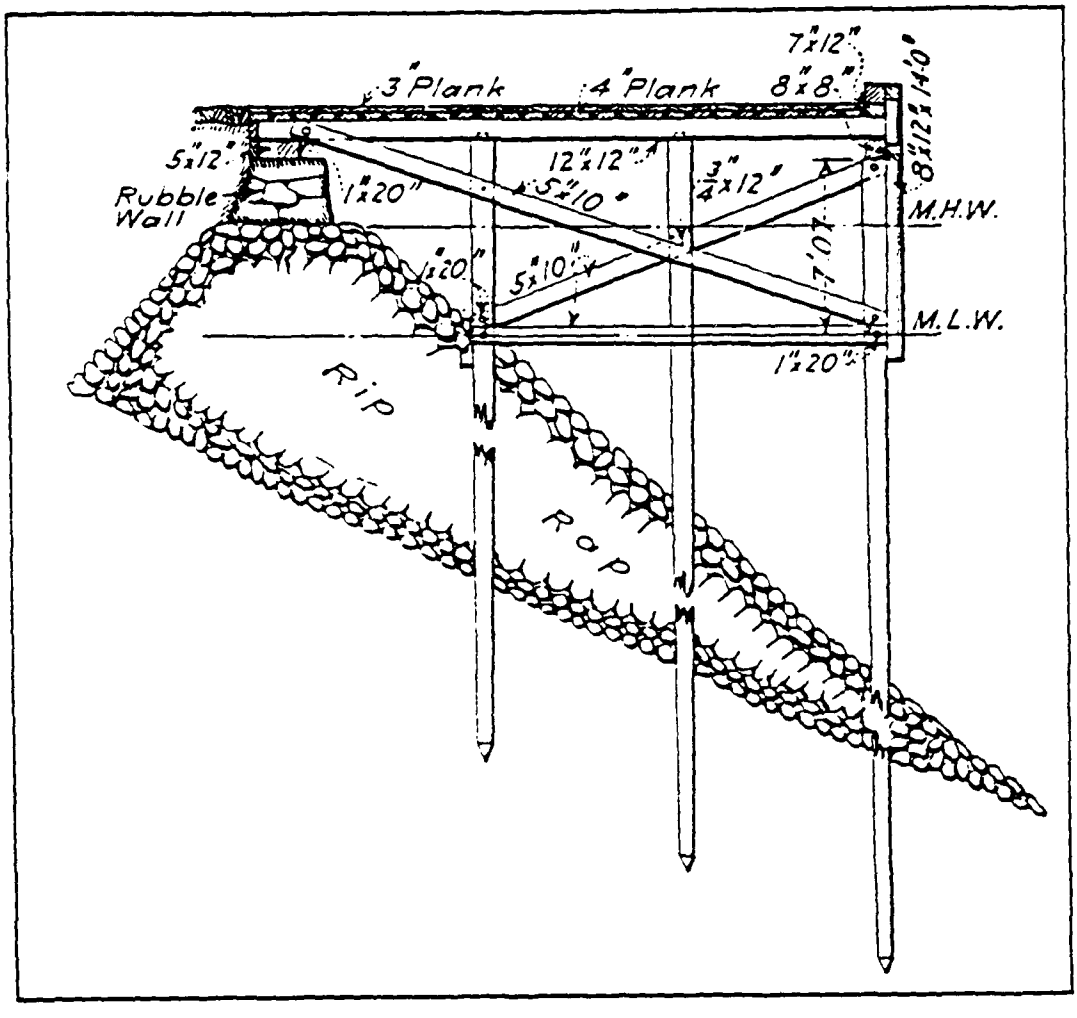



Figure 42. Design for an inexpensive riprap wall with wharf platform (after Greene 1917).

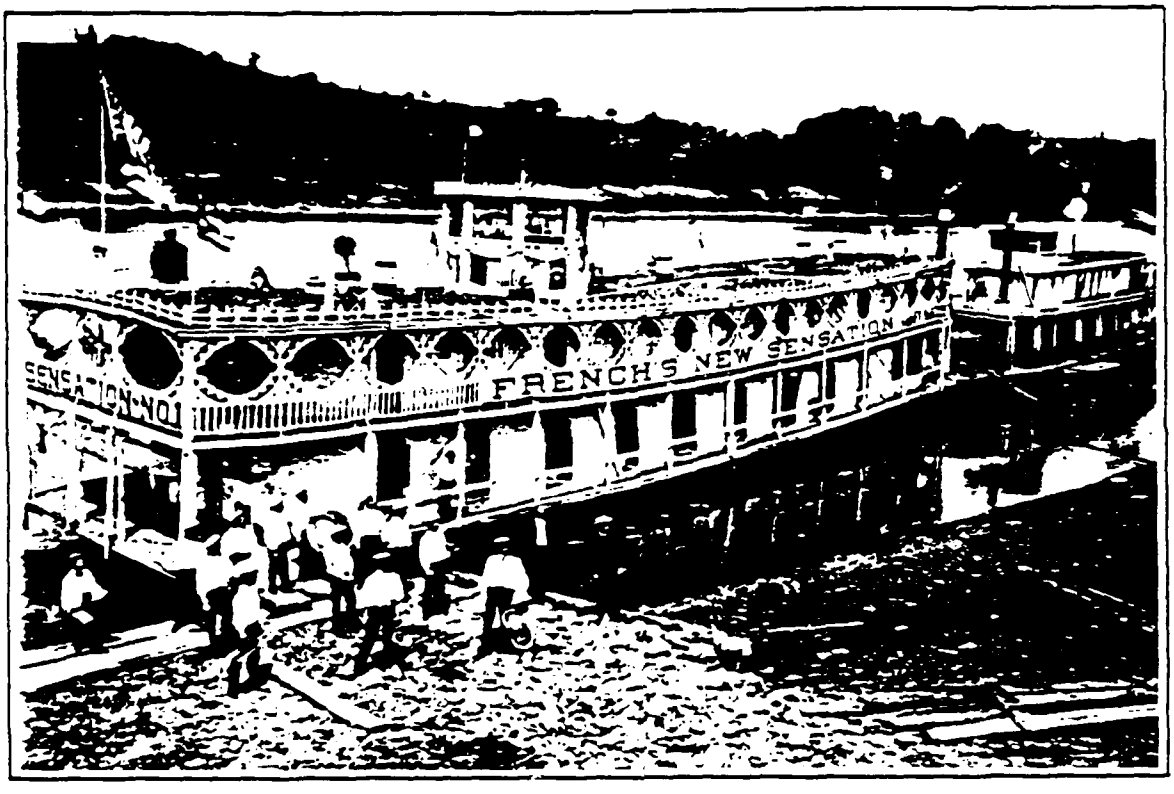



Figure 43. Photograph (no date) showing the showboat "New Sensation." (Steamboat Photograph Collection, Department of Archives and Manuscripts, Louisiana State University).

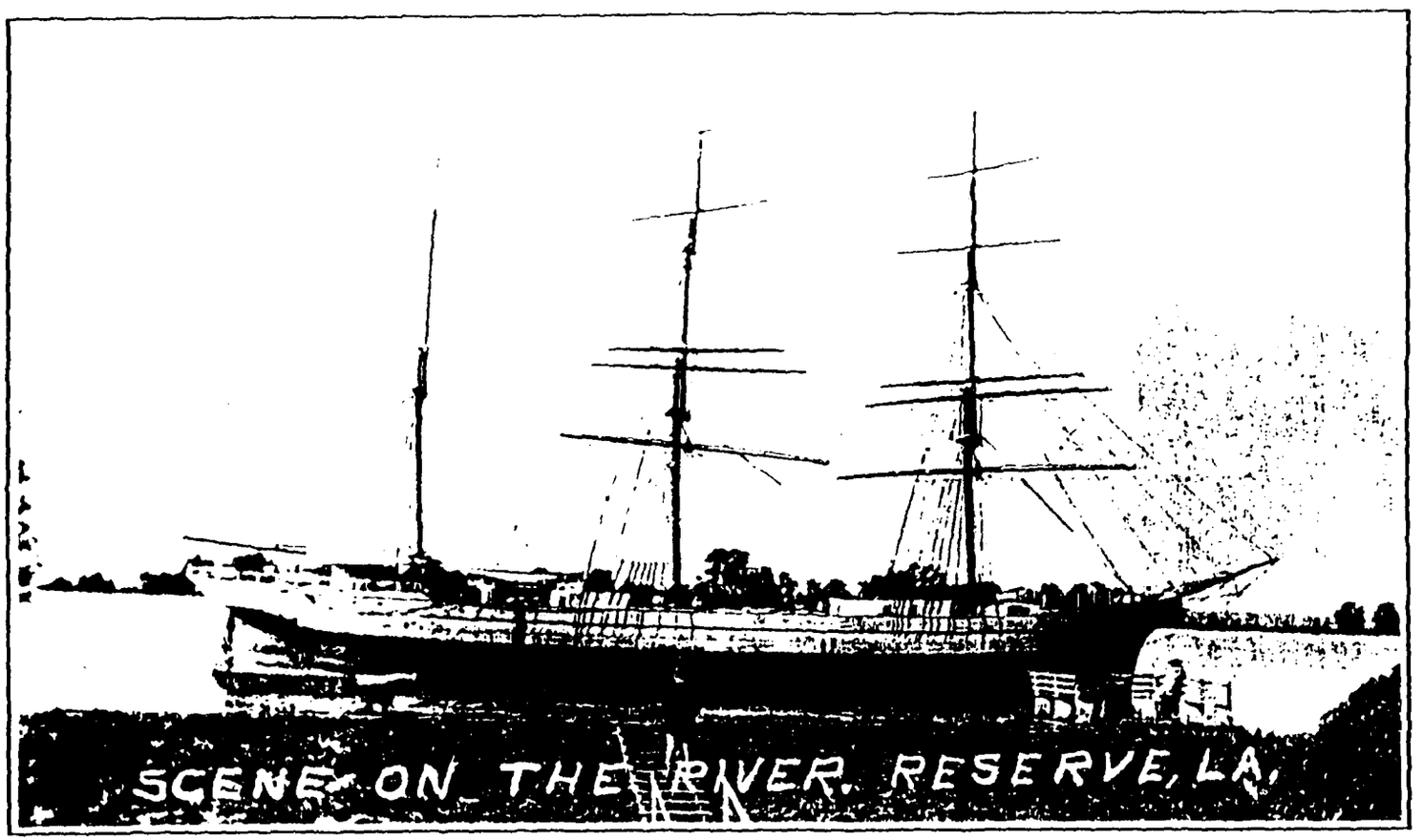



Figure 44. 1906 photograph showing levee benches and staircase at Reserve, Louisiana (courtesy of Bank of St. John, Edgard, Louisiana).

Table 18

## ARCHEOLOGICAL EXPECTATIONS FOR LANDINGS, WHARVES, AND LEVEE STRUCTURES

| Structure Type | Archeological Expectations | Evaluation |
|---|---|---|
| Landing | Normally placed on unimproved batture; occasionally covered with boards; possibly surrounded by refuse. | Normally not identifiable; located examples with archeological deposits should be evaluated, in part, in the context of the site complex. |
| Floating Wharves | At edged river; constructed of moored boats and barges; possibly stripped of much equipment; most destroyed, but remains on accreting bank possible. | Potentially significant, if located, priority for further research. |
| Marginal Wharves | Series of posts along edge of river, normally at an historically important point; possibly secured by riprap. | Intact examples potentially significant; remains should be evaluated, in part, within context of site complex. |
| Warehouses on Batture | Brick or wood foundation remains near historically important point; few valuable fixed remains (annual flooding); numerous architectural artifacts; may include numerous commercial artifacts. | Potentially significant; priority for further research. |
| Batture Platforms by Landings | Remains of boats or barges on batture; simple wood platforms; square or rectangular arrangements of posts; few associated artifacts expected. | Should be tested to provide the empirical data necessary for evaluation. |
| Structures on Levees | Located on levees; wood platforms on top of levee; stairways upside of levee; bench remains; some refuse. | Those located on abandoned levees should be tested to provide the empirical data necessary for evaluation. |
| Historic Artificial Levees | One to two meter high levee remains, expected on accreting or stable bank, or adjacent to cut-off lakes; most likely destroyed through natural and cultural processes. | Eighteenth and early nineteenth century levees are potentially significant; located examples should be evaluated. |

| | | |
|---|---|---|
| Historic Revetments | Located on the riverbend or within accreting bank, brush or wood revetments anchored with riprap or other material; early concrete, asphalt, brick, or other experimental revetments. | Late 19th and early 20th century experimental revetments are potentially significant; located examples should be evaluated. |

As previously discussed, most landings were emplaced on bare, unimproved batture. The locations of these landings were determined by need, and often changed from year to year. Such temporary landings to date have produced no discernable archeological evidence other than small amounts of refuse. Some of the more permanent landings, such as store or ferry landings, that were improved with board planking and walkways, may survive archeologically. While these remains should be recorded during initial site testing, in and of themselves they are not significant cultural resources. The role of individual landings within the economic development of specific land holdings may warrant additional historical research. However, because of the virtual lack of substantive archeological remains, landings themselves are not priorities for further archeological investigation.

Wharves rarely were constructed within the rural river parishes. The few that were constructed were located at the major landing points along the river, near post offices, stores, and other commercial centers. These wharves included both floating wharves and marginal wharves. Floating wharves consisted of barges or boats secured to the shore, with plank walkways extending onto the batture. There is no evidence to indicate floating wharves were constructed for that purpose. Rather, they were old vessels which no longer were used for riverine transportation. While useful equipment likely was removed from the vessels when they were transformed into floating wharves, the other attributes of the vessels remained virtually unchanged. Because of their placement within the dynamic Mississippi River, these floating wharves would have left few, if any, archeological remains. Any which have survived likely are located along or within an accreting bank, where they would be protected from the damaging river currents. While unlikely, recovered vessels could be identified by their location at a historically recognized point or by positive vessel identification. Historic ships, boats, and barges are identified within Louisiana's Comprehensive Archaeological Plan (Smith et al. 1983) as important archeological resources. Any historic vessels, including remains of floating wharves, located during archeological surveys are potentially significant cultural resources, and are priorities for further archeological investigation.

Wooden marginal wharves consisted of posts driven into the river bed, and secured with riprap. If the superstructure of an historic marginal wharf survived, it certainly warrants architectural recordation and additional historical research. Where the lower portions of marginal wharves have survived, they must be evaluated within the context of the landward associations. These wharves did not exist within a vacuum, but rather formed a vital link within an extended site complex. Warehouses, platforms, stores, post offices, commercial centers, plantations, landings and wharves, and nonstructural activity areas all formed interrelated parts of site complexes. During the evaluation of wharf remains, a portion of the evaluation must consider the research potential of the wharf within the entire site complex. While wharf remains may not possess the quality of significance in and of themselves, they may form significant contributing elements within a site complex.

Warehouses located on the batture adjacent to landings and wharves may be important resources. These warehouses were used primarily for storing agricultural commodities such as sugar and rice prior to shipment. While few have been documented, they likely were associated with plantation complexes. For example, Tally-Ho Plantation had two warehouses adjacent to the Bayou Goula landing wharf during the late nineteenth century (Figure 41). Warehouses such as these were important components of the local economic network that have not been examined archeologically. The excavation of such a warehouse could provide important information concerning the transportation of goods from plantations to commercial centers such as New Orleans and Baton Rouge. This class of structures represents a priority for further archeological investigation.

Some platforms were located on the batture adjacent to landings and wharves. These platforms provided a dry place for the temporary storage of goods. Some were simply old boats and barges dragged onto the batture; little archeological evidence of these structures has survived. Simple wooden platforms also may have been used. While archeological remains of these platforms may be extant, these types of structures have never been tested archeologically, and the nature of associated deposits is unknown. It is probable that the archeological deposits associated with these platforms are not significant resources. However, located platforms should be tested to provide the empirical data necessary for evaluation.

Historic structures on levees included benches, platforms, and stairs. These structures were important to the social life of the local communities. These structures never have been recorded archeologically. It is probable that archeological investigation of these structures beyond the initial site location and recordation stage would not provide important information about the area's historical development. However, examples on abandoned levees should be tested to verify whether or not these structures possess the quality of significance.

Finally, while discussed more fully in Chapter X, some levees themselves, along with early revetments, are potentially significant cultural resources. Most eighteenth and early nineteenth century levee construction was unregulated, and little is known about their form or construction. Archeological investigation would provide important information about these levees, and the adaptation of levee construction techniques to the natural setting and the economic resources of landowners. Late nineteenth and early twentieth century revetments have not been examined archeologically. These early experimental revetments were constructed in a wide variety of forms which have not been recorded adequately. Archeological excavation would provide information about the historical development of these revetments, and their long-term effectiveness.

In summary, historic landings, wharves, and levee structures were an important part of rural life along the lower Mississippi River. However, these activities and structures produced few important archeological remains. Landings normally were placed directly onto the batture, leaving few, if any, archeological deposits. The occasional wharves either were floating wharves, which normally left no archeological trace, or marginal wharves. While nearly intact historic marginal wharves may be significant, the surviving lower posts must be evaluated, in part, within the context of the site complex of which they are a part. Warehouse remains have not been recorded archeologically, and are a priority for further testing. Batture platforms associated with landings, and structures on abandoned levees such as stairs and benches, have never been recorded archeologically. Examples should be tested to provide the empirical data necessary for evaluation. Finally, an attempt should be made to locate early artificial levees and experimental revetments through records research, correlating documented locations with bankline changes and subsequent construction. Any in situ examples of these site classes would provide important information about earlier construction techniques.

# CHAPTER X

# THE EFFECT OF GEOMORPHIC AND CULTURAL PROCESSES ON BATTURE FEATURES

## Introduction

In the previous chapter, the primary economic activities that directly affected the batture near St. John the Baptist Parish were discussed, as were anticipated archeological remains from those activities. However, many of these features have been damaged or destroyed. In this chapter, the effects of geomorphic and cultural processes that have affected batture features are described. These processes include natural riverine processes, flood control and river management construction, industrial development, and the effects of the towing and shipping industry. In the following sections, each of these processes is discussed to enable archeologists to anticipate better the current state of archeological remains on the batture.

