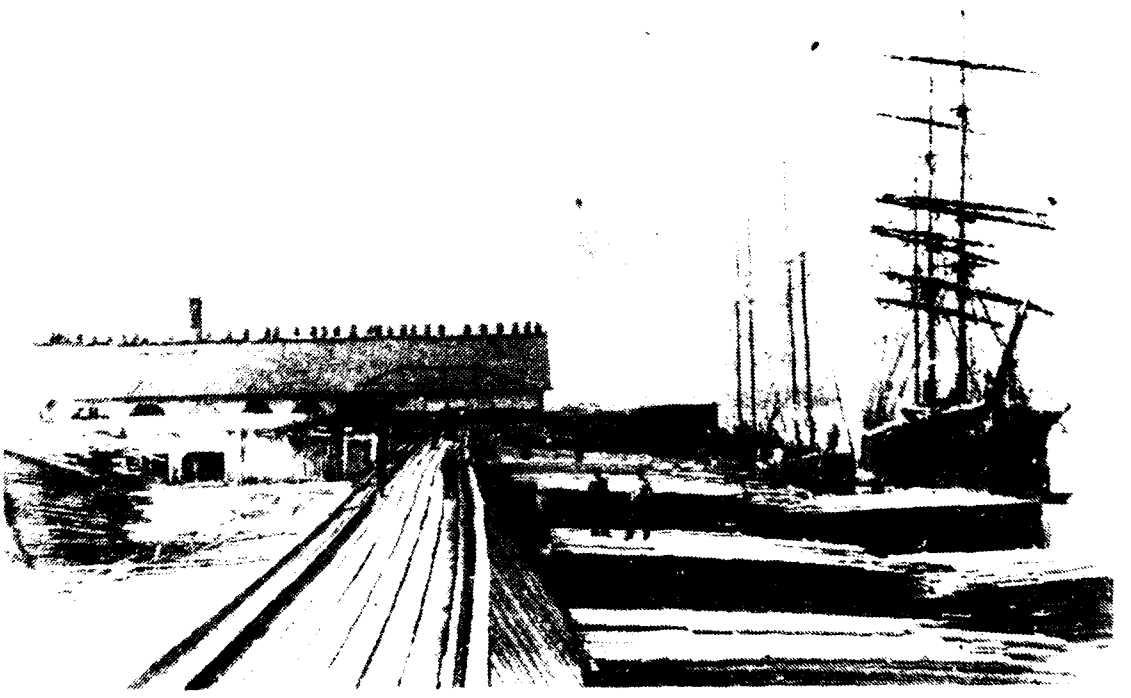
(2)

LITERATURE, ARCHIVAL, AND HISTORIC REVIEW SUBMERGED CULTURAL RESOURCES LOWER PASCAGOULA AND ESCATAWPA RIVERS, MISSISSIPPI

Tim S. Mistovich
Catherine E. Clinton
and
Brina J. Agranat



Prepared for:

U.S. Army Corps of Engineers
Mobile District

Contract No. DACW01-89-P-1673

Prepared by:

Panamerican Consultants, Inc.
P.O. Box 050623
Tuscaloosa, Alabama 35405

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: COESAM/PDER-90/002	2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE *(and Subtitle)*: Literature, Archival, and Historic Review Submerged Cultural Resources Lower Pascagoula and Escatawpa River, Mississisi	5. TYPE OF REPORT & PERIOD COVERED: Final Sept 89- Jan 90
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Tim S Mistovich, Catherine E. Clinton, and Brina J. Agranat	8. CONTRACT OR GRANT NUMBER(s): DACW01-89-P-1673
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Panamerican Consultants, Inc. P.O. Box 050623 Tuscaloosa, Al 35405	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Mobile District Planning Division USACE
11. CONTROLLING OFFICE NAME AND ADDRESS: CESAM-PD-ER Mobile District, USACE P.O. Box 2288, Mobile, AL 36628-0001	12. REPORT DATE: Jan. 15, 1990
	13. NUMBER OF PAGES: 37
14. MONITORING AGENCY NAME & ADDRESS *(If different from Controlling Office)*: Same	15. SECURITY CLASS. *(of this report)*: Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

Unlimited

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

submerged historic resources/ shipwrecks/ navigation improvements/ lumber industry.

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

A literature, archival, and historic review was conducted to determine the potential for submerged historic resources in the Pascagoula and Escatawpa Rivers, Mississippi This review revealed that there is little potential for these resources in the existing navigation channel.

The review included primary and secondary source materials, cartographic review and interviews with local informants.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

COESAM/PDER-90/002

LITERATURE, ARCHIVAL, AND HISTORIC REVIEW SUBMERGED CULTURAL RESOURCES LOWER PASCAGOULA AND ESCATAWPA RIVERS, MISSISSIPPI

Tim S. Mistovich
Catherine E. Clinton
and
Brina J. Agranat

Prepared for:

U.S. Army Corps of Engineers
Mobile District

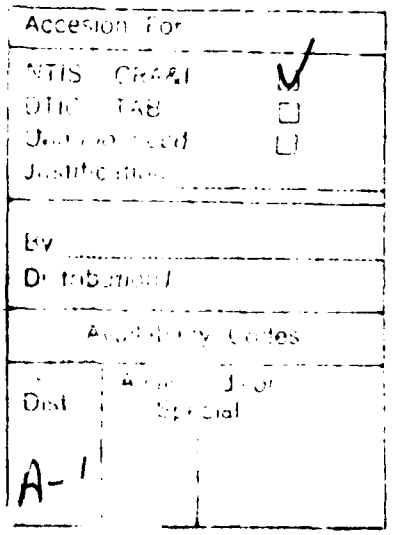
Contract No. DACW01-89-P-1673

Prepared by:

Panamerican Consultants, Inc.
P.O. Box 050623
Tuscaloosa, Alabama 35405

January 15, 1990

TABLE OF CONTENTS



LIST OF FIGURES

LIST OF TABLES

Abstract

A literature, archival, and historic review was conducted to determine the potential for submerged cultural resources within portions of the lower Pascagoula and Escatawpa Rivers, Jackson County, Mississippi prior to navigation improvements by the U.S. Army Corps of Engineers, Mobile District. The research included a review of primary and secondary literature, cartographic and newspaper archives, as well as local informant interviews. The review concluded that there is little potential for adverse impact to submerged cultural resources within the current navigation channel, however, channel realignment holds the potential for adverse impact to vessels related to Pascagoula/Moss Point's late nineteenth to early twentieth century timber industry.

INTRODUCTION

This document presents the results of a Literature, Archival and Historic Research project for portions of the Upper Pascagoula and Escatawpa Rivers, Jackson County, Mississippi. The primary aim of the study was to assess the potential for the presence of significant submerged cultural resources within those sections of the rivers slated for navigation improvement by the U.S. Army Corps of Engineers, Mobile District. The study area thus involves nine miles in the existing navigation channels, extending from the Seaboard Coast railroad bridge in Pascagoula proper to a point on the Escatawpa River four miles above its confluence with the Pascagoula (Figure 1). The current channel is maintained to a depth of 12 ft. Due to the increasing size of vessels constructed or repaired at shipyards on the Escatawpa and the needs of the commercial fishing interests in the area, the Corps of Engineers is currently considering an increase in channel depth of between 14 ft and 18 ft. This would require channel realignment in some reaches and dredging of approximately 7.5 miles of channel. As these improvements pose a potential adverse impact to any submerged cultural resources which might be present, the Corps of Engineers contracted with Panamerican Consultants, Inc. to perform the study presented here. Emphasis was to be placed on primary research into the maritime history of the study area and the resulting potential for submerged cultural resources.

The primary research was conducted by the senior author of this report during the period August - September, 1989. As detailed in the Submerged Cultural Resource Potential section of this document, the major repositories for information were located in Mobile, Alabama and the Pascagoula/Moss Point area of Mississippi. Of particular benefit to this research was the earlier maritime study performed for the lower Pascagoula River and Mississippi Sound by Mistovich, Knight, and Solis in 1983. The two works serve to complement each other in reconstructing the maritime history of the region for both coastal and inland waters.