## Natural Riverine Processes

Basic riverine processes and the formation of the natural levee were discussed in Chapter II. This section examines those processes that directly affect archeological resources on the batture. Alluvial deposition, lateral migration, and crevasses are the primary riverine processes that affect archeological sites.

Alluvial deposition refers to those sediments deposited by the river during periods of overbank flooding. Historically, the river rose during the annual spring floods overflowing its normal banks. As it rose, the river slowed and deposited suspended sediments, resulting in the formation and building of the natural levee.

Natural alluvial deposition has been altered by artificial levee construction. Flood waters that once inundated the natural levee now are confined to the river and the batture. This has had several effects. During overbank flooding, the artificial levees confine the river to an artificially narrow course. Since the river cannot spread across the broad natural levee, its speed during floods is considerably faster than it was prior to artificial levee construction. Therefore, much of the sediment load that previously was deposited on the land now is dumped at the mouth of the river.

These processes directly affect the archeological record. Prior to artificial levee construction, the cumulative effects of alluvial deposition were considerable. However, the artificial levees have protected the land behind the levees from inundation, and therefore from substantial alluvial deposition; this has decreased the amount of alluvial deposition on the batture (Elliott 1932:124-125). Where there has been substantial sediment deposition on the batture, though, it has obscured archeological deposits, often making them difficult to find using standard archeological survey techniques.

The Mississippi River is a meandering river. Meandering is a dynamic process that results in lateral migration of the river in a downstream direction. This lateral migration includes both the cutting of banks and downriver accretion. This process is controlled by the poised nature of the river. In other words, the Mississippi River has no apparent overall tendency to either aggrade or degrade its channel; it generally carries as much sediment to the Gulf as is brought in by its tributaries. Therefore, the sediment added to the river through cutting and caving is deposited on an aggrading bank within a fairly short distance. In effect, sediments are "traded" from caving banks to downriver bars. The formation of these bars is dependent on the volume of sediments deposited into the river by upriver caving banks. This, in turn, is dependent on the local characteristics of the alluvium (Fisk 1943:37-39; Walters and Simons 1983:321).

The primary factors governing cutting and accretion are the speed and direction of the river. At a bend in the river, the concave bank, where the river is forced to turn, is subject to cutting. The river moves faster in that area as it is turned by the riverbank to a new direction. In addition to cutting the bank, the river also scours the riverbed adjacent to the cutting bank, deepening the channel. Sediments cut from the bank

and riverbed are held in suspension until the river slows and they gradually are precipitated. This is normally occurs at point bars, along the convex bank at the next river bend, or at a crossing bar, which may form on the riverbed along a straight reach. The overall effect of these processes is to change the course of the river gradually (Elliott 1932:122-123).

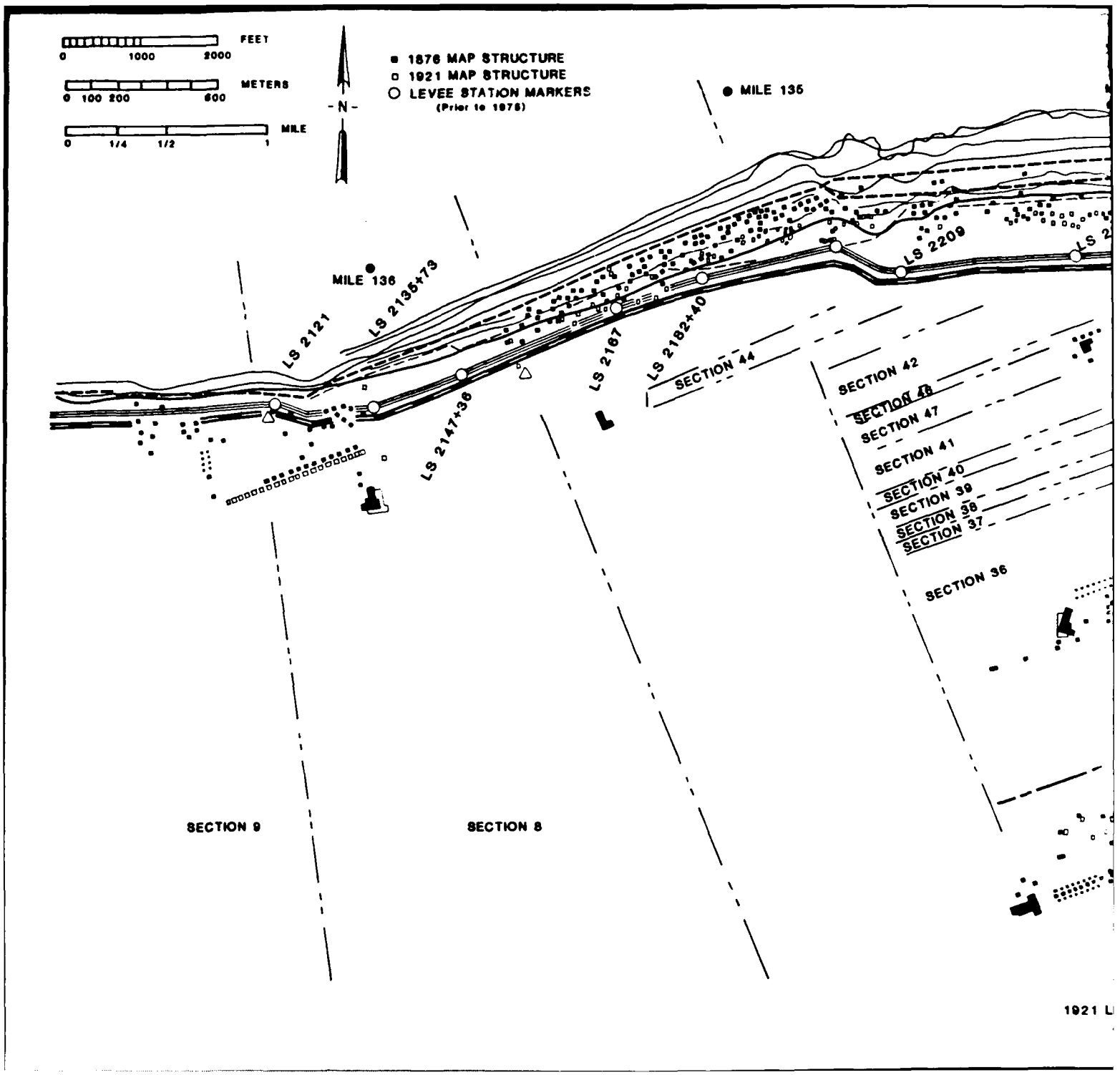
The lateral migration of the Mississippi River clearly affects archeological deposits adversely. Figure 45 is a composite map of a portion of the Mississippi River a few miles downstream from Site 16SJB29. This composite graphically illustrates a century of changes in the bankline. Between river miles 134-135, the river cut the bank up to 325 m, while just downriver, around a bend, the bank has aggraded up to 500 m. All of the archeological resources along the cut bank to the modern bankline have been destroyed. For example, two wood wells (16SJB24, 16SJB25), which originally were well inland from the river, were excavated in 1979 just prior to erosion into the river (Garrison 1981); associated archeological deposits undoubtedly were destroyed prior to recordation. On the other hand, archeological remains located on the aggrading bank have been covered with a considerable amount of sediment, making their discovery and possible recordation unlikely. Resources which are buried under thick deposits of sedimentation rarely are identified. While the effects of lateral migration vary along the river, river bank migration is an integral part of the continuing development of the river and it is a major factor in site destruction.

Crevasse channels and splays are associated with both the natural and the artificial levee systems. During periods of flooding, the river places great pressure on the levee system. As water levels begin to drop, the super-saturated levee can become unstable (Newton 1987:40). This instability can result in the formation of small breaks or ruptures in the levee; these are known as crevasse channels. These channels extend away from the main course and allow floodwaters and sediments to pour through the opening into the backswamp where fluvial features are formed. Crevasse channels generally are shallow. They are characterized by broad natural levees. In addition, crevasse channels generally function like distributary channels, albeit on a much smaller scale. The localized nature of crevasse channels stems from the fact that these channels generally receive flow only during periods of flooding (Smith et al. 1986:13). Most crevasses are filled quickly with sediment dropped from the flow as it passes out of the main river course into the backswamps (Newton 1987:40-41).

Crevasse splays are associated directly with crevasse channels. As water moves through the crevasse opening to the backswamp, large quantities of coarse grained sediments are deposited at the distal end of the crevasse channel. As the stream leaves the confines of the main channel, sediments are dropped in a distinct triangular or fan-shaped formation in a direct response to the lack of defined course (Smith et al. 1986:14).

Crevasses have several effects on the archeological record. The channels scoured by crevasses can destroy archeological sites over which they pass. The sedimentation associated with a crevasse can cover a site, potentially preventing its identification. In addition, the extensive destruction of property that can occur during crevasse formation often influences the nature of the archeological record. For example, crevasses that occurred during the 1927 flood contributed to the termination of rice production in the Willow Bend area by thrashing the rice in the fields, destroying the year's crop. Following the flood, the local farmers began planting the more durable sugarcane (Harold Dutreix, personal communication 1988). This resulted in the abandonment of rice irrigation systems. Finally, crevasses require additional levee construction, normally a setback, which further impacts cultural resources.

Alluvial deposition, lateral migration, and crevasse formation all affect the archeological record. Alluvial deposition and crevasse formation deposit layers of sedimentation onto archeological deposits, obscuring the locations of these deposits. Lateral migration destroys sites through cutting and erosion and covers sites through aggradation. These processes substantially alter the batture, and adversely affect archeological remains. Although riverine processes affect the morphology of the Mississippi River batture, flood control and river management construction have begun to exert more profound changes on the batture during the last century.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METERS
0 100 200 600
MILE
0 1/4 1/2 1
- N -
1876 MAP STRUCTURE
1921 MAP STRUCTURE
LEVEE STATION MARKERS
(Prior to 1978)
MILE 135
MILE 136
LS 2121
LS 2135+73
LS 2147+36
LS 2167
LS 2182+40
LS 2209
SECTION 44
SECTION 42
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SECTION 37
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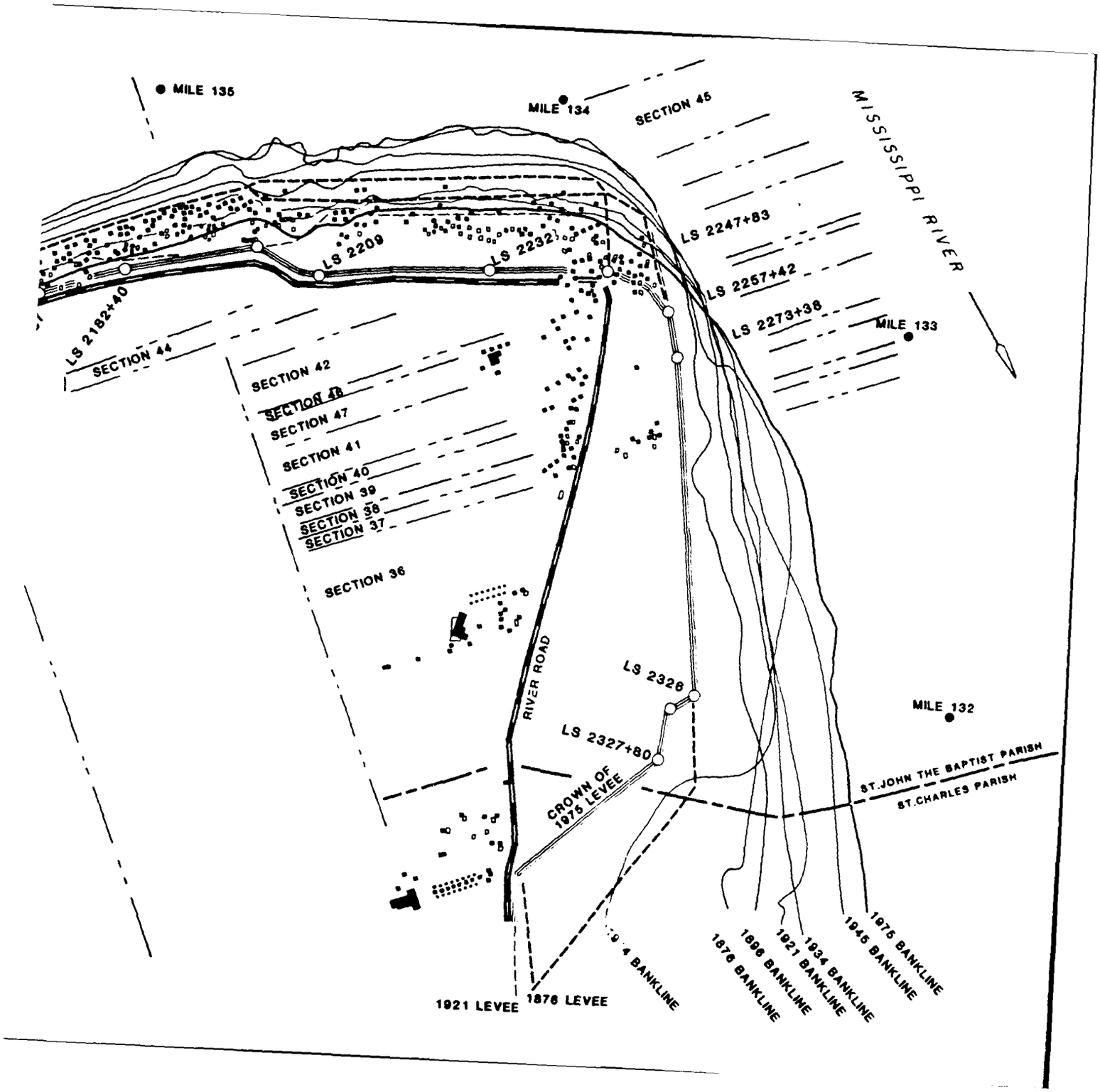
SECTION 9
SECTION 8
1921 L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SECTION 44
SECTION 42
SECTION 43
SECTION 47
SECTION 41
SECTION 40
SECTION 39
SECTION 38
SECTION 37
SECTION 36
RIVER ROAD
LS 2326
LS 2327+80
MILE 132
CROWN OF 1975 LEVEE
ST.JOHN THE BAPTIST PARISH
ST.CHARLES PARISH
1921 LEVEE
1878 LEVEE
1878 BANKLINE
1896 BANKLINE
1921 BANKLINE
1934 BANKLINE
1945 BANKLINE
1975 BANKLINE

## Flood Control and River Management Construction

Review of Historic Flood Control and River Management Construction. Levee construction along the Mississippi River began about as early as the settlement of New Orleans. The first levee was completed in 1727, ten years after the establishment of the city. This early artificial levee was 5400 feet long, 3 feet high, and 18 feet wide. It included a road on its crown. Throughout the eighteenth and into the nineteenth centuries, similar small levees were built along the Mississippi, keeping pace with the spread of riverine settlements. While their construction was required by law, levee construction methods were not standardized until the 1840s, and there was little official inspection to insure the quality of the levees. The design and method of construction were determined largely by the individual landowners, who were not trained to build adequate levees and who were not reimbursed for their expenses. As a result, the quality of the levees varied considerably. Breaks in the levee were common and floods often cut crevasses through the levee system, flooding the lands behind them. In addition, the low levee system was unable to contain high flood waters. Thus, the early Mississippi River levee system generally was in a poor state of repair (Humphreys and Abbot 1867:80-83; Elliott 1932:159-163, 172).

During the nineteenth century, there was increasing state and, after the 1870s, Federal control of levee construction. By the late 1840s, Louisiana passed laws that attempted to regulate levee construction statewide. In addition to regulating levee maintenance, these statutes specified several required construction details. Minimum dimensions and minimum levee distance from the river were given; these depended upon the height of the levee, and on the stability of the river bank, respectively. According to the revised 1856 Louisiana statutes, borrow pits were required to be on the riverside of the levee, at least 20 feet from the riverside levee toe. Landowners were required to repair holes in the levee. In addition, newly constructed or rebuilt levees were to be fascined on the river side face with palmetto or pickets (Humphreys and Abbot 1867:84-87, 90-91). This wood facing placed in front of the levees was an attempt to protect the levees from riverine erosion. While these laws were not strictly enforced, they were the first steps towards a standardized levee system that eventually guaranteed the quality of the system.

Beginning in the 1850s, the Federal government began to play an increasing role in Mississippi River maintenance and flood control construction. Two important federal reports written prior to the Civil War discussed the need for a comprehensive Mississippi River flood control and navigation management system. The first of these was a report by Charles Ellet, Jr. (1852), contained in Report of the Secretary of War Communicating Reports in reference to the inundations of Mississippi River. The second, written in 1861, was Report Upon the Physics and Hydraulics of the Mississippi River (1867), by A. A. Humphreys and H. L. Abbot. This report presented a plan for securing the natural levee from inundation and for improving the river for navigation. Little immediate action was taken in response to either of these reports. However, the devastating 1867 and 1874 floods underscored the need for federal involvement in both flood control and navigation improvement. In response to the 1874 flood, the "Levee Commission" was formed by the government to study the problem and to make recommendations for improving the levee system. The Levee Commission issued its report in 1875. They found the Mississippi River levee system defective for five major reasons: a severely flawed organization; insufficient levee grades; poor construction and improperly selected cross sections· faulty location; and, an insufficient system for inspection and guarding. They prepared a cost estimate for repairing the levee system, but emphasized that the repaired system still would be unsatisfactory. Rather, they recommended that a permanent levee system be constructed, at over thirteen times the cost of repairing the old system (Elliott 1932:162). No attempt was made by the government for several years to act upon these recommendations.

In 1879, the Federal government became directly involved in Mississippi River flood control construction and navigation improvement through the formation of the Mississippi River Commission (MRC). Although it was responsible for most of the Mississippi River levee system, until 1917 the MRC was allowed to spend monies solely on projects that aided river navigation. The construction of levees did confine flood waters within the river channel, scouring the channel, and improving it for navigation. However, the restriction hampered the efforts of the MRC to construct a permanent levee system that protected surrounding areas from floods. With this restriction removed, the MRC was able to implement further flood control construction along the Mississippi (Elliott 1932:163-170).

The flood control acts of 1917 and 1928 substantially increased the jurisdiction of the Federal government over flood control and river maintenance construction. In addition to authorizing the construction of levees by the MRC, it also required that local interests pay at least a third of construction costs, and furnish all rights-of-way. Under the 1928 Flood Control Act, all construction costs were assumed by the United States; levee boards were responsible for obtaining rights-of-way and for developing a levee inspection and maintenance system. Through these acts, especially the 1928 act, many of the activities of local levee boards were assumed by the U.S. Army Corps of Engineers (Elliott 1932:170; Harrison 1961:101-102; Shannon et al. 1988:65).

Artificial Levee Construction. Until the late nineteenth century, levee construction was a laborious task, done by hand, using wheelbarrows. A system developed in which plank runways, supported by three-legged timber supports, extended from the borrow pits to the levee. Borrow pits were placed on either side of the levee, wherever convenient. It proved uneconomical to transport fill over 75 feet, so most borrow pits were proximate to the levees. With this method of construction, a skilled laborer could move ten to twelve cubic yards of fill per day (Elliott 1932:182).

After the Civil War, state, and later Federal regulations required new and enlarged levees to be much more substantial than earlier levees. This required considerably more dirt and increased the need for more efficient earth moving machines. Scrapers were developed which were drawn by a team of horses; these systems enabled a scraper outfit to move 35 to 40 cubic yards of dirt per team-day over twice the distance. This system was used into the twentieth century, but it was superceded by more efficient machines early in the century. By the 1930s, these small scrapers were used only for dressing the levees (Elliott 1932:182-183).

The late nineteenth and early twentieth century use of dump wagons allowed dirt to be hauled from considerable distances. These wagons, which held from six to ten cubic yards each, were loaded with elevating graders. While both were drawn initially by teams, by the early twentieth century both were mechanized. This substantially increased the efficiency of the system. By the 1930s, these wagons and dump trucks were loaded by draglines. The use of this equipment increased the speed of levee construction, and decreased the cost (Elliott 1932:183).

As the rate of levee construction increased during the late nineteenth and early twentieth century, the development of large levee construction equipment also progressed. Between 1892 and 1914, several experimental levee construction machines were developed. These machines ranged from hydraulic dredges to revolving cranes. The information gained through these experiments enabled the development of more effective machines (Elliott 1932:183).

Damage caused by the floods of 1912 and 1913 resulted in the MRC adopting the 1914 levee section. This section was much more massive than previous section standards, and its construction necessitated the development of larger equipment. Two types of machines were developed that proved effective and efficient; these were the dragline and the tower machine. The dragline, which is still in use, is a revolving crane with a large bucket. By the 1930s, some draglines were capable of operating six cubic yard buckets over a 175 foot radius. The tower machine was a slack cableway suspended between two towers, which were mounted on self-propelled platforms. The head tower, located on the land side of the levee under construction, included the operating machinery. It was up to 135 feet tall. The tail tower, on the river side of the borrow pit, was no more than 40 feet tall. The bucket on the cableway, which was pulled from the tail tower toward the head tower, was dragged through the borrow pit to fill with dirt. Once filled, the bucket was pulled along the cableway to the levee under construction, where it was dumped. The bucket then was run by gravity back to the tail tower, to repeat the process. By the 1930s, a tower machine with a ten cubic yard bucket could average up to 8000 cubic yards in a double shift day. While new standards were adopted in 1928, the use of draglines and tower machines in multiples met them by increasing the distance and elevation the dirt could be transported (Elliott 1932:183-184).

Beginning in the early 1930s, hydraulic dredges were used effectively for some levee construction. Fill from the river was dredged onto the levee under construction. The saturated fill was contained with dikes, and the river water was allowed to flow back to the river through outlets. Once the dredged fill had

settled and dried, it was shaped to grade and section using dry-land methods (Elliott 1932:185).

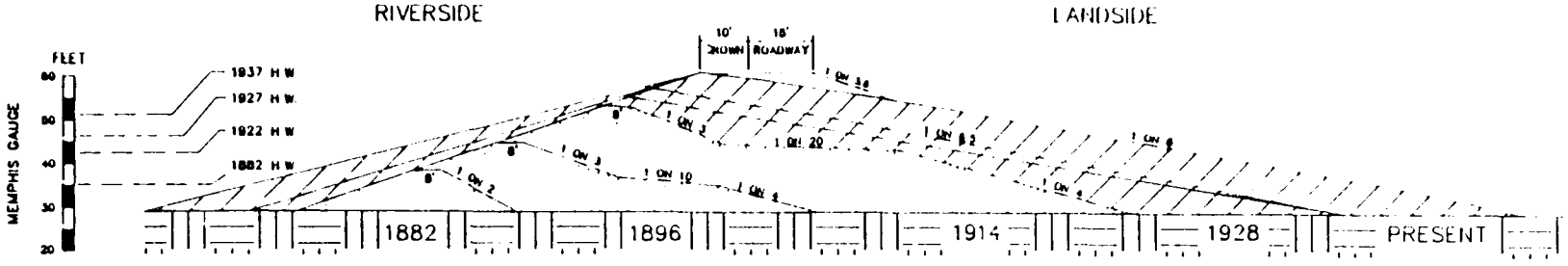
As early as 1882, the MRC established Federal standards for levee construction. While the MRC standards were not law, and their implementation could not be required for privately funded levee construction, all levee construction that was funded in part by the federal government adhered to these standards. These standards were modified several times to incorporate knowledge gained through years of experience. Most of these changes concerned levee grades and sections.

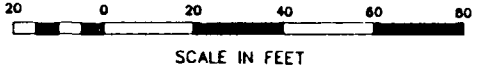
A standard practice for levee foundation preparation developed over the years. By 1932, this standard practice included the following specifications. The entire levee foundation was stripped of vegetation, including the adjacent five feet. All organic debris was removed, and all roots over 1.5 inches (3.7 cm) in diameter were removed to a depth of six feet (1.8 m). The levee foundation ground was grubbed (plowed) to promote bonding between the levee and the foundation. An inspection, or muck, ditch was excavated, normally along the centerline of the levee. This ditch was six feet wide at the top, four feet wide at the bottom, and six feet deep. All logs and other organics were removed from the muck ditch and it was then backfilled. This ditch was dug to remove organic materials from the foundation and to intercept foundation drainage. All ditches, pits, and depressions within 100 feet of the landside toe of the levee, or within 40 feet of the riverside toe, were filled to grade. Cypress stumps, which were very difficult to remove, normally were removed by blasting. When these stumps were on weak foundations, they either were loosened and split with weak explosives or were left in place. All other stumps were removed. When a levee was enlarged, the same procedures were followed, except that muck ditches normally were not dug into the older levee. In addition, the cap usually was placed on the riverside edge of the old levee, to decrease the plane of weakness between the old and new portions of the levee (Elliott 1932:175-177, 181, 187).

While borrow pits originally were dug wherever it was convenient, by the late nineteenth century borrow pit specifications were standardized. In most cases, the late nineteenth and twentieth century borrow pits were placed on the river side of the levee, and separated from the levee by a wide berm. This prevented foundation seepage, which otherwise might occur. According to the 1932 standards, borrow pits were at least 40 feet from the riverside levee toe. They were rather shallow and their bottoms sloped toward the river. Any borrow pits needed inland from the levee were placed at least 100 feet from the landside levee toe, were shallow, and sloped very gradually away from the levee. Traverses, about 14 feet wide on top, normally were kept between borrow pits to prevent harmful currents during floods. In addition, cuts toward the river were placed in the borrow pits to prevent the accumulation of standing water that could undermine the levee (Elliott 1932:180-181).

From 1882 to present, the MRC has gradually increased the section of the standard levee to contain increasingly high flood water levels (Mississippi River Commission 1972:87-88) (Figure 46). This larger section has required the use of larger equipment and the excavation of more extensive borrow pits, and it has resulted in more sites being covered by the levees. Also, the larger levees borrowed dirt from older levees, destroying most earlier examples. Finally, levee construction and subsequent setbacks have required razing of structures, removal of structures, separation of architectural from subsurface archeological elements of sites, and the destruction of context of the moved structures. While necessary for flood control, the larger section has increased the adverse effect of levee construction on archeological deposits.

Revetment Construction. In addition to artificial levees, revetments are used to control the flow of the Mississippi River. These revetments serve four functions: the prevention of cut-offs; navigation improvement; improvement of river harbors; and, levee protection. To be effective, they must extend well into the river, protect against subaqueous scour, and have reasonable permanence (Elliott 1932:225-226). There are two sections to a revetment. The lower portion is a continuous, flexible pavement laid into the river and onto the lower bank to inhibit riverine scouring of the river floor and bank. The upper portion covers the upper bank to inhibit erosion. The effectiveness of modern revetments was achieved only through many years of experimentation. A detailed account of the historical development of revetments has been presented elsewhere (Robinson and Ethridge 1985:276-354; Elliott 1932:225-255); it is summarized briefly below.




DIMENSIONS OF CROSS SECTIONS

| YEAR | HEIGHT FEET | BASE WIDTH FEET | AREA SQ. FEET |
|---|---|---|---|
| 1882 | 9.0 | 53.0 | 274 |
| 1896 | 15.5 | 120.5 | 951 |
| 1914 | 24.0 | 200.0 | 2455 |
| 1928 | 27.0 | 260.0 | 3645 |
| PRESENT | 30.5 | 315.0 | 4956 |

Figure 46. Evolution of the standard levee section, 1882 to 1972. (From Mississippi River Commission 1972:Figure 25).

There are two basic types of subaqueous revetments: mattresses made of brush, cane, willow, or lumber, all of which were weighted down with some type of ballast, and concrete mats. Experiments with the organic mattresses began first. Between 1872 and 1879, James Simpson, a U.S. Army engineer, developed a willow brush mattress revetment, which was used on a small portion of the Mississippi. The brush was woven into a framework of wood poles and secured to the riverbank with a layer of riprap. No account of the effectiveness of this revetment has survived (Robinson and Ethridge 1985:286-287).

Over the next half century, several other types of mattress revetments were attempted. These included brush mattresses woven on poles or wire; cane mattresses threaded on wire; board mattresses; framed mattresses, in which brush or willow was secured between wood frames; and, "fascines," tight bundles of willow sticks, which were securely sewn together. Each was secured to the lower riverbank with ballasting, usually riprap. Framed mattresses and fascines proved the most durable types and were standard by the 1930s. However, wood mattresses, no matter how effective, were subject to deterioration and did not fulfil the need for relative permanence. By the late 1940s, mattress revetments were superceded by concrete mats (Elliott 1932:226-227; Robinson and Ethridge 1985:295-302, 333).

As with mattress revetments, concrete mat revetments were developed over a period of years. The first concrete mat revetment was developed between 1914 and 1922. It consisted of a series of monolithic concrete slabs that were joined together and sunk. The slabs initially were 15.5 m by 38.1 m, but these proved difficult to sink accurately. The size was changed to 73.2 m by 3.7 m, and many slabs were joined prior to sinking. However, neither form was effective and experimentation with monolithic concrete slabs was abandoned (Robinson and Ethridge 1985:308-309; Elliott 1932:235-236).

Another type of concrete mat was the lapped slab concrete revetment system. This system, developed 1924-1927, consisted of numerous slabs, initially 1.8 m by 3.4 m, which were laid together much like shingles on a roof. The slabs were attached to each other directly, but were designed to maintain position through their individual weight. This system had a substantial advantage over the earlier monolithic concrete slab system because it could conform more adequately to bank irregularities. While it was a fairly effective system, the slabs were difficult to sink accurately and were prone to shifting (Robinson and Ethridge 1985:309-311; Elliott 1932:239-240, 248).

The final type of concrete mat was the articulated concrete mat revetment. Developed between 1915 and 1923, and modified since, the articulated concrete mat consisted of numerous small concrete slabs (initially 38 cm by 119.4 cm) connected with cables. These formed a flexible, joined mat, which was comparatively easy to lay accurately and which proved both effective and durable (Robinson and Ethridge 1985:311-314; Elliott 1932:236-239).

During the 1930s and 1940s, several other types of subaqueous revetments were designed. These included asphalt mattresses; a lumber/asphalt mattress; rolls of long, thin concrete slats; artificial stone; asphaltic mixtures; hollow concrete blocks; and, burlap sacks of sand-concrete mixes, which were supposed to set under water. However, none of these revetments were successful and cost-effective, and none proved suitable for widespread use. By the early 1950s, the articulated concrete mat was adopted as the standard subaqueous revetment for the lower Mississippi; its use has continued to the present (Robinson and Ethridge 1985:317-324, 333-334).

Upper bank paving is necessary to protect the upper end of subaqueous revetments from damage caused by high water and strong currents. During the nineteenth century, various wood mattresses were used to pave the upper bank. However, these deteriorated fairly rapidly and proved unsuitable. Brick pavements also were attempted but were too expensive for wide-spread use. In the early twentieth century, the accepted standard for upper bank paving was established; this involved the use of either riprap or concrete. The preferred concrete form was a monolithic concrete mat, poured in place so that it would bond with the contour of the bank. At its top, it had a three foot deep inverted curb, which prevented surface water drainage from undermining the concrete. Although they were not as effective, slab mats and articulated concrete mats were used in some cases. Riprap and concrete continue to be the primary pavements used for upper bank protection (Elliott 1932:227, 243-245; Robinson and Ethridge 1985:327-328).

Revetment construction involved four steps. First, the entire bank was cleared of trees, logs, stumps, brush, and other debris from the top of the bank to as far as possible below the waterline. Subaqueous snags were removed with derrick boats or snag boats, or with explosives. Second, the bank was graded to at least five feet (1.5 m) below the mean low water level. This allowed the revetment to form a more cohesive bond with the bank than otherwise would be possible. During the early twentieth century, hydraulic grading was used. Water hoses were attached to pumps on a barge in the river. High pressure water was forced through these hoses to undercut the bank and to wash it into the river. The bank subsequently was dressed by hand or machinery and exposed organic remains, such as stumps and logs, were removed. While hydraulic grading was inexpensive, it had a major problem. The sluiced material settled under water near the shore, forming a broad, flat bench that terminated in a steep slope. This bench substantially increased the problems with sinking revetments and decreased the revetments' effectiveness. In addition, this technique could not produce a uniform grade, but rounded off irregularities in the bankline instead. By the late 1920s, mechanical grading of banks for revetments replaced hydraulic grading. It produced a uniform grade; it removed most of the organic debris, such as logs and stumps; it allowed excavated fill to be placed deep into the river, where the current swept it away; it was faster than hydraulic grading; and, it effectively graded the subaqueous riverbank. Third, the subaqueous revetment was placed into the river. Finally, the upper bank protection was installed, to protect the lower portion of the revetment (Elliott 1932:241-243; Robinson and Ethridge 1985:329-330). These same four stages are used in present-day revetment construction.

Foreshore Protection. Foreshore protection is used occasionally to protect levees from erosion. In some areas along the lower Mississippi River, waves generated by ships have eroded the foreshore enough to threaten the integrity of the levees. In these locations, the previous bankline has eroded away, leaving horizontal underwater shelves extending from the deep channel toward the levee. Control efforts were developed in the 1950s to contain this problem. Experimental brush dikes were developed in 1950, but these soon were replaced with stone. In accordance with current construction standards, a stone or broken concrete dike is constructed near the outer edge of the shallow underwater shelf. Lower cross dikes are constructed at regular intervals, passing from the outer dike to the shore. Finally, the area between the outer dike and the shore is filled to form a protected shoreline. This protection effectively inhibits further erosion caused by wave action (Robinson and Ethridge 1985:342-343).

Summary. Since the early eighteenth century, artificial levees and river control construction increasingly have characterized the banks of the lower Mississippi River. Until the mid-nineteenth century, most of this construction was poorly organized and was inadequate to protect against flooding or to control the flow of the river. Increased state and Federal control over these projects, which began during the second half of the nineteenth century, greatly increased the effectiveness of the levee and revetment systems through increased funding and experimentation, and through the unified administration of the waterways by the U.S. Army Corps of Engineers. Positive effect reduced crevasse and their effects.

The flood control and river management construction that has occurred along the Mississippi River over the past three centuries has affected the archeological deposits on and adjacent to the batture significantly. Most of the effects have been adverse; these are summarized in Table 19. Effects include activities that have disturbed or masked archeological resources. Primary among them are the excavation of borrow pits; clearing of all vegetation, including stumps and roots, during revetment construction; excavation of muck ditches; filling of all holes and depressions near levees, including potential archeological resources; removing structures from levee alignments; separating structural and subsurface site elements; covering of sites with levees and revetments; and, bank grading for revetment construction. All of these activities have occurred along both banks of the lower Mississippi River, and have modified or destroyed archeological resources.

While the adverse effects of flood control and river management construction on cultural resources have been emphasized, the positive effects must be mentioned. Without levee and revetment construction, maintenance, and improvement, many architectural and archeological sites protected by them would be destroyed by the meandering river, floods, and crevasses. Prior to the 1920s - 1940s improvement of the levee and revetment system, numerous structures and archeological sites were destroyed by the river every year. Levees, and later revetments, are not an intrusion into the cultural system along the Mississippi River.