The following document is presented in three sections. A discussion of the study area history concentrates on the use of the rivers as avenues of commerce and transportation in relation to the historical development of the region. In this manner, it is possible to identify trends in the types of vessels used and the cargoes they carried through time. These provide the historical parameters for determining the kinds and numbers of vessel losses which might be expected in the study area. The subsequent section presents the history of navigation improvements within these reaches of the Pascagoula and Escatawpa Rivers. These improvements were particularly relevant to maritime development in the region, as well as representing a potential impact to pre-

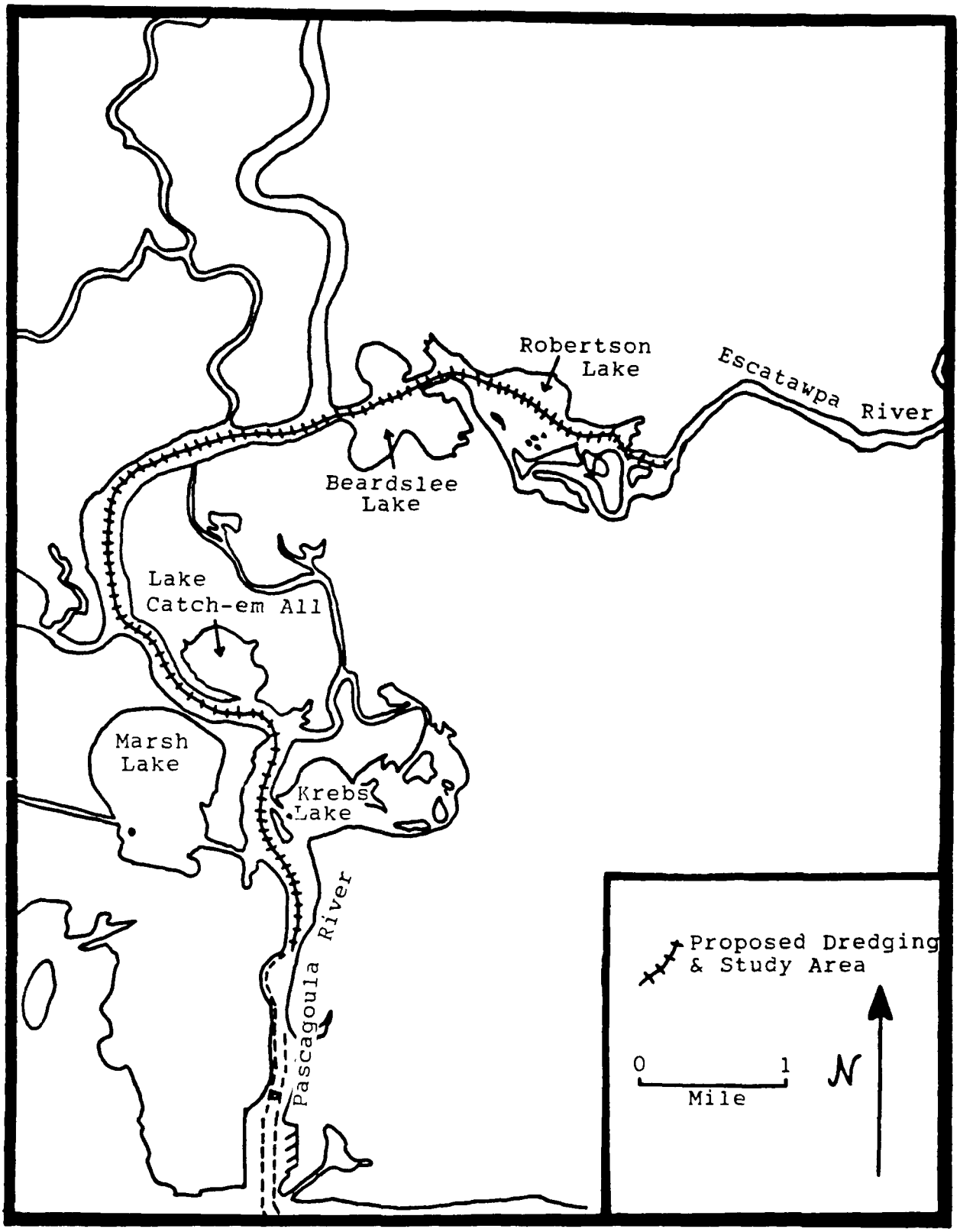
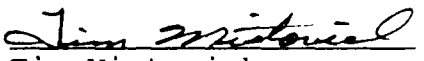


Figure 1. Study Area.

improvement vessel losses in the rivers. The final section of the report presents a listing of reported vessel losses, based on cartographic and newspaper archive sources, along with local informant interviews. The potential for the presence of these submerged resources in the areas to be impacted by planned navigation improvements is then assessed and recommendations presented.

The authors wish to acknowledge the assistance of a number of individuals and institutions in this research. First, the people listed in Section III of this document gave freely and openly of their time and knowledge and were instrumental in the conduct of this study. Once again we wish to acknowledge the assistance of the personnel of the Mobile District of the U.S. Army Corps of Engineers, few of whom escaped our requests for information. First among these is archaeologist and project monitor Dorothy Gibbens, who provided invaluable aid and direction. To these, we add in particular the personnel of the Mobile and Pascagoula Public Libraries, and Halter Marine, Inc. of Moss Point, Mississippi.



Tim Mistovich
Principal Investigator

I
HISTORICAL BACKGROUND

The Era of Discovery for the Gulf Coast region began with the exploratory voyage of Ponce de Leon in 1513. However, it is likely that he only traveled as far west as Pensacola, Florida and never reached the Pascagoula area (Cain 1953). It was not until 1519 that Pineda visited the Mississippi Gulf Coast. His voyage was the "first reasonably documented European exploration of [the] Mississippi Sound" (Mistovich, Knight and Solis 1983). Although Winsor (1886: 106-128) provides evidence of cartographic documents of European voyages in the area prior to Pineda (Juan de la Cosa - 1500, Waldseemuller - 1507, "Admiral's Map" - 1513, Reisch - 1515, and Schoner - 1515), these are considered scanty and cannot confidently be accredited. Therefore, Pineda is accepted as the first European explorer of the Mississippi Gulf Coast.

Other documentary information begins ca. 1520 with the "Cortes Map". European maps (Spanish, English and Dutch) had begun to use fairly consistent names in the Pascagoula area, as the Pascagoula River is documented as being named "Punto de Arricifos" (Winsor 1886 (II): 404), "Cabo de Cruce", "Cabo Desierto" and "Cabo (or Rio) del Oro" (Mistovich, Knight and Solis 1983). The region of Pascagoula was also referred to as "Rio del Giles Goncaly" and "Las Philipinas" (Beer 1904). The last documented 16th century European visitor to the Mississippi Gulf Coast was Narvaez in November of 1528. The remainder of the 16th and most of the 17th century has no documentary information pertaining to the Mississippi Gulf Coast. This large gap is probably due to Spanish disinterest in the area because it offered "no treasure and no exploitable empire worth conquering" (Mistovich, Knight Solis 1983).

In the 1680s, La Salle took possession of the Mississippi Valley in the name of Louis XIV of France (Cain 1953) and, consequently, revived Spanish interest in the Mississippi Gulf Coast. It is during this time that some glimpse of local aboriginal life is seen. Antonio Matheos (1686) wrote of a tribe and river of Estanani just west of Mobile. He described the Estanani River as being a four day trip from Mobile or equal to that of the distance between Pensacola and Mobile (Lankford 1981: 16). This description suggests that the Pascagoula River was the Estanani River and that the Estanani tribe was inhabiting this area. Mistovich, Knight and Solis (1983: 14) state that, "Lankford has convincingly shown that these Estananis are the same group later known to history as the Biloxi, who spoke a Siouan dialect". The principal town of the Estanani, or Biloxi, was seven days up the Pascagoula River from the Gulf and was called "Ducascaxi" (Serrano-y-Sany 1912). Matheos reported that the Estananis and the Pensacola Indians were warring with the

Choctaw, and by 1693 the Estanani were reported to have moved eastward onto the western shore of Mobile Bay (Lankford 1981: 16-17).

Thirteen years after Matheos' descriptive letters, Pierre Le Moyne d'Iberville and his younger brother visited the mouth of the Pascagcula River. The French had arrived to establish the first French fort on the Gulf Coast. Cain states that, "The Spaniards from Pensacola came to Ship Island to protest the French occupation of "their" territory, but were bluffed away by the number of the French ships" (1953: 2). Therefore, the French reportedly settled on the west bank of the delta, but within a day decided that Pascagoula Bay was too shallow and moved the site to Biloxi Bay (Higginbotham 1967: 1-2). However, further exploration of the Pascagoula River continued and Iberville and Bienville, that same year, met with the Pascagoulas and Biloxis. The Biloxis (Estananis) had apparently returned from Mobile Bay since their departure in 1693. However, they must have been absent for a significant amount of time because the river was no longer called the Estanani River but, rather, the Pascagoula River.

The French were notable for their trade relations with the Indians. This relationship provided valuable documentary descriptions of the Pascagoula and Biloxi Indians. It appears that although both tribes had different languages (Pascagoula-western Muskogean dialect; Biloxi - Siouan dialect) they shared similar cultural patterns. Dumont de Montigny recorded that both tribes shared similar subsistence patterns of horticulture and exploitation of oysters in the Mississippi Sound (Swanton 1946: 377-378). Mortuary practices of both groups followed Natchez-Taensa patterns (Mistovich, Knight and Solis 1983). In addition to the Pascagoula and Biloxi, two other small tribes lived in the Pascagoula area - the Moctobi and Capinans. However, very little is known about them (Swanton 1946: 96-98, 103-104, 170-171).

In 1702, a French seat of government was established in Mobile. It remained there until 1720 when the seat was temporarily moved to Biloxi and, soon after, to New Orleans. During the early years of the French occupation, three royal concessions were granted to colonists in the Pascagoula region: one on the eastern side of the delta established by La Pointe; one on the western side of the delta established by Graveline; and another on the upper Pascagoula River established by Chaumont (Mistovich, Knight and Solis 1983). Hugo Krebs, who became a predominant leader in the Pascagoula community, immigrated from Germany to the La Pointe concession and Francois Rillieux neighbored the Graveline concession. The Chaumont concession was dissolved soon after its establishment. These families (excluding the Chaumonts) constituted the majority of the European population during French rule. Figure 1 is a French map showing the Pascagoula area ca. 1758. Notice that La Pointe (c), Grave-

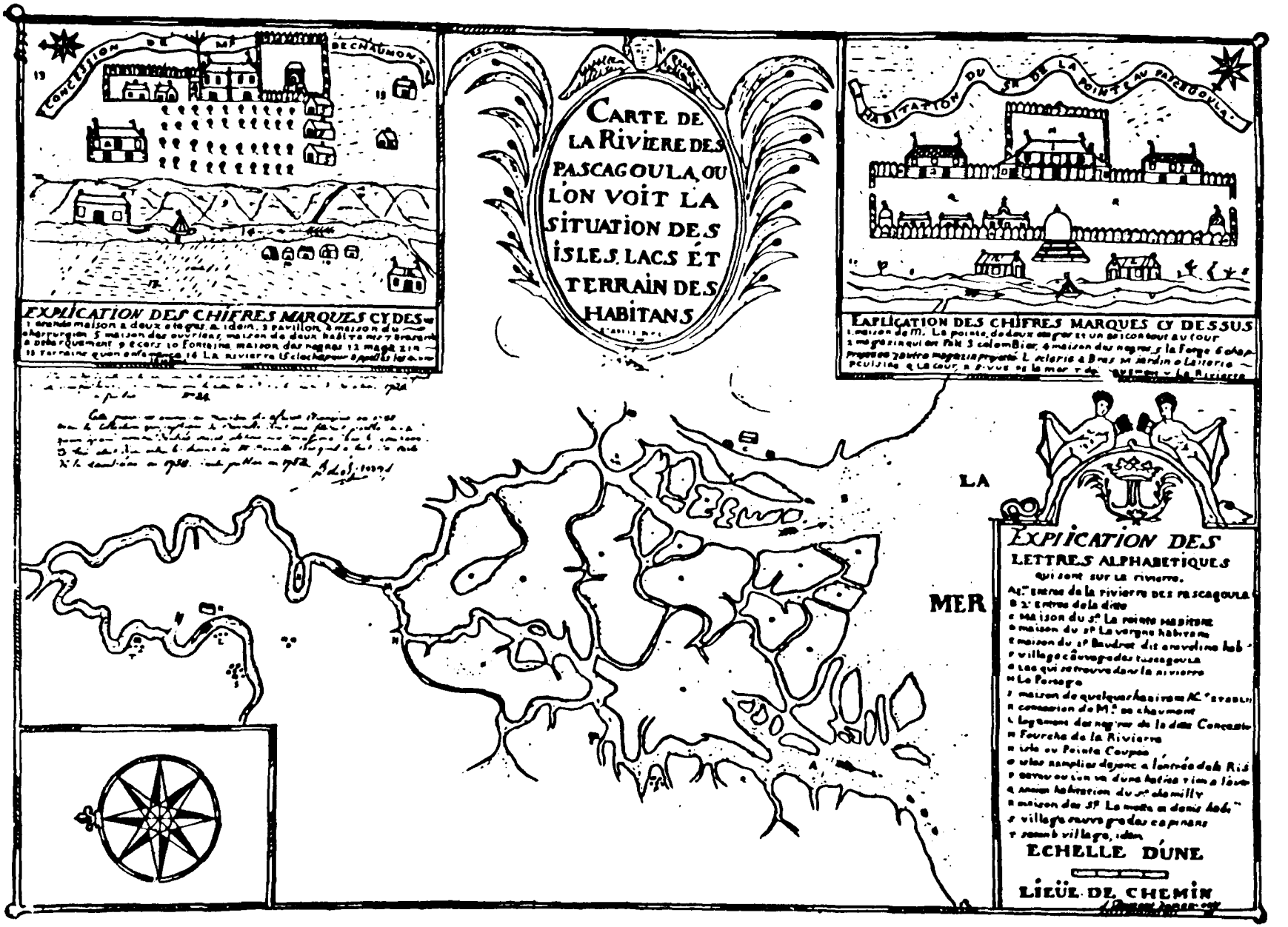


Figure 2. French Map of the Pascagoula Area, ca. 1758.

line (e), and Chaumont (k) are specifically located in addition to several other landmarks in the vicinity.

The Mississippi Gulf Coast area would undergo two more occupations before finally coming under American government. The Pascagoula colony passed onto British rule with the Peace of Paris in 1763. While further land grants were made to Dupont and Pacquette during this rule, the British were generally unsuccessful in developing the Pascagoula region. British rule came to an end after the Revolutionary War (1781) and the Spanish were in control. Under this government, few Pascagoula colonists were allowed to keep their land unless they swore "an oath of allegiance to Spain and the Catholic Church" (Mistovich, Knight and Solis 1983). Few families migrated to the Pascagoula colony during the Spanish rule (Higginbotham 1967: 4-11).

With such a small population during the Colonial era, very little is known as to local economy and maritime history of the Pascagoula area. Agriculture seems to have been pursued with some effort. Cotton must have been especially important in that Krebs had invented a cotton gin by 1772, twenty years prior to Eli Whitney's patent (Cain 1953: 74-76). Cain also notes that the concessions of La Pointe and Graveline had slave quarters which provided the main labor force for the economy. However, the Pascagoula area was not especially conducive to agriculture, but, rather, more suited to raising livestock. Cattle herding became a very lucrative business during colonial days and would remain so well into the first part of the 19th century (Mistovich, Knight and Solis 1983).

Although little is known as to Mississippi Sound colonial maritime history, it can be said that it played an important role in the transfer of passengers, supplies and information between colonial Mobile, Pensacola, Biloxi and New Orleans. Vessels were generally locally built, shallow draft sailing crafts of various construction. Few vessel losses are documented during this period in the Pascagoula area. Borja Medina (1980: 428n) documents a loss in the hurricane of 1780 when a small fleet of <u>berchas</u> (a Spanish vessel type) was transporting supplies from New Orleans to Mobile. It is unknown as to the number of vessels lost on this voyage and it is apparently the only documented vessel loss incident prior to American occupation (Mistovich, Knight and Solis 1983).

Spanish rule came to an abrupt end in 1810 when a rebellion broke out in Baton Rouge. Following this, the Pascagoula area was annexed in the Louisiana Purchase, but it was not until after a period of "piratical intimidation" that West Florida came under U.S. jurisdiction (Mistovich, Knight and Solis 1983). Between 1811 and May of 1812, the Pascagoula area was officially the Parish of Pascagoula, which extended from Biloxi Bay to the Perdido River (except Mobile which was still occupied by the

Spanish), in the Territory of Orleans with the government capital residing in New Orleans (Cain 1953: 89). The Pascagoula area finally came under the jurisdiction of the Mississippi Territory in 1812. By the end of the War of 1812, Jackson County, Mississippi Territory was occupied by 110 families and 214 slaves. Mississippi finally achieved statehood in 1817 and the Alabama-Mississippi boundary was established (Mistovich, Knight and Solis 1983: 16; Cain 1953:53-74).

The Pascagoula area slowly became "Americanized". Immigrants trickled into the area, unlike the agricultural Black Belt which was flooded with newcomers. Cattle herding was the major economic strategy and was generally complemented with small-scale farming. Hunting was also used as a secondary supplement. Unfortunately, Pascagoula was unable to prosper from the cotton industry which was booming in the Black Belt. Unlike Mobile and New Orleans, Pascagoula lacked a major navigable waterway which extended into the cotton belt. Small drought vessels could only travel as far as the juncture of the Leaf and Chickasawhay Rivers in Greene County (Mistovich, Knight and Solis 1983: 16-17; Cain 1962: 41; USCOE 1879 (I): 837). Subsequently, the Mississippi legislature appointed a commission in 1818 to raise $3,000 for navigation improvements in Mississippi streams (Cain 1953: 14). A state snag boat began operation and by 1842 the Pascagoula and Chickasawhay Rivers were generally free of obstructions. With this hindrance removed, John J. McRae took advantage of the opportunity and operated a successful cotton depot on the west side of the mouth of the Pascagoula River, trading between Enterprise and Pascagoula (Cain 53: 15). However, the Ohio Railroad, running from Mobile to Quitman and Enterprise, began operation in 1855 and soon ended the long awaited cotton trade opportunities for Pascagoula (Cain 1962: 42). But the Pascagoula economy was saved in that same decade by an influx of tourists from Mobile, New Orleans and nearby northern cities. The small Gulf Coast town had the reputation of having a healthy, pleasant climate which was "singularly exempt from acute and febrile disease" like yellow fever, which was reaching epidemic proportions in urban centers (USCOE 1874 (I): 755-756). In light of his failed cotton trade, McRae took advantage of the vacation economy and established a resort hotel on East Pascagoula Beach (Mistovich, Knight and Solis 1983: 17).

The 1850s also saw the advent of a very marketable product-lumber. The great pine forests, which made the soils unsuitable for cotton production, would now vitalize the Pascagoula economy which would thrive into the 20th century. Thomas C. Roads opened the first sawmill in Moss Point a decade before the Civil War. Soon afterwards, William Griffin established a sawmill on the south bank of the Escatawpa River where it meets the Pascagoula. This mill would operate through the war and afterwards, L.N. Dantzler, a young ex-Confederate, would join Griffin as his partner. Their firm was so successful that in the late 1860s, a

post office was opened and Moss Point was "made official". In that same decade, William Griffin died and the mill name was changed to the L.N. Dantzler Lumber Company (Figure 3). For the next two generations, Moss Point would be the timber leader of Mississippi (Carter and Ragusin 1951: 185).