Table 19

## FLOOD CONTROL AND RIVER MANAGEMENT CONSTRUCTION ON AND NEAR THE MISSISSIPPI RIVER BATTURE

**Levee Construction**

| 1717-1880 | 1880-1915 | 1915-present |
|---|---|---|
| Low, Weak Levees | Larger, Engineer-Designed Levees | High, Well-Designed Levees; Large Square Foot Coverage |
| Hand Construction, With Wheelbarrows and Plank Runways | Hand Construction, With Wheelbarrows and Plank Runways; Team-Drawn Scrapers and Wagons; Experimental Levee Construction Machines | Team-Drawn Scrapers and Wagons; Dragline; Tower Machine; Bulldozers; Dump Trucks; Dredging; Railroad Dirt Transportation |
| Borrow Pits Within 75 Feet of Levee, on Either Side; Little Regulation of Borrow Pit Construction; fill Borrowed from Previous Construction. | Borrow Pits Within 150 Feet of Levee, Mostly on River Side; Increased State and Federal Regulation of Borrow Pit Construction; Fill Borrowed from Previous Construction. | Borrow Pits at Varying Distances from Levee; Strict Federal Regulation of Borrow Pit Construction; Dredging; Soil Brought by Railroad and Dump Trucks; Fill Borrowed from Previous Construction. |
| Much Variation in Levee Foundation Preparation | Organic Debris, Trees, Logs, Stumps, Roots Removed From Levee Foundation; Surface Grubbed; Muck Ditches | Organic Debris, Trees, Logs, Stumps, Roots Removed From Levee Foundation; Surface Grubbed; Deeper Muck Ditches; Surrounding Pits, Ditches, and Depressions Filled to Natural Grade |
| Some Board Facings on Levees | Board Facings on Levees | |

**Revetments**

| 1870-1915 | 1915-1950 | 1950-Present |
|---|---|---|
| Lower Bank Protection: | | |
| Early Experimental Wood Mattresses (Cane, Woven, Board, Framed, Fascine), With Riprap Ballasting | Wood Mattresses (Mostly Framed and Fascine), with Riprap Ballasting; Experimental Mats: Concrete (Monolithic, Articulated, Slab), Asphalt, Lumber/ Asphalt, Artificial Stone, Hollow and Solid Concrete Blocks, Sand/Cement Sacks | Mostly Articulated Concrete Mats |
| Upper Bank Protection: | | |
| Early Experimental Wood Mattresses (Cane, Woven, Board, Framed, Fascine), With Riprap Ballasting; Riprap; Brick Pavement; Experimental Use of Concrete | Concrete Cast in situ; Riprap; Some use of Articulated Concrete Mats and Concrete Slabs | Concrete Cast in situ; Riprap |
| Bank Preparation: | | |
| Bank Clearing Only; Early Hand Grading of Bank; Hydraulic Grading With Hand Dressing | Bank Clearing; Hydraulic Grading With Hand Dressing; Experimental Mechanical Grading; Subaqueous Grading | Bank Clearing; Mechanical Grading With Subaqueous Grading |

**Fore-Shore Protection** (1950-Present)

Early Brush Dikes; Riprap and Concrete Dikes and Cross Dikes; Soil Fill Behind Dikes

but rather have been an integral part of it since the earliest historic occupation of Louisiana. The halting of bank cutting through revetments saves sites landward of the levee by reducing the need for setting levees back, which would expose more sites to the river. While the adverse effects of levee and revetment construction on cultural resources is considerable, the unacceptable alternative of not maintaining and improving them would result in the destruction of far more resources than it would temporarily protect.

Some of the construction items themselves have become potentially important archeological resources. These potentially significant resources, none of which have been studied extensively, are outlined below. First, little is known about the construction of eighteenth and early nineteenth century artificial levees. While most of these have been destroyed through riverine processes and through subsequent levee and revetment construction, some surviving pre-1860s levees warrant archeological investigation such as recordation through cross-section. Since most of these privately built levees have been destroyed through riverine cutting or subsequent levee construction, specific locations along the river where they may survive should be identified. These may include aggrading banks where the levee alignment has remained stable, and earlier levees were capped in the late nineteenth century; along distributaries away from the same level of impact as that sustained annually on the main channel; or along historically formed cut-off lakes. The identification process would require cartographic research, comparison of bankline data, and examination of historic levee construction data from the U.S. Army Corps of Engineers and local archival sources. Based on these data, specific sites should be selected for testing. This testing should emphasize archival and archeological recordation of construction methods used by colonial and antebellum landowners prior to strict state and federal control of levee construction techniques.

Second, some nineteenth and early twentieth century levees were faced with boards to protect them against riverine processes, especially wave wash. The construction techniques for these facings, and their effectiveness, have not been studied archeologically; such study might provide important information about experimental efforts to protect the levees. Finally, numerous experimental revetments were constructed along the Mississippi during the late nineteenth and early twentieth century. While most of these early revetments have been altered through maintenance and repair, some may warrant archeological investigation to document their construction, effectiveness, and longevity. Through these investigations, historic attempts at controlling the Mississippi River could be better understood. Because they were placed within the river, archeological recordation necessarily would focus on archival documentation, bankline changes, and recordation of exposed portions during periods of extreme low water.

### Industrial Development

Overview of Industrial Development. Since the 1940s, there has been widespread industrial development along the Mississippi River between New Orleans and Baton Rouge. Construction has included chemical plants, petroleum refineries, extensive grain elevators, a nuclear power station, and large industrial sugar refineries. The area's advantages to industry include water transportation, material proximity, availability of industrial water, available industrial sites, and a favorable tax system (Public Affairs Research Council of Louisiana, Inc. 1976). This industrial development has been a boon to the economic growth of the river parishes.

A number of industries have developed in and near St. John the Baptist Parish. Most are situated near the Mississippi River, with direct access to the river. These include the Marathon, Dupont, and Apex oil companies; Kaiser Aluminum and Chemical Corp.; Hooker Chemical Corp.; Union Carbide; Cargill Inc. (grain); Waterford 3 Nuclear Power Plant (LP&L); Colonial Sugars; and, Godchaux Henderson Sugars, Inc. The economic influence of these industries is considerable. For example, in 1986, about 24 percent of the residents in St. John the Baptist Parish were directly employed by petrochemical plants (Framontana 1986; *Mississippi River Commission 1982:Map No. 50*).

Construction Impacts. The effects of industrial construction on the archeological record can be considerable. Archeological sites located within industrial complexes may be damaged or destroyed during construction. This problem is compounded by the fact that most of the industrial complexes within the Industrial Corridor are located on the high portion of the natural levee, near the Mississippi River, which has been the prime locus of settlement for hundreds of years. The land occupied by these industries normally

been the prime locus of settlement for hundreds of years. The land occupied by these industries normally has a high potential for archeological sites.

In addition, industrial development rarely has included archeological investigations. Many of the complexes were constructed prior to the implementation of federal regulations requiring cultural resources management studies. In other more recent instances, destruction of resources has occurred prior to development that would trigger Section 106 compliance. For example, the antebellum Welham Plantation house, on the east bank of the Mississippi River in St. James Parish, was destroyed by Marathon Oil Company on May 3, 1979, despite an extensive public outcry to preserve this important piece of Southeast Louisiana history (Corley 1979).

Indirect Effects. The indirect effects of industrial complexes on cultural resources are harder to recognize and control, but they also may be devastating to the resources. Industrialization in these rural parishes leads to an increased population. This leads to the growth of the housing industry, establishment of small businesses such as grocery stores, and improvement of public utilities such as water and sewage treatment plants. Industrial development often results in new road construction to meet the needs of the industry and of the increased population. Each of these indirect effects of industrial development may result in the destruction of important cultural resources. Industrial development not only affects landward activities, it also produces increased riverine traffic. Ships, barges, and tugboats use the river to transport materials and products to and from the industries. This necessitates the construction of docking facilities, which destroy batture features. The vessels themselves also damage archeological resources, as will be seen.

### Towing and Shipping Industry

The modern towing and shipping industry is closely related to industrial development along the Mississippi River. Most large vessels on the river are used to transport materials to the industrial complexes, or to ship products from these complexes to the domestic and world markets. This system of water transportation is one of the major advantages to industrial development along the river. While shipping and towing form a vital link in the economic development of the river parishes, they also affect archeological resources in and near the river. These adverse effects can be divided into those caused by the vessels, and those associated with riverine improvements for the vessels.

Large vessels have several direct effects on the archeological record. Waves generated by the vessels scour the shoreline. In some locations, this erodes much of the shoreline into the river. The construction of foreshore protection, which was discussed earlier, is necessary to inhibit this scouring. Fleeting activity, in which barges are moored to the shore, can damage archeological sites directly. These barges often are brought as close as possible to the bankline where their bottoms scrape the riverbank slope above the thalweg. In those cases where fleeting takes place adjacent to archeological sites, damage to the site can occur. For example, the features at 16SJB29 were damaged considerably by years of mooring barges at the site. Some of the modern litter along the riverbank undoubtedly was discarded from river vessels. This refuse can compromise the integrity of the artifact assemblages from some batture features. Riverine improvements associated for the towing and shipping industry also damage archeological resources. The major source of damage is the construction of docking and mooring facilities for the ships and barges.

Navigational improvement of the Mississippi River also damages and destroys archeological resources. Levee and revetment construction have been discussed already. A third is the dredging of the river both to deepen the channel and around docking facilities. This dredging can have two adverse effects on archeological remains. First, it may destroy some underwater archeological sites, such as shipwrecks. However, the river itself continues to damage these resources, and, in many cases, the river is too treacherous to permit archeological recordation of these submerged sites at this time. Second, spoil from dredging which is deposited on the batture can cover sites, preventing their identification.

## Summary

In this chapter, the primary geomorphic and cultural processes which affect the continuing formation of the modern batture, and some of the surrounding land, have been examined. These processes, which include natural riverine processes, as well as a variety of historic and modern activities, have formed or preserved a few archeological sites, and damaged or destroyed many others. These processes are summarized in Table 20.

In addition to the destruction of archeological sites, the surface remains of some sites have been altered in appearance by these processes, at times making their identification difficult. Also, because of bankline cutting, some sites currently are located on the batture that originated inland; their modern proximity to the river may result in misidentification. Few complete batture sites have survived. Rather, most batture archeological resources are partial sites, random pieces of original complexes. Because of the stressful batture environment, features with integrity that survive are treated as significant more readily than similar features in less stressful environments. Through the necessary examination of numerous partial sites as opposed to some complete sites, the same goals of learning more about past human behavior can be achieved along the Mississippi River.

Table 20

SUMMARY OF EFFECT OF GEOMORPHIC AND CULTURAL PROCESSES ON BATTURE FEATURES

**Natural Riverine Processes**

Alluvial Deposition. Cover sites, obscure from future discovery and recordation.

Lateral Migration. Cover sites through accretion, obscure from future discovery and recordation; destroy sites through cutting.

Crevasses. Cover sites, obscure from future discovery and recordation; scour sites; reconfigure sites through property destruction.

**Flood Control and River Management Construction**

Levee Construction. Foundation clearing, grubbing, stump and root removal; muck ditches; borrow pits; site burial under levee; removal of structures; separation of architectural and archeological components; disturbance through use of heavy machinery.

Revetments. Bank clearing, stump and root removal; paving of upper bank; potential damage to underwater sites; dredging.

Foreshore Protection. Site damage through construction.

**Industrial Development**

Construction Impacts. Site destruction through building of industrial complexes; construction of docking facilities.

Indirect Effects. Increased population and service-sector construction; increased shipping and towing; pollution.

**Shipping and Towing Industry**

Shoreline scour; barge mooring damage; increased modern refuse on batture; construction of riverine service and operation facilities; dredging.

## CHAPTER XI

## SUMMARY AND RECOMMENDATIONS

Historic settlements along the Mississippi River in south Louisiana were scattered along her shores. Historic maps and archival documentation of this region show that the higher ground along the natural levee was preferred for habitation and for agricultural activity by the colonial small farmers of the eighteenth century, and the larger plantation owners of the nineteenth century. Consequently, the historic riverfront is a high probability area for archeological resources. However, the Mississippi riverfront often does not contain the expected archeological site types and associated artifacts. The reason for the discrepancies between research predictions and negative field results are due primarily to the cultural and environmental changes that have occurred along the river since the first high water episode. Since the 1710s, people have redefined the river, attempting to maintain the river within an artificial floodplain formed by construction of artificial levees, and later revetments. These changes have impacted the fragile archeological resource base along the banks of the lower Mississippi River. Although some of the environmental changes actually have exposed sites that normally would be buried, or have preserved sites that normally would be washed away, for the most part they have been deleterious, causing the extirpation of river sites, and reducing many archeological investigations along the riverbank to salvage prior to inevitable erosion. Levee and revetment construction have damaged and destroyed many of the sites within the direct impact zones, but have protected many more sites which otherwise would have been destroyed by the meandering river.

The disturbed setting of the Mississippi River batture and levee can alter the appearance of sites and may contribute to misidentification or improper evaluation. The Phase II study (Shannon et al. 1987) leading to this effort was a case in point. While the 1987 archeological testing at 16SJB29 was fairly thorough, stopping just short of the level of testing which would have destroyed the features, an insufficient amount of property specific archival research was done to properly interpret the features. The need for this property specific research cannot be overemphasized. To foster more accurate future field interpretations at Mississippi River sites, a summary of archeological expectations, previous investigations, and research priorities was compiled in Chapter IX. This chapter concentrated on site types associated with the major economic activities that took place along the Mississippi River between Baton Rouge and New Orleans during the historic periods: indigo, sugar, and rice production, and rivercraft landings. These theoretical predictions are based on historical documentation and on previous archeological investigations. They serve as a general outline of the possible remains left by the major historic agriculturalists of southeast Louisiana.

The review of previous archeological investigations along the Mississippi River in south Louisiana revealed the need for further archeological work for all socioeconomic aspects of historic themes outlined in Louisiana's Comprehensive Archaeological Plan (Smith et al. 1983). Although extensive research and architectural recordation of historic Mississippi River plantation homes has been conducted since the 1920s, plantation archeology in south Louisiana is relatively recent. With very few notable exceptions, practically all archeological investigations conducted at sites on the Mississippi River have lacked substantive assemblages and definitive results. Despite the documented evidence about the Louisiana indigo makers, colonial indigo sites have not been recovered archeologically in this region. In addition, archeological considerations concerning the cultural activities associated with historic rivercraft landings have not been investigated. The paucity of significant finds from the numerous sugar plantations and rice farms that once lined the river between Baton Rouge and New Orleans, further documents the direct relationship between site destruction and riverbank development.

Further archeological research is recommended for all aspects of colonial indigo production. Considering the fact that most previously investigated sugar plantation sites in the region have recovered residential deposits that have provided primarily subsistence and status information based on ceramic and faunal assemblages, archeological work is recommended at industrial sugarhouse sites. Although historic rice production was not labor intensive, and did not require substantial or highly specialized structures or machinery, the archeological aspects of this industry still have not been investigated fully. Other than postbellum rice flumes and a rice barn, few important rice features have been recorded. Several

components of the historic riverine rice industry are recommended for archeological investigations. These include the domestic and industrial aspects of rice production and irrigation features such as early siphons, sluice gates, and pump sheds. Rural Mississippi River landings; wharves; and benches, platforms, and staircases on abandoned levees, should be tested. Finally, additional archeological investigations are recommended at warehouse sites associated with landings and wharves. Unusually complete wharves should be recorded.

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## PERSONAL COMMUNICATIONS

George L. Miller, 1985

Transcripts of interviews conducted with the following individuals are provided in Appendix III.

Harold Dutreix, 1988
Ernest Fiffie, 1988
Casimir Graugnard, 1988
Theophile Saberre, 1988
David Webre, 1988

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At Goodwin & Associates, Inc., Stephen Hinks acted as crew chief. Field investigators included Rebecca E. Bruce, Julie R. Esthus, and Jeff Creasy. Donna D. Livaudais and Julie R. Esthus did an admirable job in the development of graphic materials for inclusion in this report. And Lyn O'Brien produced the final report.

# APPENDIX I

## Scope of Work

CELMN-PD-RA 27 JUNE 1988

SCOPE OF SERVICES
DATA RECOVERY AT WILLOW BEND
REVETMENT (16SJB29), ST. JAMES PARISH, LOUISIANA

CONTRACT DACW29-88-D-0121

**1. Introduction.** This delivery order calls for data recovery from Site 16SJB29, located in the Willow Bend Revetment easement, mile 139.5-R, on the left descending bank of the Mississippi River in St. John the Baptist Parish, Louisiana (Enclosure 1, Mississippi River File No. 1-127, Sheet 36). The contract period for this delivery order is 196 days.

**2. Preparation of the Proposal.** Based upon prior knowledge of 16SJB29, the Contractor will prepare a detailed research design for data recovery as part of his proposal for this delivery order. The proposal shall be prepared within the guidelines provided in the following sources:

the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation as published in the Federal Register on September 29, 1983;

Louisiana's Comprehensive Archaeological Plan, dated October 1, 1983;

the Advisory Council on Historic Preservation's Section 106 Update/3 entitled, "Manual of October 12, 1982.

**3. Study Requirements.**

a. Phase 1: Literature Search and Records Review. The Contractor shall commence, upon work item award, with a literature, map, and records review specific to Site 16SJB29 and its historical and archeological contexts: Columbia Plantation, similar Mississippi River sites, and/or sites with similar features or activity patterns. This phase shall include but not be limited to review of historic maps, historic archives, courthouse and other public records, plantation papers, the State Archeologist's site and standing structure files, the National Register of Historic Places, geomorphological data, archeological reports, and informant interviewing.

b. Phase 2: Data Recovery from 16SJB29. The fieldwork to be performed by the Contractor requires site mapping, excavation and specific attention given to recordation of Features 1 through 4. All work will be performed within the context of an approved, detailed research design which emphasizes recovery and analyses of data relevant to specific research problems and the elements for which 16SJB29 was found eligible to the National Register of Historic Places.

Within 3 days of delivery order award, the Contractor will implement the field phase of the research design prepared as part of the proposal. All field work at 16SJB29 must be finished no later than August 4, 1988.