The horrors of the Civil War would begin in 1861 and last until 1865. Little military action occurred in the Mississippi Sound and there are only seven recorded shipwrecks for the period. Six of these wrecks were intentionally scuttled by Union forces in Petit Bois Pass, which strategically blocked passage of the Confederates, while the FANNY, a Confederate blockade runner, was intentionally run aground on the Pascagoula beach (Mistovich, Knight and Solis 1983: 18, 55; Higginbotham 1967: 37-38; Cain 1962: 68).

Reconstruction of the South began in 1865 and would last for twelve years. While these were difficult times for all southerners, the Pascagoula economy was able to overcome the struggles with the help of the lumber industry. In 1870, the railroad running from Mobile to New Orleans was completed and the "race was begun" in the lumber business. The "lumber boom" would last from 1870 through about 1910. The three major sawmills in the area were the L.N. Dantzler Lumber Company in Moss Point, the J.S. Dees sawmill at Jackson Creek, and the Fernandez Gautier sawmill in West Pascagoula. Large barges full of pine lumber were sent down-river and cargos transfered to ships bound for Mexico, Cuba, Puerto Rico, Sweden, Norway, and England, as well as to U.S. cities. The 1880s saw the innovation of the crosscut saw, replacing the common ax and further stimulating the business. Productivity was increased while the cost to acquire the timber decreased. By 1889, Gautier was producing a 4,000 ft. daily average, while Dantzler had an estimated 138,000 ft. daily production. The demand for lumber was so great that even timber thieves were thriving. The peak of the lumber industry was at 170 million board feet to be shipped to foreign ports in 1891, making the Pascagoula/Moss Point vicinity the second largest lumber port on the Gulf Coast (Higginbotham 1967: 54). A list of the sawmills operating in 1896 and their daily capacity is shown in Table 1. Sixteen mills were operating at that time and producing an average of 840,000 sq. feet daily. By the turn of the century, numerous companies like Robinson, White, Denny (Figure 4), Dantzler, Gautier, Tam, Danner, Bounds (Figure 5), McIntosh, Phoenix (Figure 6) and Farnsworth had flooded the lower Pascagoula River. Between 1900 and 1910 the timber industry was the crux of the local economy (Mistovich, Knight and Solis 1983: 18). Fourteen sawmills were operating in the Moss Point area alone by 1906 (Carter and Ragusin 1951: 185).

Cyril E. Cain (1953) devotes a chapter to the lumber industry in Four Centuries on the Pascagoula. He describes the marketing of timber as occurring in three forms: 1) large yellow

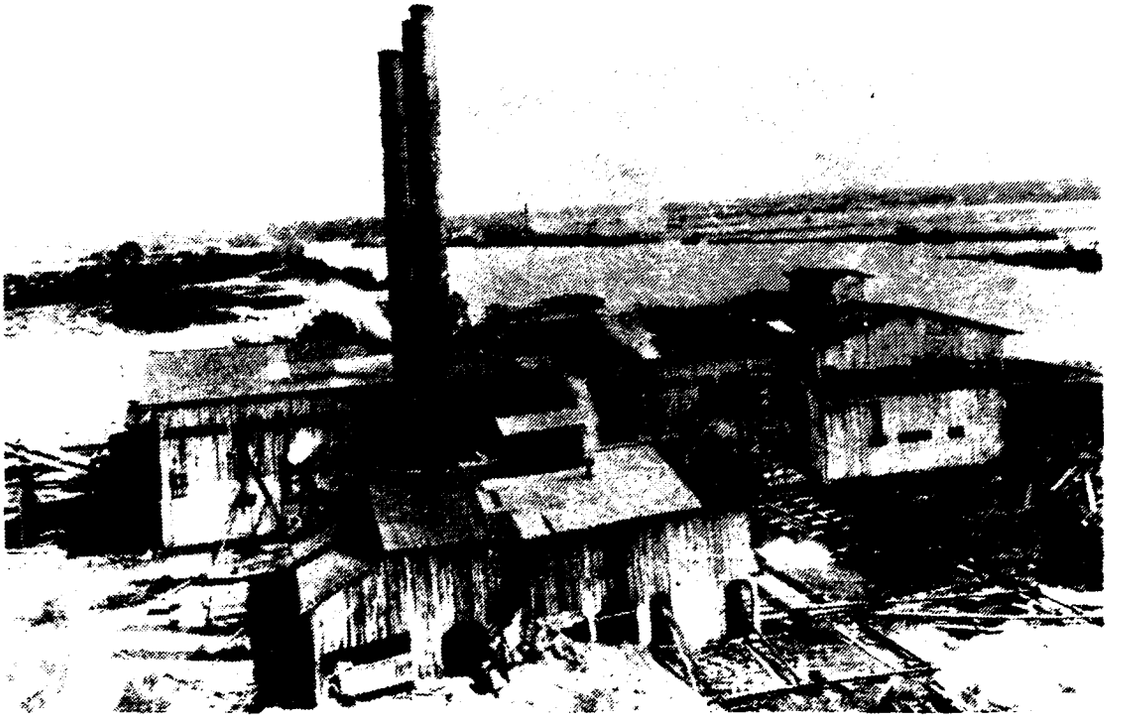


Figure 3. Dantzler's Mill, Moss Point.
Source: Thomas C. S-Wixon, 1982.

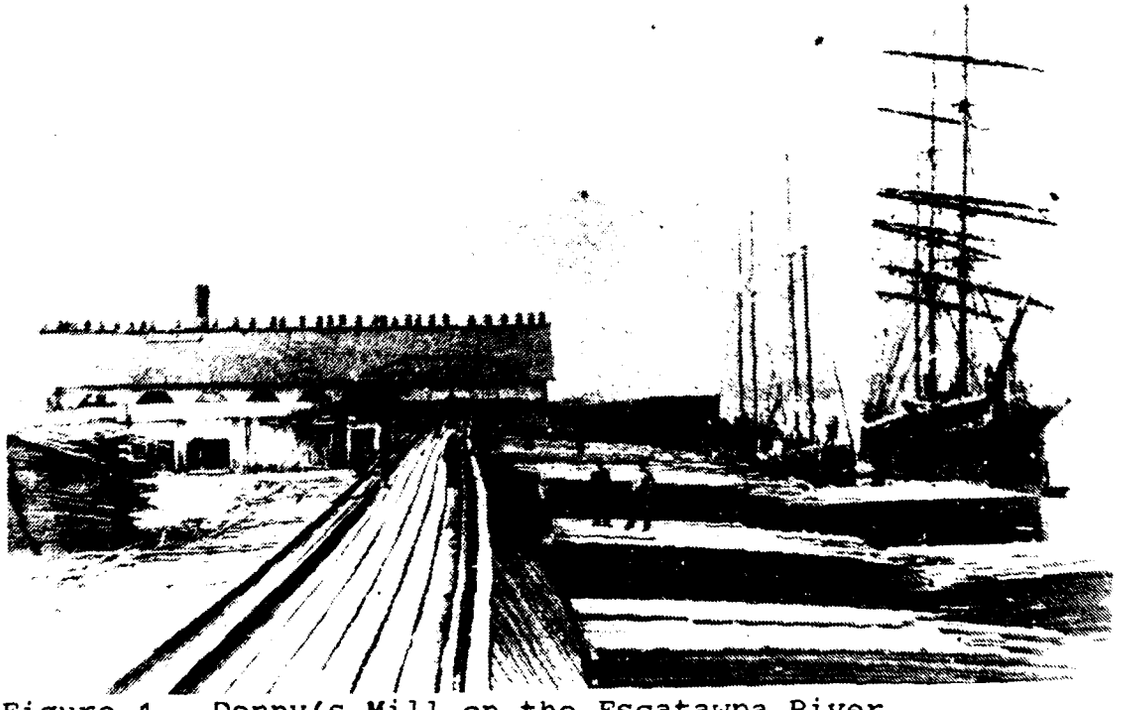


Figure 4. Denny's Mill on the Escatawpa River.
Source: Thomas C. S-Wixon, 1982.

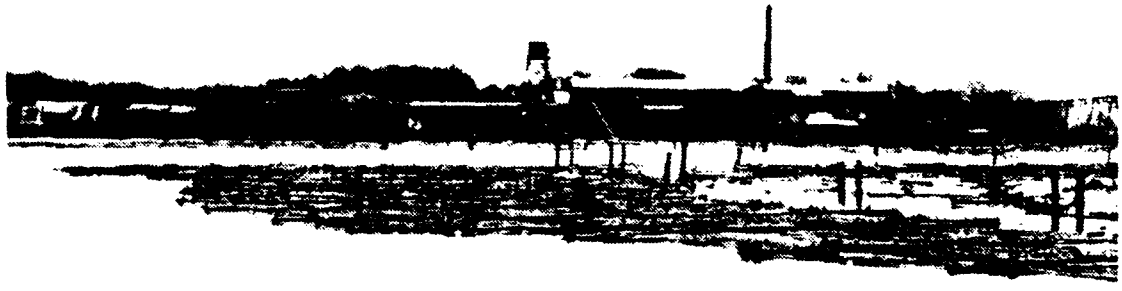


Figure 5. J. Bounds Mill, Moss Point.
Source: Thomas C. S-Wixon, 1982.

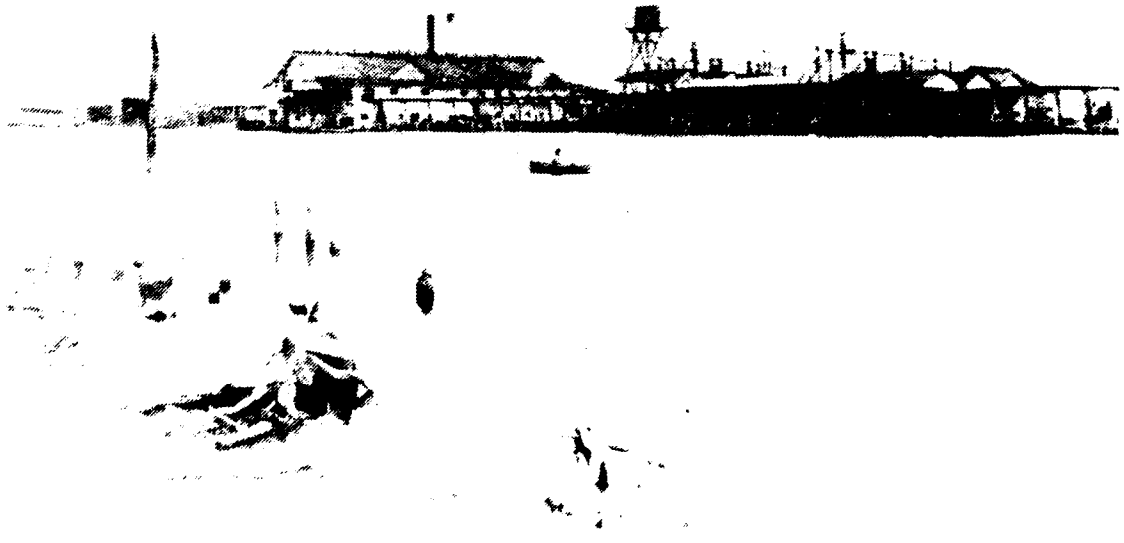


Figure 6. Phoenix Mill on the north side of the Escatawpa Bridge. Source: Thomas C. S-Wixon, 1982.

Table 1: Daily Capacity of Sawmills in the Pascagoula Vicinity in 1896.

Sawmill	No. Mills	Daily Capacity (Sq. feet)	Location
Dantzler Lumber Co.	2	125,000	Moss Point
Denny Lumber Co.	2	100,000	"
Pascagoula Lumber Co.	1	100,000	"
Moss Point Lumber Co.	1	50,000	"
Lake Mills Lumber Co.	1	50,000	"
K. Platt Lumber Co.	1	40,000	"
Dead Lake	1	30,000	Upper Pasc. River
J.I. Dixon & Co.	1	40,000	"
David Baker	1	20,000	"
Patterson, Downing & Co.	1	25,000	"
J.O. Arve & Co.	1	25,000	"
F. Gautier & Sons	1	50,000	West Pasc.
M. Parker Lumber Co.	1	25,000	Upper Pasc.
Farnsworth Lumber Co.	1	100,000	Scranton
Mead Bros. Lumber Co.	1	40,000	"
N. Venice Manufacturing Co.	1	20,000	"
TOTAL	16	840,000	

Source: USCOE 1897: 1721

pine sawlogs were floated down river to mills for lumber; 2) large and middle pitch pines were "boxed and chipped" for turpentine - these were called naval stores; 3) middle to small pines were burned into charcoal for fuel (Cain 1953: 143). Pine logs were transported to the river by ox driven "drake-tail" caralogs. Cain states that this type caralog was unique to the Pascagoula area, however, it is poorly documented. Upon reaching the river, logs were floated down Black and Red Creeks and stopped at the "boom" in Dead Lake. It is said that up to 80,000 logs were held at one time at the "boom". The logs were then sorted by calling out brand names which were then put into pens until it was time for a run to the mills at Moss Point and Pascagoula. These runs could take a week when the water was up or longer when the water level was low or fluctuating (Cain 1953: 144-146). The sawlogs were then manufactured at the sawmills and transported to other areas by ship or railroad. In later years, beginning in 1914, Southern Paper Company was established in Jackson County and paper manufacturing, another industry made possible due to the marketability of lumber, eventually became the second most important local industry (Mistovich, Knight and Solis 1983: 19; Cain 1962: 48; Carter and Ragusin 1951: 185).

Although the Pascagoula/Moss Point vicinity was prospering and growing, the population still was not large enough to be recorded in the 1890 census. A decade later Pascagoula was recorded as having 708 persons, with Moss Point having fewer. Just a year later, in 1901, when the lumber industry was at its height, Moss Point was incorporated as a city. Three years later Scranton, on the eastern shore of the Sound, and West Pascagoula, on the western shore, were combined into the city of Pascagoula. (Carter and Ragusin 1951: 185).

Navigational improvements to the Mississippi Waterways by the Mississippi State government and the U.S. Army Corps of Engineers (USCOE) were largely responsible for the "boom" of wood products in the late 19th and early 20th century. Navigational improvements were initially directed by the State of Mississippi beginning with the removal of obstructions on the Pascagoula and Chickasawhay Rivers starting in 1818 and completed by 1842. In 1869, an 8 ft. by 6 ft. channel, the Noyes Canal, was dredged through the Pascagoula River bar under a private charter issued by the state. The dredging was completed the next year and vessels passing through the Noyes Canal were charged a toll. Soon afterward, the USCOE became involved and after preliminary surveys in 1873 and 1878 recommended that, "the State of Mississippi charter be revoked in favor of a comprehensive and more commercially favorable federal involvement" (Mistovich, Knight and Solis 1983: 19). Lt. James B. Quinn, who worked under Capt. C.W. Howell during the 1873 survey, is quoted as writing, "Light draft steamboats have run to Enterprise, Mississippi, a distance of 400 miles from the mouth of the Pascagoula, and it is estimated that the Pascagoula and its tributaries furnish 1,300 miles of navigable water" (USCOE 1874: 754-755). Soon afterward, improvements were initiated, with the most significant being the dredging and maintenance of Horn Island Harbor, Pascagoula Harbor, and the lower Pascagoula River begun in 1880. After these navigational improvements, large seagoing craft were able to travel directly to Pascagoula and Moss Point (Mistovich, Knight and Solis 1983: 19; USCOE 1874 (I): 754-761; 1879 (I): 105, 935-937). By 1896, vessels with a 10.5 ft. draft (loaded) could receive cargo at the sawmills; vessels with a 10.5 - 20.5 ft. draft (loaded) could travel as far as Horn Island; and vessels with a draft greater than 20.5 ft. could travel as far as Ship Island (USCOE 1897: 1721). The following chart by Mistovich, Knight and Solis (1983) presents a summary of the major navigational improvements to the Pascagoula Harbor from 1827 through 1958 (Table 2).

As demonstrated in Tables 3-6, there was a significant increase in local commerce through the years which can be attributed largely to navigation improvements. These improvements were not only essential to the success of the great "timber boom", but were equally important to the development of the local fishing and oystering economy. This economy underwent signifi-

Table 2. Major Improvements of Pascagoula Harbor, 1827-1958.

Date	Activity	Channel Dimensions	Cost
1827	First federal appropriation for improving Pascagoula R. at mouth.	(no record of work done)	$ 8,000.00
1827	Second federal appropriation, ditto	(no record of work done)	$ 17,500.00
1832	Third federal appropriation, for purposes of survey.	(no record of work done)	$ 5,000.00
1869	Private charter issued by State of Mississippi to dredge Pascagoula R. bar (Noye's Canal).	8' x 60'	$ 27,000.00
1880-1882	Federal appropriation for dredging Pascagoula R. bar.	8' x 190'	$ 42,374.10 (est.)
1886-1896	Channel from Moss Point to Mississippi Sound dredged.	12' x 180' (Moss Pt. to mouth); 12' x 80'-120' (mouth-sound)	$ 87,317.60
1894-1899	Horn Island bar channel dredged.	19.5' x 200'	$ 7,682.40
1899-1901	Horn Island bar channel expanded.	20' x 200'	$ 88,000.00 (est.)
1899-1902	Channel from above Moss Point to Mississippi Sound expanded.	12' x 150' (above L&N R.R.); 12' x 300' (below L&N R.R.)	$ 304,346.36
1902-1910	Channel from above Moss Point to Mississippi Sound deepened and extended.	17' x 150 ' (above L&N R.R.); 17' x 225' (below L&N R.R.)	$ 302,097.25
1905-1907	Horn Island channel deepened and widened.	21' x 300' (outer bar); 21' x 200' (elsewhere)	$ 136,162.40 (new work) $ 36,475.00 (maintenance)
1913-1954	Horn Island and Pascagoula R. channels expanded.	35' x 325' (Horn Island Pass); 30' x 275' (Sound channel); 12' x 15' (Pas. R.)	$ 258,040.00 (new work) $1,007,479.48 (maintenance)
1949	Turning basin added by private interests.	---	Data unavailable
1954	Horn Island and Pascagoula R. channels, project modification.	25' x 300' (Horn Island Pass); 22' x 225' (Sound channel); 18' x 150' (Pas. R.)	Data unavailable
1958	Bayou Casotte channel dredge.	38' x 225'	Data unavailable

Source: Mistovich, Knight, and Solis (1983:20).