Within 3 days of delivery order award, the Contractor will implement the field phase of the research design prepared as part of the proposal. All field work at 16SJB29 must be finished no later than August 4, 1988.

c. Phase 3: Data Analyses and Report Preparation. All literature search, mapping, and excavation data will be analyzed using currently acceptable scientific methods. The Contractor shall catalog all artifacts, samples, specimens, photographs, drawings, etc., utilizing the format currently employed by the Office of the Louisiana State Archeologist. The catalog system will include site and provenience designations.

All literature, map search, field and laboratory data will be integrated to produce a single, graphically illustrated, scientific report of findings.

**4. Reports.**

a. Monthly Progress Reports. One copy of a brief and concise statement of progress shall be submitted with and for the same period as the monthly billing voucher throughout the duration of the delivery order. These reports, which may be in letter form, should summarize all work performed, information gained, or problems encountered during the preceding month. A concise statement and graphic presentation of the Contractor's assessment of the monthly and cumulative percentage of total work completed by task shall be included each month. The monthly report should also note difficulties, if any, in meeting the contract schedule.

b. Draft and Final Reports (Phases 1,2, and 3 ). Five copies of a draft report integrating all phases of this investigation will be submitted to the COR for review and comment 103 days after the date of the order.

The draft and final reports shall follow the format set forth in MIL-STD-847A with the following exceptions: 1) separate, soft, durable, wrap-around covers will be used instead of self covers; 2) page size shall be 8-1/2 x 11 inches with a 1-1/2-inch binding margin and 1-inch margins on all other edges; 3) the text reference and Reference Cited formats of the Society for American Archaeology will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual, dated January 1973.

The body of each report shall include the following: 1) introduction to the study and study area; 2) environmental setting; 3) review and evaluation of previous archeological investigations; 4) research design; 5) description of field and laboratory methodology; 6) description of research results; 7) description of field results; 8) description of cultural material inventories; 9) results of analyses; 10) both archeological and historical interpretations of the body of data; 11) conclusions; 12) references cited; and 13) appendices, as appropriate.

The COR will provide all review comments to the Contractor within 60 days after receipt of the draft reports (163 days after the date of the order). Upon receipt of the review comments, the Contractor shall incorporate or resolve all comments with the approval of the COR and submit one reproducible master copy and 40 bound copies of each report of investigation, and all separate appendices to the COR within 196 days after the date of the order.

**5. Disposal of Records and Artifacts.** All records, photographs, artifacts, and other material data recovered under the terms of this delivery order shall be recorded and catalogued in a manner compatible with those systems utilized by the Louisiana SHPO and by State and Federal agencies which store archeological data. All artifacts to be permanently curated will be cleaned , stabilized, labeled, catalogued on typed State curation forms, and placed in sturdy bags and boxes which are labeled with site, excavation unit or survey collection unit provenience. They shall be held and maintained by the Contractor until completion of the delivery order. Final disposition of the artifacts and records will be in accord with applicable Federal and State laws. Unless otherwise specified, artifacts will be returned to the landowner or permanently housed with the Louisiana Division of Archaeology and Historic Preservation or in a repository selected by the State Archeologist. The Principal Investigator shall inform the COR in writing when the transfer of data has been completed and shall forward to the COR a catalog of items entered into curation. The location of any notes, photographs or artifacts which are separated from the main collections will be included in the documentation to the COR. Presently existing private archeological collections from the project area which are used in data analyses will remain in private ownership. The Contractor shall be responsible for delivery of the analyzed archeological materials to the individual landowners, the Louisiana SHPO's office, or any other repository designated by the Government following acceptance of the final report.

# APPENDIX II

**Letter to Mr. Robert Fink**
**Advisory Council on Historic Preservation**

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

September 23, 1988

Planning Division
Environmental Analysis Branch

SEP 30 1988

OCT 2 5 1988

Mr. Robert Fink
Chief, Western Division of Project Review
Advisory Council on Historic Preservation
730 Simms Street, Room 450
Golden, Colorado 80401

Dear Mr. Fink:

In accordance with 36 CFR Part 800.5(d), Protection of Historic Properties, the U.S. Army Corps of Engineers, New Orleans District requests your comment on a finding of no adverse effect to Site 16SJB29 from the construction of Willow Bend Revetment at Mile 139.5-R on the bank line of the Mississippi River (Enclosure 1, Project Map). In consultation with the Louisiana State Historic Preservation Officer, this agency applied the Criteria of Effect in reviewing the impact of a federal undertaking on 16SJB29. A copy of the State's letter of concurrence is enclosed. The following describes the conditions of site significance, project effect and data recovery which we considered in determining an appropriate action to take prior to construction.

Site 16SJB29 was located during survey of the Mississippi River bank line by the National Park Service, Denver Service Center in 1984 and tested by R. Christopher Goodwin and Associates, Inc. in 1987. Both studies were conducted for the US Army Corps of Engineers, New Orleans District. The survey and testing results were reported in a draft document entitled: Cultural Resources Survey of St. John the Baptist and St. Charles Parish Construction Items by Shannon, Goodwin and Hewitt (1988).

In 1987, the site was subjected to surface collection, shovel testing, probing, extensive augering, and unit testing. The fieldwork was augmented with a literature search which identified the site as an early to mid-nineteenth century wharf or ferry landing associated with Columbia Plantation. Its significance is its association with events contributing to broad patterns of

local and regional transportation history, an opinion with which the State Historic Preservation Officer concurred by letter dated March 31, 1988. The site is representative of a ubiquitous class of riverine features which has never been studied in detail because such facilities are fragile and easily destroyed by lateral erosion of the Mississippi River bankline or by modern use of the batture. It is suspected that remnants of many nineteenth century landings and ferries have been recorded as unidentifiable features during the last decade of cultural resource surveys because of their poor condition and the lack of comparative archeological data or historic data modeling which would aid their correct identification.

The site is a 30 by 80 m surface scatter along a low terrace adjacent to the river's edge at low water (Enclosure 3, Site Plan). Despite extensive augering, no evidence was found of intact midden or habitational features. The mean ceramic date, determined from the surface scatter, is 1835. Found with domestic debris were two boiler grates, slag, and coal. Four wooden features were identified as a cypress trough and three aligned pier supports. The latter three features share a common linear alignment. The parallel placement of the trough suggests it was related to the pier.

The site has undergone continual modification since its initial recordation in 1984. It was first described as a 30 by 700 ft. light scatter of historic ceramics and glass, in association with a purported wooden revetment (a vertical alignment of boards) and a wooden, hand-pegged sluice.

It should be noted that the Corps of Engineers has no record of a revetment ever having been built at this locale. When relocated in 1987, after several episodes of seasonal high water, the site was again described as a sparse surface scatter but the revetment-like feature and sluice were no longer present; victims of lateral erosion. The four wharf related features recorded in 1987 were not exposed in 1984.

The site is scoured annually during the high water cycle of the river. As a consequence, the bank profile is low and terraced. The four cypress features extend from the low terrace into the channel. Feature 4 is visible only at extremely low water elevations. The localized bank line at the site has experienced serial cutting and aggrading since records began to be systematically collected in 1876. There was an aggrading

phase between 1896 and 1929, followed by a cutting phase in the 1930s. Just upstream and downstream from the site the cutting has been more extensive, necessitating the replacement of the late-nineteenth century levee in 1921 by the State of Louisiana, only to require setting back again in 1932. The 1932 levee is still in place.

The Corps of Engineers proposes to construct an articulated concrete mattress revetment across the length of the site. This construction item is part of an on-going channel improvement program designed to halt erosion of the Mississippi River's bank line, to maintain levee stability, and to lessen land loss by maintaining the river's present channel. The property is held in private ownership. This project item is to be constructed in cooperation with the Lafourche Basin Levee District. It is funded under the Flood Control, Mississippi River and Tributaries Project which was authorized by Congress under the Flood Control Act of May 15, 1928 (Public Law 391), as amended. A final environmental impact statement for the project, entitled: Mississippi River and Tributaries, Mississippi River Levees and Channel Improvement, Cairo, Illinois to Venice, Louisiana Reach, was prepared by the US Army Corps of Engineers, Vicksburg District in February 1976.

Revetments have been constructed along the Mississippi River in Louisiana since 1878. The first measures were placed in the New Orleans area to prevent bank caving around wharves. The Willow Bend Revetment reach occupies the right descending bank line between river miles 142.1 and 139.0, and is being constructed in stages, as erosion requires action and money is appropriated for the work. The first segment was built in 1977. The portion to be constructed in 1988 is 2000 ft. long. Construction requires mechanical clearing of all vegetation from a minimum 100 ft. wide strip parallel to the bank line. The bank line is then graded to a standard slope using bulldozers and a barge-mounted dragline. Site 16SJB29 would be removed during grading. A continuous, articulated concrete mattress is then mechanically laid from the low water line to a point several hundred feet into the river channel. Riprap, or large stone, is piled onto the bank face above the top of the mattress to retard erosion.

The Corps of Engineers has taken the above destructive factors into account in it application of the Criteria of Effect and has concluded, with the State Historic Preservation Officer,

that a finding of no adverse effect is appropriate. Although revetment construction will destroy the site, the value of the site lies only in its potential to yield archeological and historical data. Natural erosive forces have already destroyed any artifact bearing deposits at 16SJB29 without benefit of data recovery. Only Features 1 through 4 remain for detailed study. There is no feasible means of both saving the site in situ and ensuring levee stability at a cost less than that of data recovery.

To ensure preservation of the data for which the 16SJB29 was found significant, we propose a multi-phased data recovery plan. The first phase will collect and analyze historical data specific to the economic and settlement history of Columbia Plantation and similar sites in nearby river parishes in order to identify the activities, trade patterns and economic cycles which affected the development and use of the landing. Data collection on these specific topics will be augmented by more general research regarding nineteenth century river landings, wharves, and ferries; structural, functional and chronological analogs for such sites; and the regional economic patterns responsible for influencing change in products and shipping. The goals are 1) development of a typology of landings and landing structures so that they may be accurately recognized in future surveys; and 2) creation of a standard by which such features may be assessed. The second phase of the study will be oral history research on the nature and use of landings earlier in this century. The data collected will be applied in classificatory analyses. The third phase of the research will be excavation and recordation of the four cypress features. The extreme low water of 1988 will facilitate mechanical exposure of the vertical and horizontal aspects of all four features, and any new ones which have been exposed since 1987. Additional trenching will be employed to locate any subsurface deposits not located by augering during the testing phase. All features will be recorded and drawn in detail. The resulting report will discuss the historical and economic context in which these features were constructed; develop a structural and functional classification for wharf/landing facilities and their associated features; and relate types of landings to economic and navigation themes of significance.

It is our opinion that a data recovery program using the above approach will more successfully preserve the historical and scientific value of 16SJB29 than leaving the site in situ and exposed to annual scouring.

We look forward to your comment. Should you have any questions about this project, you are invited to contact Ms. Carroll Kleinhans at (504) 862-2548.

Sincerely,

R. H. Schroeder, Jr.

Robert H. Schroeder, Jr.
Chief, Planning Division

Enclosures

# APPENDIX III

## Transcripts of Oral Interviews

TRANSCRIPT OF AN INTERVIEW WITH HAROLD DUTREIX,
SON OF A FORMER RICE FARMER, AND A NATIVE OF EDGARD, LOUISIANA

August 25, 1988

Present: Stephen Hinks
Project Manager
R. Christopher Goodwin & Associates, Inc.

Harold Dutreix
Edgard, Louisiana

Transcription from 000

**HINKS:** Today is August 25, 1988.

Mr. Dutreix, what is your full name?

**DUTREIX:** Harold Richard Dutreix.

**HINKS:** How do you spell Dutreix?

**DUTREIX:** D-U-T-R-E-I-X.

**HINKS:** Are you aware that this conversation is being recorded?

**DUTREIX:** Yes.

**HINKS:** When is your birthdate?

**DUTREIX:** December 1.

**HINKS:** And what year is that?

**DUTREIX:** 1912.

**HINKS:** Has your family lived in the area for a long time?

**DUTREIX:** Since birth.

**HINKS:** What were your parents' names?

**DUTREIX:** My father's name was Edmond S. Dutreix. My mother's name was Henrietta Troxclair, T-R-O-X-C-L-A-I-R.

**HINKS:** What did your father do for a living?

**DUTREIX:** My father was a rice farmer, rice and sugar cane farmer.

**HINKS:** Where did he grow his rice? Was it in this area?

**DUTREIX:** In this area. He leased all available land to cultivate into rice.

**HINKS:** How have you seen this community change over the past many years that you have lived here? Have you seen a lot of changes in agriculture and the way people live?

**DUTREIX:** Well, one of the major changes was that there were a lot of small farmers all around the vicinity, and they are all gone. And the only farmers left are the big ones, the ones who have a lot of acreage.

**HINKS:** And do they lease the small farms now? Do they lease the land behind your property and cultivate that?

**DUTREIX:** Yes.

**HINKS:** Let's talk a few minutes about some of the local changes.

When you were a boy, did you used to play on the old levee or play along the river any?

**DUTREIX:** We did. In fact, when I was a teenager, we used to use the river for a swimming pool.

**HINKS:** What did you see up there on the levee and how has it changed? Was it normally used by the whole community, and what was up there?

**DUTREIX:** No. The only difference was that sometimes in some localities the men folks would gather and sit on the levee at night fall and talk about things that happened during the day.

**HINKS:** Was there a road on top of the levee?

**DUTREIX:** A road, no.

**HINKS:** Do you remember any structures or buildings that were out on the levee?

**DUTREIX:** The only one that I remember is the one around Caire's Store, where the launch Tom, a little motorboat, used to deliver freight which was put in the large--fairly large--building, and from that the trucks would come in and load up merchandise and deliver it to the stores along the river.

<u>Transcription from 122</u>

**HINKS:** Were you involved in that?

**DUTREIX:** Yes, I was. I was a teenager at the time, and I did do some of that delivery work.

**HINKS:** And was it delivered to Caire's Store or up and down the river?

**DUTREIX:** Up and down the river, all the way up to Vacherie.

**HINKS:** Did you know of any other landings along the river in this area?

**DUTREIX:** I think there was one around the Vacherie area.

**HINKS:** How were the landings used by the boats and what did one look like? Like the one down at Caire's Store?

**DUTREIX:** Well, the boat would come up against the bank and it drop some walkway up onto the bank and then they transported freight from the boat to the building. They transported the freight from the boat to the building

**HINKS:** Then the ramp was on the boat and it went down onto the shore.

**DUTREIX:** Onto the shore.

**HINKS:** And was the shore just a dirt landing, or was it covered with anything?

**DUTREIX:** It was just a dirt landing, that's all. It went on down to the batture.

**HINKS:** Then were there any other activities along the batture, such as sawmills or brickyards or other activities?

**DUTREIX:** No.

**HINKS:** The ferry down at Edgard, has that always been in its present location, or has its location changed over the years.

**DUTREIX:** The ferries?

**HINKS:** The one that's down at Edgard.

**DUTREIX:** Oh no, the locations of the ferries have changed quite a bit over the years. Years ago the ferry was located in Lucy.

**HINKS:** Okay, I know where that is.

**DUTREIX:** And finally, after a few years, it was moved to Edgard.

**HINKS:** And so that's not on the same location as Caire's Landing.

**DUTREIX:** No, they are about six or seven miles apart, the two landings.

**HINKS:** Then the present ferry location is near where Caire's Landing was?

**DUTREIX:** Yes.

**HINKS:** But is it on the same location or is it downriver a little bit?

**DUTREIX:** For the freight landing? It's about the same location.

**HINKS:** Do you remember approximately when the different levees were built? There's the one right now that's way out by the river. Was that there when you were a boy?

**DUTREIX:** Yes, it was there.

**HINKS:** The other one, the current levee, when was that built? Do you have any idea?

**DUTREIX:** I would say in the early 20s, the 1920s.

**HINKS:** And it has not moved from that location. From the 1920s to the present, it has been the same levee?

Transcripton from 223

**DUTREIX:** No, it's the same levee.

**HINKS:** Have they built up that levee any since that time?

**DUTREIX:** I think once.

**HINKS:** How about if we talk awhile about rice. Mr. Dutreix, you stated that your father grew rice in the area. What do you remember about his rice production?

**DUTREIX:** Well, when the rice was harvested, the rice thresher was installed on the river bank. And the rice was threshed and stacked in 200-pound sacks. And the river boat that I remember, the John D. Grace, would come up against the bank and they would load the rice on the boat. The rice buyers would come in and sample the rice out of the sacks and then determine what price they would pay for it. And they were shipped out on a boat to rice mills, like in New Orleans and Baton Rouge.

**HINKS:** Then the boats came right up to where your father was processing the rice and they let their ramps down.

**DUTREIX:** They let their ramps down on the river bank.

**HINKS:** And they loaded the rice right onto the boats.

**DUTREIX:** The stevedores, yes. They were fairly large colored men. In fact, I can tell you a little story about that. These fellows were gigantic men and one guy said, "I'm going to carry two bags." Which was just about 400 and some pounds. And one of the other ones said, "If you carry two, I'll carry three." And he did, one under each arm and one on his head. And he walked down the batture onto the boat.

**HINKS:** That's amazing.

**DUTREIX:** It is.

**HINKS:** When did he stop growing rice and what were the reasons for him stopping his rice production?

**DUTREIX:** During the depression years, one rice didn't make. It cost about six or seven dollars a sack to produce, and the market prices when it was time to harvest and sell averaged about $1.10 for 200 pounds. And they just about went out of business. So they recouped their losses and came here in this section and they leased all the land from Columbia Plantation all the way up to Abadie's property. And they planted rice. It was supposed to have been, if I remember right, the name of the rice was Lady Rout, which was supposed to be somewhat stormproof. And when the rice was ready to be harvested, we had a terrific storm came along and thrashed it in the field and they lost it all. That finished it.

**HINKS:** Do you know what year that was?

**DUTREIX:** That storm was around 1926 or '27. I don't exactly remember the date.

<u>Transcription from 333</u>

**HINKS:** There was a major 1927 storm.

**DUTREIX:** It was, it was. I remember the rice was pretty much left standing but the grain was all on the ground. And that finished us as far as raising rice. And then he went on to raising sugar cane.

**HINKS:** Is that much more sturdy against...?

**DUTREIX:** Yes. We still had the weather to contend with but it was a lot surer for income than rice. With rice, if it was very windy, any storms came along, that was it.

**HINKS:** What can you tell me about his irrigation system?

**DUTREIX:** The water was pumped from the river, using a large capacity water pump driven by a tractor, pumped into ponds along the river bank. And then from the pond to across the levee we used siphons into a canal leading on out into the rice field. And the water level, was first maintained on the sections closer to the siphon, and through a system of levees in the field the water level was allowed to seep on down as far back as the field extended.

**HINKS:** Then the ponds that you pumped the water into initially, were those on the river side?

**DUTREIX:** They were on the river side.

**HINKS:** Of the levee.

**DUTREIX:** Of the levee.

**HINKS:** The pumps were powered by the tractors.

**DUTREIX:** Tractors, right.

**HINKS:** What type of hose or pipe did they use from the river into the pond and over the levee?

**DUTREIX:** You mean from the pump into the pond?

**HINKS:** Yes, as well as from the river to the pond.

**DUTREIX:** Well, on the outlet of the pump we usually dug a canal leading into the pond. And they pumped this water into that canal and right on into the pond. Now the suction of the pump was normally a 12-inch line going out into the river.

**HINKS:** And it went straight out into the river.

**DUTREIX:** It went down into the river, I'd say about six feet under water.

**HINKS:** Then was that a metal pipe?

**DUTREIX:** It was, oh yes.

**HINKS:** Where was the pump located? Was that on top of the levee?

**DUTREIX:** The pump was located on the riverbank.

**HINKS:** So the machinery that you had out there was a pump, a tractor for powering that, and was that it or was there other machinery, other than the pipes?

**DUTREIX:** No that's all there was, the tractor and the pump and the pipe.

**HINKS:** Do you remember any waterwheels that were used along the river?

**DUTREIX:** No.

**HINKS:** I know that there was one in the early twentieth century, down at Columbia Plantation, but I have not found anybody who remembers it yet.

**DUTREIX:** I don't remember that.

**HINKS:** And do you remember any other irrigation systems in the area.

**DUTREIX:** No.

**HINKS:** You had stated that your father sold the rice and then it was shipped to New Orleans or some other area to get milled.

**DUTREIX:** Right.

**HINKS:** So there was no rice mill right in this area here.

**DUTREIX:** No.

**HINKS:** Before your father used a tractor to power the pump, do you know what he used?

Transcription from 452

**DUTREIX:** He used a steam driven engine. And what they did was install a steam boiler and a steam engine on the riverbank to drive the pumps.

**HINKS:** Do you know what the steam engine was powered with?

**DUTREIX:** Steam.

**HINKS:** Was it coal or...

**DUTREIX:** The boiler was powered with coal.

**HINKS:** Do you know when he started using the tractor as opposed to the steam engine?

**DUTREIX:** They began using tractors in the 20s, the 1920s.

**HINKS:** So before that he used the steam engine.

**DUTREIX:** They used the steam engine. At one point they tried a kerosene engine which operated fairly well, but gave a lot of trouble starting it.

**HINKS:** Where were the steam engines located? Were they on top of the levee, or once again right on the riverbank?

**DUTREIX:** The steam engine and the steam boiler were located on the river bank.

**HINKS:** So that's in front of the levee.

**DUTREIX:** That's on the river side.

**HINKS:** Thank you very much for your information. I appreciate how you have helped us.

**DUTREIX:** Thank you.

TRANSCRIPT OF A INTERVIEW WITH CASIMIR GRAUGNARD,
A SUGARCANE FARMER AND REFINER, AND A NATIVE OF EDGARD, LOUISIANA

**September 1, 1988**

Present

Stephen Hinks
Project Manager
R. Christopher Goodwin & Associates, Inc.

Casimir Graugnard, Columbia Plantation
Edgard, Louisiana

Transcription from 000

**HINKS:** Today is September 1, 1988. Are you aware that this conversation is being recorded?

**GRAUGNARD:** Yes

**HINKS:** Mr. Gaugnard, what is your full name?

**GRAUGNARD:** I have three call names, John Baptiste Casimir, and my surname, Gaugnard.

**HINKS:** How do you spell Gaugnard?

**GRAUGNARD:** G-R-A-U-G-N-A-R-D

**HINKS:** Has your family lived in the area for a long time?

**GRAUGNARD:** Yes, I am 71 years old. I was born when my father was 62, and he arrived here when he was about 18. So we add 62 and 71 and from that subtract about 18 years and that would be the longevity of my father's life here, our family's life here.

**HINKS:** And you are 71 years old, so you were born in 1917. What was the date? What was your birthdate?

**GRAUGNARD:** The 16th of January.

**HINKS:** What were your parents' names?

**GRAUGNARD:** My father's name was John Baptiste Camille Graugnard.

**HINKS:** And what did your father do for a living?

**GRAUGNARD:** He was a storekeeper and a farmer.

**HINKS:** Do you know what crops he grew?

**GRAUGNARD:** He grew sugar cane, corn, and soybeans. Those and only those.

**HINKS:** Have you seen a lot of changes in the community during the 71 years you have lived here?

**GRAUGNARD:** The changes have mainly been the influx of nearby petrochemical plant and the genetical improvements of sugar cane varieties, which are more productive of sugar, and more resistant to insects and other influences on their sugar production. And better transportation along the river, fast increased transportation along the river. The railroading and the changes that have taken place all over the country with the

extraordinary manifestations of newer things and better things in the twentieth century.

HINKS: Let's talk a few minutes about some of the changes right in this area. As a child, did you ever play on top of the old levee? Or on the batture?

GRAUGNARD: Very, very much.

HINKS: What was it like? What did you see there?

GRAUGNARD: It had driftwood, and I personally would shrimp for fresh water shrimp in boxes with bait. And I also personally laid fish lines with hooks on them. I did that personally, and most of the time alone.

Transcription from 112

HINKS: Were there any structures or buildings on the levee or on the batture at that time?

GRAUGNARD: Stores which received goods would sometimes have warehouses on either side of the levee to receive the goods that were brought by little river boats for their supplies to sell to their customers at retail. There was more freight that came by way of the river since the residences and the stores were along the levee, and they weren't by railroad, which was two miles to the south of the river.

HINKS: Then, were there any landings in this immediate area?

GRAUGNARD: Yes, there was one very, very old landing called Caire's Landing.

HINKS: What was it like?

GRAUGNARD: The old store which served as the warehouse is still standing. It is a beautiful old brick structure.

HINKS: Okay, I've seen that.

GRAUGNARD: And the little river boats from New Orleans, carrying salt meat and all of the provisions as well as cloth for seamstresses to do their dresses and clothes, but especially enormous amounts of rice and salt meat which was one of the prime meat sources, protein sources, which is salted pork. And does not require refrigeration.

HINKS: What did the landing itself look like?

GRAUGNARD: The boats did not need a landing. They would simply drop a boardwalk from their...shortly aft of the bow. Just behind the boat, so they would drop a wooden walkway with handrails and it is along this passageway that big, strong men would put on their shoulders the bags of materials, almost everything came in bags, in large cotton or hemp bags. That is the way in which it was brought to the warehouses, which were owned and maintained by the stores, by the retail stores.

HINKS: At Caire's Landing, was there a store right out by the river, or was there any sort of building out by the river, or was everything inland?

GRAUGNARD: It was inland.

HINKS: Then the riverboat would come up and drop its gangplank, or its walkway, and the goods were unloaded and taken either to Caire's Store...Were the goods that were

for other people, were they left on the batture or on the levee or where were they taken?

GRAUGNARD: The storekeeper would rent his services to those who were expecting freight. The boats would carry not only the freight destined for the retail store. Others would also use that a means for transporting freight from New Orleans. The passenger access to New Orleans was by rail, and the freight access was by boat, mainly.

Transcription from 221

HINKS: Were you aware of any other landings right around in this area, other than Caire's Landing?

GRAUGNARD: No. I did not know about any.

HINKS: Were there any wharves or piers or was everything just dropped onto the batture?

GRAUGNARD: Dropped onto the batture.

HINKS: Were there any other activities along the batture such as sawmills or brickyards or other buildings?

GRAUGNARD: The only thing else I knew were showboats. There never was a year that a showboat would not make known its intended arrival and they would present one or two nights of nice, live stage shows and sell a lot of simple things to make money. But they were interesting. They were very lively.

HINKS: I've read about those showboats. It must have been a great thing to look forward to every year.

GRAUGNARD: With their calliopes. Every showboat had a calliope.

HINKS: That would have been fun. I would have enjoyed things like that.

GRAUGNARD: They were steam powered, and therefore could get the source of operating the calliope.

HINKS: Yes. The ferry down at Edgard. Has it always been in its present location, or has that location changed?

GRAUGNARD: It has moved about a hundred yards, east.

HINKS: Okay. Do you remember when the different levees were built?

GRAUGNARD: I do not remember the levee immediately in front of the Caire Landing, because usually when there are large structures, they tried not to move the levee. They used revetments instead. What I do remember distinctly when the levee was moved back very hard, in front of the Columbia sugar factory.

HINKS: When was that?

GRAUGNARD: We used to ride horseback in those days. I imagine it must have been when I was about 14, so it would be...

HINKS: 1931.

**GRAUGNARD:** Yes, 1931.

**HINKS:** And the one that was in front of that, right up on the river in front of Columbia Plantation ...

**GRAUGNARD:** Still exists.

**HINKS:** Okay, do you know when that one was built?

**GRAUGNARD:** No, sir.

**HINKS:** Have the traditional Columbia Plantation's boundaries changed over the years?

**GRAUGNARD:** None at all. Originally it was a Spanish grant, many, many years ago. I think my family acquired it from the latter part of the twentieth century.

**HINKS:** The nineteenth century?

**GRAUGNARD:** Of the nineteenth century.

**HINKS:** When you were a boy, what crops were grown at Columbia?

**GRAUGNARD:** Corn to provide food for the mules, which was the only source of farm power. There were no tractors in our day. And corn was grown for that purpose only. The cane, of course, was grown for the sugar business.

**HINKS:** Was rice grown at the plantation?

**GRAUGNARD:** There was much rice grown, but my family never did grow any.

<u>Transcription from 324</u>

**HINKS:** Can you tell me a little bit about sugar production at Columbia Plantation?

**GRAUGNARD:** Sugar is planted every year on about a quarter of the total of cultivated acreage, because a quarter of the total acreage is destroyed in order to provide grasses deterioration of the root system. Cane is granular and will come back but never as well as the first time. So about 25 percent is planted each year and 25 percent is abandoned each year. So about 75 percent of total cultivated acreage is in crop production. And then some seed of course is taken from that, so about five percent of the acreage is used for seed so that leaves about 70 percent of the total acreage for shipment to the mill for the production of sugar and molasses.

**HINKS:** Are sugar cane fields irrigated?

**GRAUGNARD:** Never.

**HINKS:** There used to be a pumphouse out by the levee. Do you know what that was for?

**GRAUGNARD:** It was exclusively for the use of the sugar factory in its condensers and mostly its boilers.

**HINKS:** D'd they have any structure associated with the pumphouse that was out by the river?

**GRAUGNARD:** Yes, there was flume, a three-sided flume which would bring the river water closer to the pump, which had to be in a more elevated position so it wouldn't get flooded

when the river came up in the last quarter of the year. And the pump then could take suction near itself by just gravity flow from the river into this flume.

HINKS: Could you describe how the flume was made?

GRAUGNARD: The flume had its substructure by big heavy timbers along the side and at the bottom, and it was boarded with heavy cypress boards. There was a pressure in it because it was sealed on the sides with the river sand, the batture sand, but it was strong enough that it wouldn't collapse by means of the sand pressure and by the water pressure. It was in equilibrium because there was water inside and out.

HINKS: And how wide was that?

GRAUGNARD: Oh, I would think it was about five or six feet wide.

HINKS: And then at the back end of that, would a pump sit right on top of the back end to draw water out?

GRAUGNARD: In proximity to the back. Steam driven pump.

HINKS: How was the sugar processed at Columbia Plantation transported out into the world market?

GRAUGNARD: Originally, I feel sure it went by riverboat. In the opposite direction of the freight that came in for use. It went to New Orleans for sale and distribution from there by brokerage houses in the city of New Orleans.

HINKS: Do you remember any waterwheel near the river?

GRAUGNARD: No, sir.

HINKS: Do you remember what agriculture took place adjacent and upriver from Columbia?

GRAUGNARD: I heard of the old crops, perhaps before sugar cane and perhaps before rice was grown here. There was indigo, for the dye. There was castor oil, to what extent I don't know. But those were the two crops that I never saw existing but heard from the older people when I was young. But there were two crops grown here in the years back. And then in my life, soybeans, rice, cane, and corn.

Transcription from 442

HINKS: Last month the crew I had excavating had a large wooden structure on the batture just upriver from the water plant. I've shown you a few picture of what we excavated. Do you remember ever seeing any of these structures that I showed you?

GRAUGNARD: Not the ones you showed me, but my father had one which was very much like it. And by the way sir, I have a half of a caster bean roller at my home that you might like to see. That was for the castor oil.

HINKS: That would be interesting.

Do you have any old pictures of different activities that happened on the river such as your parents' flume?

GRAUGNARD: Regretfully not.

**HINKS:** What about old Caire's Landing, any pictures of that?

**GRAUGNARD:** No but since it still exists, it can be seen and photographed.

**HINKS:** The store still exists. Does the landing itself still exist?

**GRAUGNARD:** Well, it is the storehouse, the warehouse into which the boats would leave their material. Now the red building which you've seen that can be photographed was moved, and there's a cornerstone showing when it was moved in order to make way for a levee. Be sure you photograph that cornerstone.

**HINKS:** Okay, I've not seen that yet.

**GRAUGNARD:** A white marble cornerstone.

**HINKS:** Is there anything else you can tell me about different activities that would happen up on the levee or on the batture?

**GRAUGNARD:** When levees were much lower and much less high in height, I've seen the water virtually, very near the top. And guards would patrol the levee, so that no one who would have the least inclination of making a small hole would not do that. And so flood stage, being the level at which water would run on the land if there was no levee, we were many feet above flood stage. This seldom happens now. And I did not experiences crevasses, but I've heard a great deal of two vast crevasses that happened in our vicinity, when the levee would simply break and water would flow freely to the rear of lands which run into Lake Des Allemands and eventually to the Gulf. So you should look at the pits that were made by this large flow of water. Perhaps talk to the people who were there, in the proximity.

**HINKS:** Do you remember the names of any of the different boats that came up here regularly?

**GRAUGNARD:** I can distinctly remember one called Tom.

**HINKS:** Was that a large boat?

**GRAUGNARD:** No, it was a very small boat, but carried a great deal of freight. It had enough free board to carry a lot of freight. And a number of people would ride and be fed aboard while they made their commercial excursions on the river. But I don't remember, any names I would give you would be hearsay.

**HINKS:** Okay. Did people used to do anything on top of the levee, like sitting? Was there a road on top of the levee or did they have benches up there?

**GRAUGNARD:** Every homeowner had a bench. And before air conditioning, and before television, every evening was spent, every twilight late evening after sunset, was spent on the levee with family and friends. We visited each other from neighbors from one side or the other. There were even little steps that were constructed of cypress that would go up the levee so that if it was slippery or grassy, it could be done conveniently.

**HINKS:** But there were no roads up on top of it?

**GRAUGNARD:** No, in fact there could be no road because the little benches and the little meeting places were setting right on top of the levee

**HINKS:** Okay, thank you very much for your help. You have been of great help and you have given me much information.

**GRAUGNARD:** I wish I had photographs.

**HINKS:** So do I.

TRANSCRIPT OF AN INTERVIEW WITH THEOPHILE SABERRE,
SON OF A FORMER RICE FARMER, AND NATIVE OF EDGARD, LOUISIANA;
AND,
ERNEST FIFFIE, A NATIVE OF EDGARD, LOUISIANA.

September 9, 1988

Present: Paul Armstrong
Archivist/Historian
R. Christopher Goodwin & Associates, Inc.

Theophile Saberre
Ernest Fiffie

*Transcription from 000*

**ARMSTRONG:** This was at one time a rice canal?

**SABERRE:** Yes.

**ARMSTRONG:** And do you remember it?

**SABERRE:** I don't remember but I was real small. Well actually, it was before my time in the 1800s.

**ARMSTRONG:** I believe so. Who is Theophile? That's you?

**SABERRE:** That's me, yes.

**ARMSTRONG:** And did you have a father by that name?

**SABERRE:** Yes. It was my father's name.

**ARMSTRONG:** Okay, your father was Theophile, too. I guess it would be going way back, but do you remember anybody named Eugene Roussel?

**SABERRE:** No, Etienne Roussel.

**ARMSTRONG:** Etienne?

**SABERRE:** Yes, well Eugene.

**ARMSTRONG:** Okay.

**SABERRE:** Eugene, that's what they called him. That's French. Probably Eugene, yes.

**ARMSTRONG:** Was that your grandfather?

**SABERRE:** Yes, that's my grandfather. Yes, he was married to Tasephine Roussel.

**ARMSTRONG:** So that's going back aways now.

**SABERRE:** Yes, they are the ones that bought the property.

**ARMSTRONG:** Right. I think I recorded in the courthouse 1883 for the property. May I ask your age, sir?

**SABERRE:** My age? I'm 67.

**ARMSTRONG:** Okay, so that makes sense then. So it was during your grandfather's time that he was growing rice. The reason why I am asking all these questions is that out here on the batture we found the flume.

**SABERRE:** Yes, the slough or something made of wood.

**ARMSTRONG:** To irrigate the rice. Do you think that it was your grandfather who built that?

**SABERRE:** Well, he had to because they were ones raising rice and that was the only way they could irrigate it. I couldn't say he built it but I assume he used it whether he built it or someone else.