Table 3: Tonnage on the Pascagoula River in 1885

Vessel Type	No.	Tonnage
Steam Tugs	9	250
Schooners, Large	15	1,500
Schooners, Small	40	800
Barges	18	1,260
TOTAL	82	3,810

Source: USCOE 1886 II: 1219

Table 4: Freight and Tonnage on the Pascagoula Harbor in 1912

Freight	Tonnage*	
Logs	320,000	
Lumber/Timber	412,380	
Crossties	11,750	
Piling	25,000	
Fish/Oyster	3,250	(30,000 barrels)
Rosin	1,192	(4,500 ")
Turpentine	301	(1,400 ")
Charcoal	7,200	(300,000 ")
Hardwood	3,750	
TOTAL	784,823	

* In short tons.

Source: USCOE 1913 II: 2166

Table 5: Tonnage for Pascagoula, Leaf and Chickasawhay Rivers in 1912.

(short tons in thousands)

Frieght	Pascagoula	Leaf	Chickasawhay
Round Logs	150	140	48
Pilings	35	-	-
Crossties	30	18	-
Sawn/Hewn Timber	8.8	3.2	4.8
Hardwood	2.5	-	1.2
Turpentine	86	-	-
Rosin	928	-	-
Charcoal	750	-	-
TOTAL	1,990.3	161.2	54

Source: USCOE 1913 II: 2169

Table 6: Tonnage for Pascagoula Harbor in 1949

Frieght	Tonnage*
Fish	308
Shellfish	230
Seashells	12,471
Lumber	18,471
Pulpwood	122,899
Coal	500
Fuel Oil	8,131
Asphalt	504
Sulfur	448
Animal Products	28,138
Other	22,347
TOTAL	214,447

* In short tons

Source: USCOE 1950 II: 721

cant growth during the last quarter of the 19th century but did not experience its peak until the ending of the timber boom. The 1906 hurricane destroyed twenty percent of the pine forests and caused several mill closures, including the Denny Lumber Company. The timber industry never fully recovered.

Shortly thereafter, however, the seafood industry came of age (Ziglar 1961: 86-89). Small commercial draught schooners and slopes were now operating in the Mississippi Sound with greater ease due to Sound improvements, while larger "snapperboats" could travel in and out of the Sound to operate in the Gulf waters. In the early years, the catch (shrimp, mullet, redfish, croaker, catfish and speckled trout) was processed in New Orleans and then transported to northern markets. However, in 1878 the first shrimp cannery on the northern Gulf Coast was established at Pascagoula, providing an important boost to the local economy (Mistovich, Knight and Solis 1983: 21; Cain 1962: 47-48). Another boost to the fishing industry occurred in the 1920s and 1930s when motor powered vessels replaced sailing vessels. In 1922, Pelham's Seafood Company of Pascagoula owned six boats and was shipping an average of 300 lbs. of fish, 2000 lbs. of crabmeat, and 5000 lbs. of shrimp a week (Ziglar 1961: 102). The oyster industry improved in the 1890s when Bonnet Carre crevasse was closed, protecting the Mississippi Sound from the fresh water of the Mississippi River. By the 1890s, the average oyster size in the Sound had "remarkably improved" (Mistovich, Knight and Solis 1983:21; Pascagoula Democrat Star 10-6-1893). In addition, with the enactment of oyster laws in the late 19th century, the industry grew and several packing plants were established in the Pascagoula area (Mistovich, Knight and Solis 1983: 21). The menhaden fish industry also became very lucrative for the Pascagoula area. Wallace M. Quinn Fisheries was established in 1939 on the west bank of Pascagoula Harbor. Fishmeal for chicken feed was processed and the oil byproduct sold in Europe to make oleomargarine. Other menhaden processing plants, such as the Standard Products Company in Moss Point and the Fish Meal Company on the Escatawpa River, were established during the 1940s (Ziglar 1961: 104-105).

With navigation improvements and a strong fishing and oystering economy, shipbuilding would now come into play as the major industry for the Pascagoula vicinity. Although private shipyards had been common since the French arrived in the 16th century, the earliest commercial shipyard in the area was not established until 1843 by Ebenezer Clark on the upper Pascagoula River. The Clark shipyard largely performed repairs to small schooners, barges and flatboats restricted to river travel, and on occasion was contracted to build schooners and at least one steamer. However, it was not "until the era of the timber boom that shipbuilding began in earnest" (Higginbotham 1967: 55) and the number of shipyards along the Pascagoula and Escatawpa Rivers steadily increased during the last half of the 19th century (Mis-

tovich, Knight and Solis 1983: 21; Clark 1838: 56; Burger 1944). In the 1890s, steamships began replacing older vessels and, with the opening of Pascagoula Harbor in 1906, larger ships were allowed passage. Consequently, shipyards were contracted to build larger craft (Figure 7). The De Angelo and Fletchas shipyards began producing three-masted "blue water" schooners and employed as many as a hundred employees (Figure 8). Not only were commercial shipyards being established, but a repair yard for government vessels was also built in 1910 (Mistovich, Knight and Solis 1983: 21).

World War I marked the beginning of the shipbuilding boom. Larger shipyards were being established to fulfill the contracts available for building "Liberty Ships" under the U.S. Emergency Fleet Corporation. Three major shipyards were founded in 1917 alone - Dierks-Blodgett Shipyard, Dantzler Shipbuilding & Drydock Company, and Hodges Shipyard - which demonstrates the effect World War I had on the commerce of the area. The ships constructed were wooden cargo vessels made of pine and oak. However, late in the first world war, there was a shift from wooden to steel hull vessels (Ziglar 1961: 117-118).

Following the war, contracts were few and the industry suffered a major setback. However, one shipyard was successfully competing with the national shipbuilding economy. By 1937 the F.B. Walker & Sons Boatyard (formerly the Gulf Ship Co.) began constructing steel commercial vessels. The company was soon purchased by Ingall's Iron Works of Birmingham, Alabama and exists today at the mouth of the Pascagoula River as the Ingall's Shipbuilding Company (Mistovich, Knight, and Solis 1983: 21-22; Ziglar 1961, 1974). An important landmark for Ingall's was on June 8, 1940 when The Exchequer, the first arc-welded ship constructed in Pascagoula, was completed. By 1941, Ingall's was constructing ocean liners of 18,000 tons and during World War II was contracted to construct 100 vessels (Ziglar 1961: 122-125). During the war and up to the present, Ingall's Shipbuilding Company has been a major economic presence in Pascagoula.

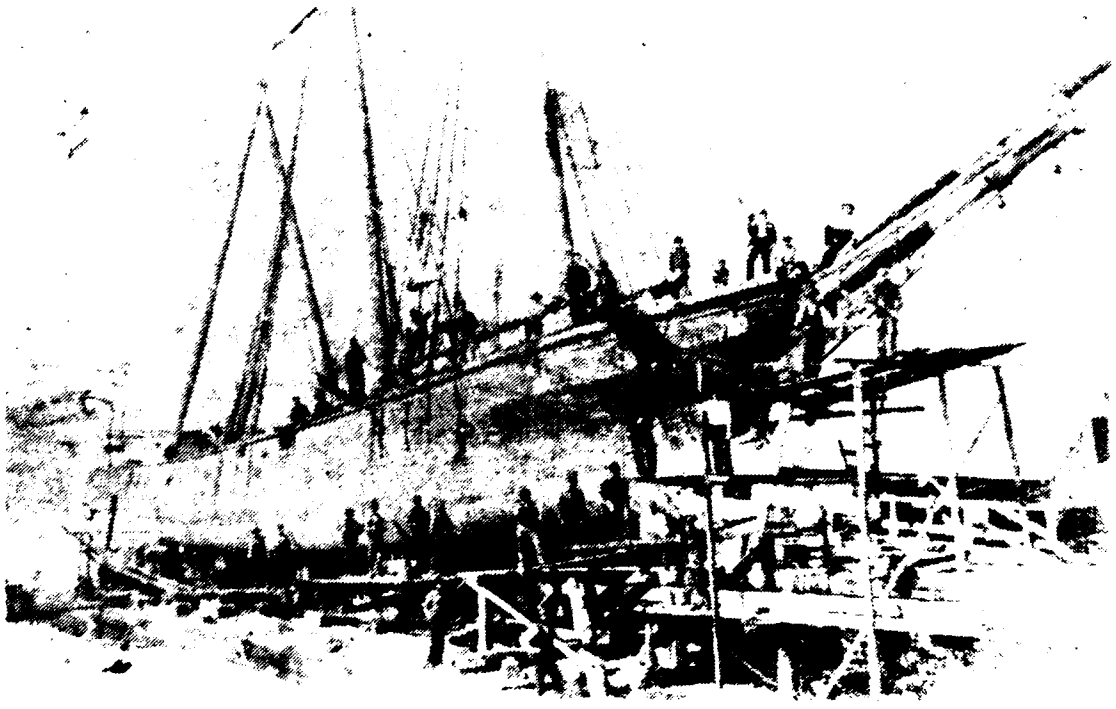


Figure 7. Frentz Shipyard, the later site of Walker's Shipyard. Source: Thomas C. S-Wixon, 1982.

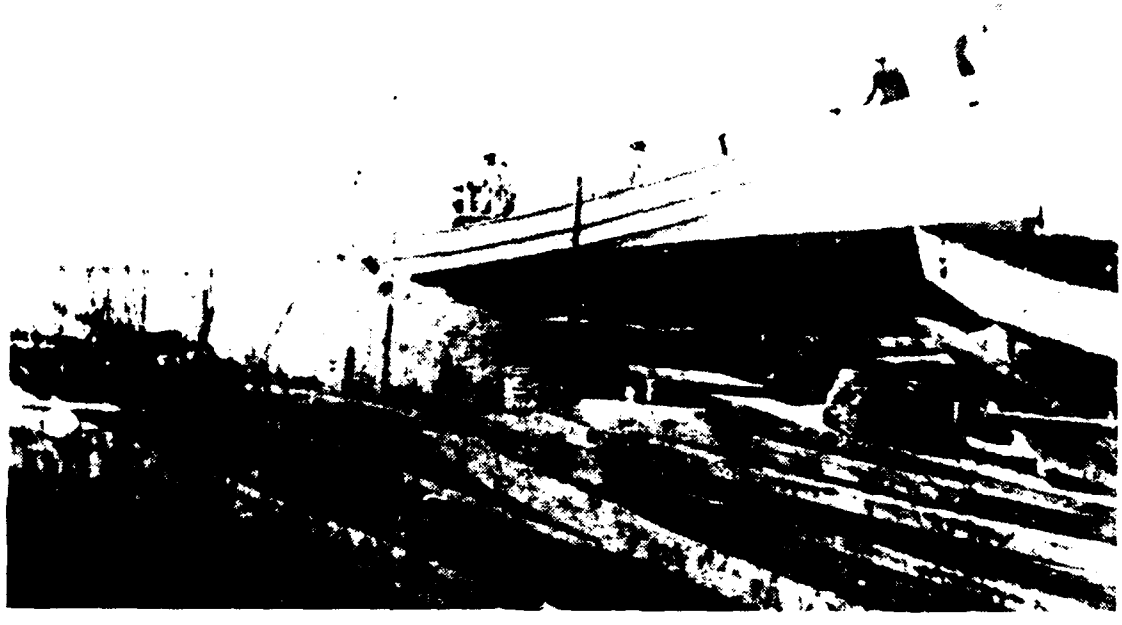


Figure 8. Launching at Angelo's Shipyard, Moss Point. Source: Thomas C. S-Wixon, 1982.

II
NAVIGATION IMPROVEMENTS

The Pascagoula River is formed in part by the Leaf and Chickasawhay Rivers. The Escatawpa River flows into the Pascagoula approximately 6.8 miles above the mouth of the river. In its original state, the Pascagoula was virtually impassible except during high water. Logs and snags further restricted navigation in the Pascagoula River channel, which prior to improvements had a 60-foot minimum width with one-foot minimum depth at mean low water (MLW). Snags restricted navigation on the Leaf River, as well, where the 100-foot wide channel measured 2.5 feet in depth at MLW. The Chickasawhay River, offering a channel 50 feet wide and six inches deep, MLW, could be navigated only during high water by small rafts, though during extreme high water steamers could go all the way up to Enterprise (USCOE 1913; Mistovich, Knight, and Solis 1983).

With the advent of cotton in the South during the early nineteenth century, Pascagoula residents sought to improve the area's potential as a trading port. In 1818, a special commission appointed by the Mississippi Legislature recommended the removal of river obstructions by a state snag boat, funded through land sales and a state lottery. The River and Harbor Act of March 2, 1827 appropriated the first federal monies for improvements to the Pascagoula River. It designated the sum of $8,000 to be expended in a survey of the river. The River and Harbor Act of May 23, 1828 appropriated an additional $17,500 for the Pascagoula River, however, there is no record of any work accomplished under either of these early appropriations. By 1842, meanwhile, state efforts had been successful in clearing the principal obstructions in the Chickasawhay and Pascagoula Rivers. John J. McRae operated a cotton trading business between Enterprise and Pascagoula until forced out be the completion of the Mobile and Ohio Railroad in 1855 (Mistovich, Knight, and Solis 1983).

A survey of the Pascagoula in 1852 recommended the expenditure of $25,000 in federal funds for improvements to the river. Toward that end, the River and Harbor Act of July 30, 1852 appropriated $5,000, though there is no record of what work was accomplished under this appropriation. In 1854, the sum of $9,900 was estimated for improvements to the Pascagoula and East Pascagoula Rivers (USCOE 1913; House Doc. 482, 55th Cong., 2nd sess.).

Beginning in the 1830s, a strong timber industry developed in the southern Mississippi region, reaching its heyday during the first years of the twentieth century. Logs were sent down the Chickasawhay, Leaf, and Pascagoula Rivers to the mills and distribution centers around Moss Point and Pascagoula. From

there the lumber was shipped out "in light-draught schooners, that can come directly to the mills, the existence of a bar at the mouth of the Pascagoula preventing the passage of other vessels" (USCOE 1874: 756). Lighters were also employed to carry lumber to the larger vessels which anchored five miles out in the Mississippi Sound.

In an attempt to improve access to the port for the larger vessels of the lumber trade, the State of Mississippi in 1869 granted a 25-year charter to Abram A. Green to create a six-foot channel across the Pascagoula River Bar. Financed through a 30-cent per ton charge on outgoing vessels, the Noyes Canal was completed in March, 1870 at a total cost of $27,000. The sum of $4,000 was authorized annually for maintenance of the 60-foot wide, 6-foot deep canal. Prior to completion of the Noyes Canal, vessels entering the Pascagoula River were restricted to those of less than 30 to 35 tons. The canal permitted the passage of vessels of up to 80 to 100 tons. The viability of the Noyes Canal appears to have been rather limited, however. In August 1873, Mr. E.F. Griffin commented, "the canal has had no appreciative effect on the lumbering interests; as, to within a few months, it has been but little better than the natural channel" (USCOE 1874: 759, 756).

By this time the federal government developed a serious interest in the area. The River and Harbor Act of June 10, 1872 directed the completion of an examination of East Pascagoula Harbor. U.S. Army Corps of Engineers' Captain C.W. Howell conducted the survey during July and August, 1873. As a result, an increase in the channel to 100 feet in width with a minimum depth of seven feet was authorized, with light jetties to be constructed to either side. On June 18, 1878, Congress authorized a survey of the East Pascagoula River from the river mouth to the head of navigation (USCOE 1874; House Exec. Doc. 95, 45th Cong., 3rd sess.)

The year 1880 marks the first apparent expenditure of federal funds for the improvement of Pascagoula Harbor. The River and Harbor Act of June 14, 1880 appropriated funds for dredging a seven-foot deep, 200-foot wide channel across the Pascagoula River Bar, as well as snag removal and improvements to the river system from the head of navigation to Merrill, Mississippi. The Act authorized a seven-foot channel for 32 miles from the confluence of the Dog (Escatawpa) River to Dead Lake, with a three-foot channel for 50 miles thereafter to Merrill, Mississippi. The total for federal monies appropriated through 1880, including that from the period 1827 through 1852, amounted to $74,500 (USCOE 1880).

In 1884, Major A.N. Damrell of the U.S. Army Corps of Engineers conducted a preliminary examination of the Pascagoula from Moss Point to the bay anchorage, with the view of establishing a

twelve-foot channel for eleven miles. He reported a channel generally twelve feet deep in the Pascagoula, though he found two bars between Moss Point and the New Orleans & Mobile Railroad Bridge, 500 feet in length with a minimum depth of eight feet. In addition, he recorded the Chammier Shoals two miles below Moss Point, 3,200 feet long with a minimum depth of nine feet, and two small shoals below the railroad bridge at "Scranton" (Pascagoula). The River and Harbor Act of 1886 appropriated $87,300 to dredge a twelve-foot channel from the Mississippi Sound to Moss Point, with a twelve-foot deep, 80-foot wide channel from Moss Point to the mouth of the river. In 1897, Major William T. Rossell of the USCOE recommended a twelve-foot channel depth from the Mississippi Sound to three miles up the Escatawpa River with a future increase from twelve to seventeen feet, if justified (USCOE 1886, 1913, 1950, 1897).

The River and Harbor Act of March 3, 1899 authorized Rossell's recommendations for a twelve-foot channel from mile three on the Escatawpa River down to the twelve foot contour in the Mississippi Sound. By February, 1902, an uninterrupted twelve-foot channel was achieved in the river. The River and Harbor Act of June 13, 1902 authorized an increase in the channel depth to seventeen feet from mile three on the Escatawpa River to the Sound at a cost of $1.5 million (USCOE 1913; House Doc. 642, 61st Cong., 2 sess.).

In 1910 the channel was extended an additional mile up the Escatawpa River at a cost of $8,000. At this time, the total project for Pascagoula Harbor provided for a seventeen-foot deep, 150-foot wide channel from mile four on the Dog (Escatawpa) River to the Pascagoula Northern Railroad Bridge, and from there to the Sound, a seventeen-foot deep, 300-foot wide channel (USCOE 1913).