**ARMSTRONG:** He definately used it. So as far as you know the canal went this way and it watered the fields going that way, right?

**SABERRE:** Right.

**ARMSTRONG:** Not this way.

**SABERRE:** No

**ARMSTRONG:** No, because that way was sugar cane and this way was rice. So how far back does it go, do you know?

**SABERRE:** It goes back to the Lafourche Basin.

**ARMSTRONG:** Oh, it goes far.

**SABERRE:** Yes, all the way back to there.

**ARMSTRONG:** So, it's all the way to the end of the property.

**SABERRE:** All the way to the end of the property.

**ARMSTRONG:** Wow.

**SABERRE:** It's swamp land back there.

**ARMSTRONG:** Yes. So they must have grown a lot of rice here.

**SABERRE:** At one time, they did, yes.

**ARMSTRONG:** And your grandfather, he owned the property. Did he lease it to other people to grow rice?

**SABERRE:** Afterward I understand some people were leasing it for rice. Several people, I don't know who all they were. At different times, different people.

**ARMSTRONG:** Right. But your father, do you know what time did he get the property?

**SABERRE:** Well, I'll have to look at the copy of the deed to see when... You see, my grandmother willed it to her grandchildren, that's what it was.

**ARMSTRONG:** Your grandmother's name was...

**SABERRE:** That was Tasaphine Roussel.

**ARMSTRONG:** But your father didn't grow rice?

**SABERRE:** My father, I don't ... No, he didn't grow rice.

**ARMSTRONG:** So it was probably in the late 1800s, early 1900s, that they grew rice.

**SABERRE:** Yes, in the 1800s.

**ARMSTRONG:** Late 1800s?

**SABERRE:** Yes, in the late 1800s, early 1900s.

**ARMSTRONG:** Do you remember as a child ever playing out there on the batture and seeing anything out there other than those rice flumes?

**SABERRE:** Well, they used to have that protection, a lot of boards that would protect the levee from...

Transcription from 108

**ARMSTRONG:** Oh, okay. I read about that.

**SABERRE:** To protect the levee from erosion, I guess, they had these cypress boards.

**ARMSTRONG:** Yes, what did they call that? There was a name for that. It seems like it was a French word.

**SABERRE:** It was a French name. I don't know.

**ARMSTRONG:** I believe we asked somebody over here and he said that, too. Do you remember any pumps or steam engines or anything like that, any type of equipment being left out there?

**SABERRE:** Not that I know of. I couldn't remember, no. You see, I don't think there was any because you see this is a new levee.

**ARMSTRONG:** I see.

**SABERRE:** There was another levee just beyond that. And that levee moved, let's see, I believe in 1920 something when the high water came. If there was anything, it is probably in the river.

**ARMSTRONG:** Right. That's what we assumed it was.

**ARMSTRONG:** I see. What about this rice canal. When you were little, was it bigger or was it about the same?

**SABERRE:** It was larger, yes.

**ARMSTRONG:** It was larger. How large do you think it was, a meter, three feet, four feet?

**SABERRE:** I would say about at least about three feet or bigger. You can see it's filled up.

**ARMSTRONG:** Was it deeper, too?

**SABERRE:** It was a little deeper, yes. At one time the Parish used to dig this out and clean it for us.

**ARMSTRONG:** Oh, really.

**SABERRE:** Well, actually they paid us a fee because the water on the other side of the highway used to drain through here, but then they...I don't know, I was away at least. They had a little misunderstanding with the parish...

**ARMSTRONG:** I'm sure...

**SABERRE:** And they stopped doing it.

**ARMSTRONG:** They stopped doing it, yes. Do you have any old family papers or anything that describes the rice agriculture that went on here or anything about it?

**SABERRE:** No, I sure don't.

**ARMSTRONG:** No, I didn't imagine you would. That was a long time ago. What about the property boundaries, they haven't changed?

**SABERRE:** The boundaries haven't changed, no. Because it was what they called from the river all the way back to the Lafourche Basin.

**ARMSTRONG:** The records show that your family owned one arpent front. And these tracks are a half arpent.

**SABERRE:** Right, that one on the side here is a half arpent.

**ARMSTRONG:** Right. This used to be part of the old Camelia Plantation, going back to the 1800s.

**SABERRE:** Yes, well I don't know about that.

**ARMSTRONG:** Right. I'm just saying that your family bought this and they bought a larger piece than the other people before Camelia Plantation. And that's where they grew rice. That's what we're trying to figure out here.

**ARMSTRONG:** Let me ask you about something a little different. We have the landing across the street from the church, right?

**SABERRE:** That's the ferry landing.

**ARMSTRONG:** The ferry landing. Do you remember when they had what they called the old Caire landing? It was across the street from the store.

**SABERRE:** Across from the store, yes.

**ARMSTRONG:** That's no longer there now though.

**SABERRE:** No, it's not there any more. You see actually I left away from here when I was a kid. I left away to go to school. I was real small when I left and I didn't come back until about four or five years ago.

**ARMSTRONG:** So you don't remember that much.

**SABERRE:** Not that much. When I was a kid, I used to play back of the levee, and that's how I remember the upright boards.

**ARMSTRONG:** I think that was to help protect...

**SABERRE:** That was to help protect the levee, yes.

Are they going to put a matting in the front here?

**ARMSTRONG:** I think that's what they are thinking of doing. That's why they hired us, to see if there's anything historically important.

**SABERRE:** Yes, well the only thing I would know would be that rice.

**ARMSTRONG:** Yes, there seems to be another one. Maybe a couple more, going further down this way. They look pretty similar. We haven't dug them up yet, but yours seems to be the first one.

**SABERRE:** You see at one time most of this area was rice and then later on they got into sugar cane.

**ARMSTRONG:** Did they grow vegetables around here, too?

**SABERRE:** Vegetables, yes.

**ARMSTRONG:** But nobody grows rice any more.

**SABERRE:** Not that I know of in this area.

Transcription from 224

**ARMSTRONG:** Do you remember any boats that would come along and stop, along the river? Because there are a couple of old gentlemen we spoke to, and they say they remember two boats, one called the Tom and what was the other one... the Grace, the John D. Grace.

**ARMSTRONG AND SABERRE ENTER HOME AND CONTINUE CONVERSATION WITH ERNEST FIFFIE.**

**SABERRE:** This gentleman is Ernest Fiffi, a friend of my father. He may know a little bit more about what went on around that time. He was asking me about the river traffic. Do you remember any boats that used to pass up and down this river?

**FIFFIE:** The last boat that I remember was a ship.

**ARMSTRONG:** A ship?

**FIFFIE:** From France, yes. _____

**SABERRE:** Oh, that's when the ship ran into the levee.

**ARMSTRONG:** Oh, really. What was the name of that ship?

**FIFFIE:** No, it was from France.

**ARMSTRONG:** It was from France. Do you remember a boat called the John D. Grace?

FIFFIE: Yes, I worked on it.

ARMSTRONG: You did. You worked on it, huh?

FIFFIE: Yes. Didn't have no roustabouts.

ARMSTRONG: Really? Where did it stop?

FIFFIE: It stopped right down there, a little further up at Perret.

ARMSTRONG: Was it at a store?

FIFFIE: Yes.

ARMSTRONG: A store, right.

FIFFIE: It stopped at different stores.

ARMSTRONG: I see. What did the Perret landing look like? Did it have wood?

FIFFIE: No they didn't use no wood.

ARMSTRONG: What about a boat named the Tom? Do you remember that boat?

FIFFIE: Tom, yes. Tom and Paul.

ARMSTRONG: Paul, too?

SABERRE: Did they run by Caire's old Store? Didn't they used to have a landing there?

FIFFIE: A little further up.

ARMSTRONG: But not in front of the store. Do you remember any other landings besides Perret, were there any other places the boats stopped on this side of the river?

FIFFIE: Well, they stopped at Ledville, they stopped at Uslip, they stopped at Tigerville, at different stops.

ARMSTRONG: Different stops. But they didn't stop right here, though, that you remember?

FIFFIE: No.

ARMSTRONG: No. That was before. Too long ago. Sir, how old are you, may I ask?

FIFFIE: Eighty.

ARMSTRONG: Eighty?

FIFFIE: Eighty-six.

ARMSTRONG: Eighty-six. Do you remember when they used to grow rice around here? Did you ever remember seeing the old rice irrigation flumes out in the river?

FIFFIE: Yes.

ARMSTRONG: Because we found one of the old ones out there.

FIFFIE: They used to siphon it.

ARMSTRONG: Right, this is the canal, right? The water for the rice came out right here?

FIFFIE: Yes it did.

ARMSTRONG: But they weren't growing rice when you were a little boy?

FIFFIE: Yes, they were growing rice.

ARMSTRONG: They were?

FIFFIE: We grew rice here.

ARMSTRONG: You did. Well, what kind of rice was it called? Did you have a name for the rice? River rice?

FIFFIE: Early Prolific.

ARMSTRONG: Early Prolific?

FIFFIE: Yes, and Blue Rose. That was the name of the rice.

ARMSTRONG: Blue Rose?

FIFFIE: Blue Rose. That's the major rice.

ARMSTRONG: You remember when they grew it?

FIFFIE: Yes.

ARMSTRONG: Did they lease the land to grow it? Did they... how do I ask this question?

SABERRE: When they were growing rice, one individual raised the rice but he didn't own the land?

FIFFIE: No. He rented it.

SABERRE: He rented it?

FIFFIE: He rented it.

ARMSTRONG: He rented it, right.

FIFFIE: See, they grew corn and different things, not all rice. I rent a fellow half of this in the back. I make it rice in between and the rest of it I was growing corn.

ARMSTRONG: Wow. When did they stop growing rice around here?

FIFFIE: Oh, about when I was ten years.

ARMSTRONG: Ten years?

FIFFIE: The river was too high.

ARMSTRONG: Ah.

**FIFFIE:** Divant was the last man to raise rice here. (unintelligible) But they can't get any water. See they had to go a mile to run the water from the river to the levee.

**ARMSTRONG:** How did they pump the water over the levee?

**FIFFIE:** They had a siphon.

**ARMSTRONG:** Had a siphon? Was it a steam engine?

**FIFFIE:** No, a pipe.

**ARMSTRONG:** But they didn't use a pump to push the water over? They didn't use an engine?

**FIFFIE:** No.

**SABERRE:** It was probably just a pipe. Once they got the siphon started, they would let it go and they when they got ready, they would just cut it off.

**ARMSTRONG:** Right.

**SABERRE:** Raise the valve up. There was no steam engine.

**ARMSTRONG:** No steam engine.

**FIFFIE:** They primed it.

**SABERRE:** Yes, they primed it. Just like when you want to siphon something. You prime it to get it started and then it starts flowing. Well, that's the way they did. They didn't use no engine.

**ARMSTRONG:** Yes, this side of the levee has got to be lower.

**SABERRE:** Yes, to slow it down, put something like you are closing the valve up or something.

**FIFFIE:** Yes. There's that pipe under the highway right now.

**ARMSTRONG:** Really?

**SABERRE:** That's underneath the highway.

**ARMSTRONG:** But that old siphon, that was always there, even when you were younger?

**SABERRE:** They had built that even before we used to raise rice. That siphon.

**ARMSTRONG:** It's old, right. It's older than you?

**SABERRE:** That siphon was there before you was a kid, right?

**FIFFIE:** No. They put that out there.

**SABERRE:** Well, who built it?

**FIFFIE:** Divant.

**SABERRE:** There wasn't no rice there before _____?

FIFFIE: Not that I know.

ARMSTRONG: Not that he remembers. So what's this man's name?

SABERRE: D-I-V-A-N-T

ARMSTRONG: Okay. And he doesn't live here. He built that? He built the siphon?

SABERRE: They probably did. They probably built that before Divant was here. Because Divant got that in the 1900s, right?

ARMSTRONG: We're trying to find out was who built it?

SABERRE: If they were raising rice before Divant, then somebody else must have built it.

FIFFIE: I don't remember.

SABERRE: David [Webre?] said they were raising rice when he was a kid.

ARMSTRONG: They had Columbia next to them, right? They grew all the cane.

SABERRE: Columbia start from that canal on down.

ARMSTRONG: But they grew rice, didn't they?

Transcription from 510

ARMSTRONG: So you remember growing Blue Rose rice?

FIFFIE: Blue Rose, Early Prolific.

ARMSTRONG: What time of year did they plant?

FIFFIE: March.

ARMSTRONG: March? And how long did it take before the rice would grow?

FIFFIE: Well, July or August.

ARMSTRONG: July or August. You put it in 200-pound sacks, right?
FIFFIE: Three.

ARMSTRONG: Three hundred? I thought it was two.

FIFFIE: Three.

ARMSTRONG: Okay. And then they used to thresh it on the river, on the batture, that's where the threshing machine used to be?

FIFFIE: No in the field.

ARMSTRONG: In the field?

SABERRE: See, that's when they had the threshing machines. The threshing machine in the 1920s.

**ARMSTRONG:** Well, how did they take the rice, by truck, by railroad?

**FIFFIE:** Truck.

**ARMSTRONG:** Truck? By truck, okay.

**SABERRE:** You must have had wagons or something at first before... How did you used to haul it?

**FIFFIE:** Haul it from the field? With trucks.

**SABERRE:** When did they start building trucks? That's the thing. They didn't start building trucks until later. So it was wagons...

**ARMSTRONG:** Wagons and carts.

**FIFFIE:** Wagons and horses.

**ARMSTRONG:** Where was the mill? Down in New Orleans? The rice mill?

**FIFFIE:** They had one in Tigerville.

**ARMSTRONG:** Tigerville?

**FIFFIE:** Yes.

**ARMSTRONG:** That's not far. I didn't know they had one in Tigerville. That's close. So they stopped growing the rice because they couldn't water the fields any more?

**FIFFIE:** Too far to get water, that's what I figure. (unintelligible) You see the river used to come by here. Now the river is stopped up on this side, the river is too far from the highway on the other side. (unintelligible)

**ARMSTRONG:** But nobody grows rice any more, even going this way. You would have to go up near St. James Parish.

**SABERRE:** Yes, I don't know of anybody raising rice around here now. I think they raised rice down in St. Charles Parish at one time.

TRANSCRIPT OF INTERVIEW WITH DAVID WEBRE, A LIFELONG RESIDENT OF EDGARD, LOUISIANA; AND, HIS WIFE MARIE WEBRE.

August 25, 1988

Present: Stephen Hinks
Project Manager
R. Christopher Goodwin & Associates, Inc.

David Webre and Marie Webre
Edgard, Louisiana

Transcription from 000

HINKS: Today is August 25, 1988. Mr. Webre, what's your full name?

D. WEBRE: David Guy Webre

HINKS: How do you spell that?

D. WEBRE: W-E-B-R-E.

HINKS: When were you born?

D. WEBRE: September 12.

HINKS: What year?

D. WEBRE: 1910, September 12.

HINKS: Are you aware that this conversation is being recorded, and is that fine with you?

D. WEBRE: That's all right. I'm aware.

HINKS: Has your family lived in the area for a long time?

D. WEBRE: Almost all our days. My grandparents lived in Edgard for years. You know, for as long as I can remember.

HINKS: What were your parents' names?

D. WEBRE: My father was Joseph Henry Webre and my mother was Martha.

HINKS: So its Joseph Henry Webre and Martha... How do you spell that?

D. WEBRE: Martha, M-A-R-T-H-A. And Fenici, F-E-N-I-C-I, something like that.

HINKS: What did your father do for a living?

D. WEBRE: He was foreman at a sugar mill.

HINKS: Which sugar mill was that?

D. WEBRE: Columbia.

HINKS: And were you born over there at Columbia?

D. WEBRE: I was born at Columbia.

**HINKS:** And how many years did you live there at Columbia?

**D. WEBRE:** In my life, I lived there until I was, it must have been around 18 or 19 years.

**HINKS:** Let's talk about some of the local changes over these past many years. Did you used to play on the old levee, out by the river?

**D. WEBRE:** Yes, we used to go play there. And would even go swimming by the river.

**HINKS:** What was it like and what did you see down by the river?

**D. WEBRE:** Well the river then, the water edge was where you could walk maybe 20 feet without getting to more than about four feet of water. Past that, well then you get to a slow boundary, then you would get even deeper. We always met in a regular back yard. Knee deep was enough for us as kids, or our parents would catch us and then we really would have gotten it.

**HINKS:** I believe it. Were there any buildings or other activities that normally occurred on the batture that you remember?

**D. WEBRE:** No. People usually go fish by the river and catch shrimp or something like that and fish, you know. But they were almost every local residents used to go fish down by the river.

Transcription from 070

**HINKS:** What can you tell me about landings along the river? Were there many landings along here?

**D. WEBRE:** No, the landing was mostly down the river by Caire's Store, the company store, by the church. That was their landing here. That was one. The other landing where we used to go we used to have a river light, you know like the Coast Guard put a light, where right now, I don't know if they still have it. Because right now they've got plenty lights by the river on each side. On the banks, you know they have electricity. Around that time there was no electricity. No electric lights. The government had usually pass about every three months. They had a boat, common government boat, with kerosene and used to would come and put kerosene by the light keeper. Put kerosene there and they paid him about every three months, something like that. It wasn't done every month. They put enough supplies to make about four trips a year. That was by Carry Lane, about a mile up the road.

**HINKS:** So the only landing in this area was Caire's Landing, as a regular landing.

**D. WEBRE:** Yes.

**HINKS:** Do you remember how that was actually used?

**D. WEBRE:** Well, you know how the boats used to have long gangplanks. And, the people would haul the freight on the boats on their backs and put it on the levee, or wherever you had to go, somebody had to truck that and put it. Then they would take off with their load. Then they rode away and off they go. Pick up their gangplank and go.

HINKS: Did the goods just get put on the batture or did they get put on top of the levee or into Caire's Store or where were they taken?

D. WEBRE: They would put it for Caire's store in the building. The others knew their goods was coming and come and get it.

HINKS: Was there a building there?

D. WEBRE: No, no. It wasn't there at the time, that I remember.

HINKS: You know the ferry that is down at Edgard, that's there now. Has that always been in its present location or has that changed?

M. WEBRE: It changed.

D. WEBRE: _____ bypass. It went right by Caire's store. But then they changed it and put it in front of the church.

M. WEBRE: It's not that old that they did that. About maybe six or seven years.

HINKS: How close is its present location to Caire's Landing?

D. WEBRE: Well, it's about from here to, I'd say, from here to the levee.

HINKS: About a city block or so.

D. WEBRE: Yes.

HINKS: Were there any sawmills, or brickyards, or other activities that were close to the river in this area?

D. WEBRE: I remember back at the time you didn't talk about that. But when they laid that levee there, I remember seeing brick foundation by the river, but that was done years ago. What that was, that old building there, I don't know.

HINKS: Do you remember when the different levees were built?

D. WEBRE: Yes. Well, I don't remember the first, the old one, but I do remember this one, the new one.

HINKS: There's two levees out there now. There's a modern one...

D. WEBRE: The one they borrowed the dirt to make this one. It depends, you know how they survey, sometimes they go out, some in. Someplaces they took most of the old levee. Someplaces they took new land that was too far from the other levee. So they left a pond there sometimes.

HINKS: That would be a borrow pit. Then the old levee out there, the one that we walked over right before we got to our site, the old one was there when you were a boy?

D. WEBRE: Oh, yeah. I don't know when they make that. That was maybe even before my daddy's time.

Transcription from 166

**HINKS:** Did they ever alter that one? Did they ever change that one out by the river? Did they ever build it up any?

**D. WEBRE:** The old levee you are talking about, they capped it about four or six feet. And then years after that they made the new one.

**HINKS:** Do you know about when they capped the one out by the river?

**D. WEBRE:** The one by the river, I was a little boy when they did that. I must have been about maybe twelve or fourteen years old.

**HINKS:** Would that be in the early 20s then?

**D. WEBRE:** That would be 1922 about. I was born in 1910. If I was around 12, it got to be 1922, I guess.

**HINKS:** So they had the old levee there, then around 1922 they capped it with about four or six feet on top of it, then after that they built the new one.

**D. WEBRE:** Years after. When they built that one, I don't remember when.

**M. WEBRE:** You know about your age?

**D. WEBRE:** About '29 or '30. There was a big flood all over the country in 1929, I believe, or '27. 1927 was the flood all over the nation, all along the Mississippi Valley. That was in 1927 and they built it about maybe one or two years after.

**HINKS:** So it would be the late '20s, maybe 1930. Let's talk now a little about rice and about this area here. I brought along a copy of the 1929 Lafourche Basin Levee District map. And on this map, just west of Columbia Plantation, it shows a section of land owned by Henry L. Webre. Was that your father that owned this land?

**D. WEBRE:** No, no.

**HINKS:** Or, who is it?

**D. WEBRE:** They got two different families of Webres in Edgard. My Daddy was Joseph Henry Webre.

**HINKS:** Do you know who this gentleman was here? Is he any relation to you, Henry L. Webre?

**D. WEBRE:** No, there is no relation.

**M. WEBRE:** Do you think you have the name right?

**HINKS:** They have been wrong, I'm not sure.

**M. WEBRE:** It could have been a "J" instead of an "L." Then it would be Henry J. Webre.

**HINKS:** It could be wrong.

**D. WEBRE:** *There were two families of Webres now.*

**HINKS:** Who owned this property before you? When did your father buy this land?

**D. WEBRE:** I don't remember the year. I was still going to school. I was about fourteen or fifteen years.

**HINKS:** So it would have been about mid 1920s.

**D. WEBRE:** It might.

**HINKS:** Do you know who owned it before?

**D. WEBRE:** (Unintelligible)

**HINKS:** When you were a boy, what crops were grown in this area?

**D. WEBRE:** They grew sugar cane here at Columbia. They used to grow rice and vegetables, that's all.

**HINKS:** So from just west of your property and on into the west, they grew rice.

**D. WEBRE:** Lots of rice, mostly rice. Columbia, sugar cane, always was. And going down the road all the way to the end of the parish, sugar cane.

**HINKS:** Then from this point on toward the west part of the parish they grew rice.

**D. WEBRE:** Rice, plenty of rice.

**HINKS:** Then, how long did they grow rice? When was the last rice crop? Do you have any idea?

**D. WEBRE:** I think there were some growing on into the 20s, 1925, 27, something like that.

**HINKS:** So it was the late 20s, the end of the rice.

Several weeks ago, you and I walked over to the river where my crew was excavating a large, wood structure. What can you tell me about that structure? Do you remember it?

**D. WEBRE:** I remember that structure, but I don't remember when they built it. I remember when the rice farmers were using it. They built a trench and they boarded it to keep the ground from caving in. Every time the river would rise a little bit and they were not finished, they put it in the way to protect it from caving in so they get enough water coming in the end of the siphon to go over the levee.

<u>Transcription from 281</u>

**HINKS:** How about you just go through it step by step and tell me how it actually worked, how you remember it in operation?

**D. WEBRE:** Well, as a little boy, I remember it. The water from the river followed a trench that they boarded on each side. You can see the board was made out of rough lumber. There were no sawmills to talk about back in those days. They just split lumber and they board it. Now the water would come to the end of the siphon. They had a pump on a stand. You might see a place where it is kind of square like. And that pump was installed on that.

**HINKS:** Where was the pump?

**D. WEBRE:** Sometimes it was by the levee, if the river wasn't too high.

**HINKS:** On the river side.

**D. WEBRE:** When the river was high, they put the pump on top of the levee.

**HINKS:** And so they had a pump either in front of the levee or on top of the levee depending on the river level.

**D. WEBRE:** Yes, if the river was high, they had to take the pump away. So if the water came naturally, then the suction end was low. I mean, if the suction end was high, the discharge was low. So they followed it in, sometimes they didn't use the pump at all. A natural flow, they sucked from the river and discharged at the low end. Did you ever take a tube from a high jug full of water and have it drop into something low? It does that automatically.

**HINKS:** So if the water level was high, they just suctioned the water, or siphoned it on over the levee.

**D. WEBRE:** That's right. But sometimes it was low. So then that's why the [pump] came in handy.

**HINKS:** Then, the water went in the siphon, into the settling box...what was the box in the back of it for?

**D. WEBRE:** It was just a stand, it was just a stand. You see, to hold the pump in the water, you had to put the pump on something like that, you see.

**HINKS:** When they had to do that, did they put a pump on top of that structure?

**D. WEBRE:** That's it. They would put it on top, yes. If the water was there to the top, they put it on top. If there was no water there to keep it low, well, that's when they had to use a pump and pump. The farmers used to wait for high water. You see, like that you don't have any expenses. You see, they used the suction. But when the water was low....

**HINKS:** Then, what equipment did they use, what was the basic equipment they had out there when they were using it?

**D. WEBRE:** It ain't much. A few water buckets to prime the pump sometimes when they had to prime it. When the water was high, they had to prime it to start up. People with shovels, not too many, it used to be one attendant, one water attendant. Then whatever go wrong you have the shovel lackey, then if you need help, call for help.

**HINKS:** Then you have the pump itself with the pipes going from the rice flume. What were the pipes made out of?

**D. WEBRE:** Cast iron, iron pipes.

**HINKS:** And how big around were they.

**D. WEBRE:** They were 12-inch pipes.

**HINKS:** Twelve-inch pipes. And that was either suctioned through a siphon or else it was pumped over the levee. And what happened to it on the other side of the levee, on the inland side?

**D. WEBRE:** Well, the water just followed the trenches, go back to take care of your rice fields in the back where you have the trenches. They scattered the water like they want.

**HINKS:** So it went straight into a trench for the rice field.

**D. WEBRE:** And from the canal to the trenches. From that they divided, you know. Here you have your standing water standing over here. If you need water over there you dam it here, then let it go over there. If you have too much in the back, well, then they dam it and let the water stay in the front, and name a water tender.

**HINKS:** So you had different sections of the field that you could flood depending on...

**D. WEBRE:** Oh, yeah, they could go any way. They dam it in one place to make it rise in the other place. Because in between each square they had a little levee, a rice levee.

Transcription from 365

**HINKS:** I can understand that. Then how was the pump powered? What did they use to...

**D. WEBRE:** Kerosene or gasoline. Well, I don't remember if they had kerosene or gasoline or coal oil. I remember the gasoline trucks passing on the road. They'd have their _____ filling station. That was coal oil, I don't remember gasoline. Gasoline came years after.

**HINKS:** Okay, so you remember kerosene?

**D. WEBRE:** I remember kerosene.

**M. WEBRE:** It was kerosene, because I used to work at Caire's Store, and I worked back at the _____ and I remember working in there _____ and it was kerosene. And they'd bring the kerosene, you know, in drums.

**HINKS:** Then, do you remember what was used before the kerosene?

**D. WEBRE:** (Shakes head no)

**HINKS:** When do you remember the rice flume being actually used? What year?

**D. WEBRE:** I think I was about between eight or ten years old, seven, eight, or ten years old.

**HINKS:** So that would be ....

**D. WEBRE:** I used to walk down the levee and watch the men working there.

**HINKS:** So it would be like 1917, 1920.

**D. WEBRE:** It would be around somewhere in that area.

**HINKS:** Do you know when the last time was when they used it?

**D. WEBRE:** No. When we came to live here, there were no more rice fields then.

**HINKS:** So by the late 20s, they were no longer using it.

**D. WEBRE:** In fact, not the late 20s. They must have used that, I don't remember then using that about, or was it like about fifteen or seven to nine years. They never used it after that, I was a little boy, you see.

**HINKS:** Okay, so the last time that you remember using that was around 1920. Did they use it throughout the growing season, or was it just say after...

**D. WEBRE:** You see they plant the rice, then they have to water the rice to help it come up. Then they keep the water there so many days. How many days, I don't know. Its to keep the grass down and keep the moisture up. Then they take the weeds out, the grass out. Sometimes the little boys would go, I remember one time going to pull the weeds out of the rice. Then, they draw the water out and the rice would grow, it would start from the seed. They take the water out, and let the rice dry up. Harvest would start in September, October, Novernber.

**HINKS:** That's harvesting. So when they were using it would be in the spring time when they would use the rice flume for irrigation.

**D. WEBRE:** Yes, that was in the spring time.

**HINKS:** Then after this rice flume stopped being used in the early 1920s, do you know how long it was open so you could still see in the box in the back?

**D. WEBRE:** Once they give it up, high water would come and cover everything. That's why now and then, when the river's still, and you go down dragging the river, then you see the top edge of it. But for years now, sometimes its covered years, but I knew it was there. But then one day, I started seeing some pieces showing up and the weight of the water had washed in it, showing the whole trench again, you see.

**HINKS:** Where did they thresh their rice and where did they sell it? How did they get rid of it?

**D. WEBRE:** Well, the boats would come pick up the rice on the levee. They thresh it in the field, put it in bags and bring it on the levee with wagons. Then the river boat would pick it up.

**HINKS:** So it was threshed at the front end of the field and then carried over to the levee and transported from the levee onto the river boat. How did the river boats land?

**D. WEBRE:** With a gangplank. And the longshoremen would take the bags of rice and put it on the boat.

**HINKS:** Okay, so it was just like at Caire's Landing.

**D. WEBRE:** Same thing, same thing. All one system. There wasn't a freight truck for many--about ten--years. Going to school, you know, and in vacation, I used to work deliver freight on the red boat that came from New Orleans. We used to call that boat Tom Number 1 and Tom Number 2. Carl was the captain of that boat. And had they the time, they would come and eat on the boat.

<u>Transcription from 466, on Side B</u>

**HINKS:** So there were lots of river boats?

**D. WEBRE:** Oh, lots of river boats, like I mentioned. The Plaquemine. The John D. Grace, and the Dixie was the two most famous ones here, and Tom boat.

**HINKS:** Then for landing they almost always just went up to the shore and they dropped their gangplanks. They didn't go up to a wharf or anything?

**D. WEBRE:** There weren't any wharves.

**HINKS:** Okay, so there weren't any wharves at all.

**D. WEBRE:** No wharves, no wharves.

**HINKS:** Do you remember any other irrigation systems up and down the levee?

**D. WEBRE:** No other system, same system. But they had different kind of _____, you know. It was all the same type of work, siphon over the levee.

**HINKS:** Then the other irrigation systems that you saw up and down the river for the rice, they were similar to the one .....

**D. WEBRE:** Probably the water on the batture would have been lower, something like that. They had more powerful pumps after that year.

**HINKS:** Did they also use rice flumes or did they just put pipes into the river or do you remember?

**D. WEBRE:** No, they had the pipes over the levee.

**HINKS:** Do you remember any waterwheels being used near the river?

**D. WEBRE:** (Shakes head no)

**HINKS:** No. Okay, because there are historical references to a waterwheel up on Columbia Plantation and we were trying to figure out what it was used for and where it was located.

**D. WEBRE:** There used to be a Columbia pumphouse by the river, but that was years ago, they had a steam pump by the river.

**HINKS:** What did they use that for?

**D. WEBRE:** They used that water to go to the sugar house for the boilers, just for that, for the boilers.

**HINKS:** What was that? I didn't catch that.

**D. WEBRE:** They used the water to make steam in the boilers.

**HINKS:** Did they pump water over the levee with that?

**D. WEBRE:** Yes, over the levee. They had to get over the levee to get water from it. The government wouldn't allow them to dig a trench under the levee. It was against the law to do that. They have to go to Washington. If you don't do that, they won't grant you that.

**HINKS:** Okay, so at the Columbia pumphouse they pumped water over the levee and they used it for the steam engine.

**D. WEBRE:** Yes, the pumphouse. From a building on the plantation, by the highway.

**HINKS:** Yes, I've seen that on the different maps, I've seen that pumphouse.

Was the rice processed on the farms or did they send it away to be processed?

**D. WEBRE:** They get rid of it like it was. Then the rice mills would take care of that for the brokers' percentage. They took that out.

**HINKS:** Once they got onto the boats...

**D. WEBRE:** Once they got onto the boats that was it.

**HINKS:** And do you know what factors ended the rice industry in this area?

**D. WEBRE:** (Shakes head no)

**HINKS:** Okay, no.

Do you have any old pictures showing any of these old rice irrigation activities?

**D. WEBRE:** (Shakes head no)

Transcription from 576

**HINKS:** No, okay. Well, I'll show you a few pictures of what we found and get an idea from you as to where the exact equipment was located. Here's a picture of the rice flume that we excavated from the river towards the old levee. Yes, the one that we actually excavated. This is not a clean picture, it's not a great picture, but it gives you a good feel for what's there. Here's a few more showing the feature as we excavated it.

**D. WEBRE:** They did that with a _____. It's all torn out, the wood is torn out.

**HINKS:** This ditch here in the middle where the water intake goes, was that open or was that filled up with sedimentation.

**D. WEBRE:** The only thing I know is they take water from the river, go over the levee and that was it. That's all I know.

**HINKS:** So it went through the pipe into this box at the back end. There's the opening to the pipe right there. And then they pumped it out of there into the rice fields. This box at the back end of the rice flume, was the pump on top of that box there?

**D. WEBRE:** They put a pump on top of that box. Sometimes they would. And sometimes they take it off. If the water _____ do anything with it, if there is no where to go, you see. _____ It's just a big heavy box, sitting on top of a flat box.

**HINKS:** Was this covered any how, the entire rice flume, was it covered?

**D. WEBRE:** No, it was left open. The time they used it, they forget about it until next year.

**HINKS:** And then there would have been a board on top of it.

**D. WEBRE:** Yes.

**HINKS:** Something to pump on. You can see in the picture a lot of these posts have been kind of shorn off, probably from barges or something. When you remember, was it much taller than this, or was it just about the same height for the entire rice flume?

**D. WEBRE:** It was about the same height.

**HINKS:** So a little bit has been destroyed but not a lot.

**D. WEBRE:** Oh yes, during high water we used to watch the _____ the top, you know.

**HINKS:** Was the back box much higher, or was it about the same level as it is now?

**D. WEBRE:** It was about the same level as it is now, about. I noticed the top, you see, I noticed the top when I went with you, you see. There hasn't been too much damage except the slat--the floor--that was put on it.

**HINKS:** Okay, so basically what's missing is that top board to put a pump on. And then this was kept reasonably open, up in the front part, but not necessarily all the way down to the box. You don't remember seeing that part there.

**D. WEBRE:** (Shakes head no)

**HINKS:** And these were all made from hand hewn boards in here, in the feature. Do you remember what type of wood were used?

**D. WEBRE:** Cypress.

**HINKS:** Cypress. And most of that was hand done.

Transcription from 687

**D. WEBRE:** Yes. They used to have what they called a fascine. They used to use two by ten, two by twelve boards. That was to protect the levee from wave wash, that old levee. You might come across them when you dig along the river, hit some old folks' boards from the old fascine.

**HINKS:** Okay, so they also used some of these boards for shoring up the old levee, to keep the river from damaging it.

**D. WEBRE:** Yes. That's right. Build the levee higher, twelve, fifteen feet high. Long boards. I remember that well. The farmers used to spend a fortune. Of course, everything was cheap in those days.

**HINKS:** Then do you remember other than the pump and the rice flume here, do you remember any other features out there whatsoever?

**D. WEBRE:** No. I was a young boy. Generally, it was not like it is today. In those days you had your chores to do at home. We used to go out. My daddy used to go on the levee. We used go watch him at times.

**HINKS:** So you don't remember anything that looked like this other picture, which is our other feature?

**D. WEBRE:** No.

Transcription from 730

**HINKS:** Do you have any other information you think would be helpful for me? Anything else that you remember about anything on the batture?
Buildings or anything?

**D. WEBRE:** (Shakes head no)

**HINKS:** Thank you very much for your help. I have learned a lot through what you have said.

**D. WEBRE:** You're welcome.