By 1911, due to the large vessel traffic at the sawmills, an increase in channel depth to 22 feet was proposed. From July, 1912 through April, 1913, the U.S. dredge PASCAGOULA removed 107,819 cubic yards from four main shoal areas in the river channel (Bayou Chammier, Crooked Bayou, Farnsworth Boom, and Bellefontaine Bayou) to provide the minimum specified depth of seventeen feet. The Corps of Engineers report for 1913 described the channel as extending 22.7 miles from mile four on the Escatawpa River to across Horn Island, with a range in width of 300 to 700 feet for the eleven-mile stretch from the mouth of the Pascagoula to the upper limit of the channel, and a depth of 21 feet across the Horn Island Bar. The USCOE recommended increasing the depth of the channel from mile four on the Escatawpa River to the railroad bridge from seventeen to 22 feet at an estimated cost of $383,000, with $50,000 provided annually for maintenance. The estimate also provided for local interests to contribute $100,000 in five annual installments for the project, as well as furnishing public wharves 800 feet in length at Moss Point and Pascagoula. The monies authorized by the River and

Harbor Act of March 4, 1913, providing for a 25-foot deep, 300-foot wide channel through Horn Island Pass, thence a 22-foot deep, 225-foot wide channel across the Sound, narrowing to 150 feet from the railroad bridge to mile four on the Escatawpa River, were not expended, due to lack of local participation in the project. The River and Harbor Act of March 4, 1915 waived the requirement for local participation (House Doc. 682, 62nd Cong., 2nd sess.; USCOE 1913, 1915; House Doc. 12, 63rd Cong, 2nd sess.).

From 1947 through 1950, the channel was straightened through Robertson and Bounds Lakes, creating a cut-off channel twelve feet deep and 125 feet wide from the Highway 63 (now Highway 613) bridge to mile four on the Escatawpa River, eliminating one mile and four sharp bends in the old channel. The River and Harbor Act of July 3, 1958 reimbursed local interests for $44,000 contributed toward work on Escatawpa River cut-off. The 1960 appropriation provided for maintenance of a twelve-foot deep, 125-foot wide channel up to mile six on the Escatawpa River. The River and Harbor Act of July 11, 1983 authorized an additional twelve-foot deep, 80-foot wide channel approximately 2,750 feet long from deep water in the Pascagoula into Krebs Lake (House Doc. 188, 81st cong, 1st sess.).

Total funds appropriated for 1987 included $5.7 million for new work and $38.5 million for maintenance, with an additional $2 million contributed for maintenance by local interests. The current project for the Escatawpa River provides for a 22-foot deep, 150-foot wide channel from the railroad bridge to the mouth of the Escatawpa and up the Escatawpa to the Highway 613 bridge, with a twelve-foot deep, 125-foot wide channel extending from the Highway 613 bridge via Robertson and Bounds Lakes to mile six on the Escatawpa River (USCOE 1987).

III
SUBMERGED CULTURAL RESOURCE POTENTIAL

Introduction

The preceding sections of this document have detailed the maritime history of the study area and the improvements to navigation performed over the last century and a half. This historical framework allows us to now consider the potential for the presence of significant submerged resources within the current navigation channel from the L&N Railroad bridge in Pascagoula proper to the head of the study area north of the Highway 63 bridge. Several major avenues of research were pursued in order to determine this potential. These included published shipwreck lists, cartographic sources, newspaper archives, and local informants.

Shipwreck Lists

The previous cultural resource study of the maritime history of Pascagoula by Mistovich, Knight, and Solis (1983) again proved invaluable in the conduct of the current research. This earlier study was oriented more toward the Mississippi Sound and approaches to Pascagoula Harbor, but the limits of inquiry extended north to the Lowry Island/Bayou Reverie segment of the Pascagoula River, encompassing approximately the southern half of the current study area. Thus a number of vessels recorded in the 1983 list of potential shipwreck apply to this research. In addition, several vessel disqualified from the 1983 listing on the basis of being recorded lost "to the north of the study area" are now applicable to the Upper Pascagoula/Escatawpa locale. Thus, the first step in assessing the potential for the presence of submerged resources was to review the 1983 shipwreck compilation and extract those entries which were applicable to the current research. These are presented in Table 7.

Eighteen vessels are listed in Table 7, with disposition dates spanning the years 1831 to 1974. In most cases, the location of loss is only generally known, being either "at Pascagoula," meaning anywhere in the general area of the town, but most probably in the main harbor area, or "the Pascagoula River", indicating a possible location anywhere from the mouth of the river to north of the study area and potentially including wharves and docks located along the river and within its minor tributaries. In a few cases, more specific locational data are known. These include the Mascot, lost in 1893 at Farnsworth's Wharf, formerly located on the east bank of the river at the railroad bridge crossing; the Air Gannet, lost in Krebs Lake in 1963; the Dr. Franklin, lost in Bayou Chemise in 1893; the Alan B., lost at the Standard Oil Dock in 1967, and the Gulf Trader,

Table 7. Recorded Vessel Losses from Previous Study (1983).

Name	Comments
Mount Vernon	Steamboat, stranded 12/10/1831, Pascagoula
DeSoto	Steamboat, exploded 12/9/1865, Pascagoula
Mascot	Steam launch, sank 10/2/1893, Farnsworth's Wharf
Air Gannet	Fishing boat, lost 1963, Krebs Lake
Dr. Franklin	Schooner, lost 10/2/1893, Bayou Chemise
Mamie M.	Gas screw, burned 8/13/1910, Scranton
Capt. Wes Robinson	Fishing boat, burned 9/1946, Pascagoula River
Dewey	Fishing boat, lost 1964(?), Pascagoula
February	Fishing boat, lost 7/6/1964, Pascagoula
Bea Joyce	Fishing boat, lost 12/1966, "at the dock", Pascagoula
Alan B.	Towboat, lost 1/14/1967, Standard Oil Dock
Gulf Trader	Fishing boat, foundered 1969, Quinn's Fishery
Liberty	Fishing boat, lost 1/2/1974, in Pascagoula River
Capt. Fritz	Steamboat, lost 1930, Pascagoula River
Isabel L.	Tugboat, lost 1896, Pascagoula River
John Scott	Fishing boat, lost 1956, Pascagoula River
Wasp	Towboat, lost 1910, Pascagoula River
Otis	Schooner, foundered 9/21/1917, Pascagoula

Source: Mistovich, Knight, and Solis 1983.

lost at Quinn's Fishery in 1969.

Almost half of the vessels listed in Table 7 are fishing boats lost in the Pascagoula River during the years 1946 to 1974. This frequency is to be expected, given the volume of fishing related traffic in the region in the last century. The fact that the earliest of these sank less than 50 years ago does not exclude the possibility of earlier losses of this vessel type, rather, it is more likely that these occurred, but were not recorded. At any rate, fishing vessels lost at docks or wharves were likely salvaged to permit access to these facilities; those lost in the river can be expected to have been fully or partially salvaged if they posed a hazard to navigation or abandoned if they did not and were no longer deemed productive vessels. If any of the eight fishing vessels listed are still situated in the study area, they are probably not significant due to their recent vintage.

Of the remaining ten vessels in the table, four were steam driven, one a gas screw, three served as tows or tugs, and two were schooners. One, the towboat Alan B., is a late vessel lost in 1967. The remaining vessels, however, all demonstrate some antiquity, with a disposition date range of 1831 to 1930. Loca-

tional data on these are generally sketchy, with more specific sites available only for the Mascot, lost at Farnsworth's Wharf, and the Dr. Franklin, lost in Bayou Chemise. Figure 9 illustrates the location of these landmarks, as well as other historical locations pertinent to this discussion. Given the degree of maritime traffic and channel dredging which has occurred at the main Pascagoula Harbor, it is doubtful that any vessel which sank in this locale (such as the Alan B. and the Mascot) have survived to the present. Those lost in areas outside the main traffic areas, such as the Dr. Franklin, have a greater potential for having survived to the present.

As the 1983 study extended only halfway into the current study area, additional documentary effort was required to assess the potential for submerged cultural resources in the northern half, i.e., a portion of the Pascagoula River and the lower reaches of the Escatawpa River. Several standard shipwreck references were reviewed in this phase of the study. These included Berman's Encyclopedia of American Shipwrecks (1972), Lloyd's of London's Register of British and Foreign Shipping (1982 edition), Coastal Environments, Inc.'s Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf (1977), and Shomette's Shipwrecks of the Civil War (1973). No additional listings to those unearthed in the 1983 study were found. A search of the computer files of the Automated Wreck and Obstruction Information System, compiled by the National Oceanic and Atmospheric Administration, did not yield any known wrecks for the study area. A check of minor sources, such as Potter (1972) and Marx (1987), also proved negative.

The generally negative results of the documentary or published shipwreck list inquiry is not considered unusual in this case. The list compiled in the 1983 study included the active harbor areas of Pascagoula, while the current study encompasses those reaches of the Pascagoula and Escatawpa Rivers which, while certainly active from a maritime perspective, witnessed smaller vessels traversing a comparatively safer environment. Vessel losses can be expected to be less frequent in protected waters and the loss of a non-ocean going vessel (with the exception of the river plying steamboats) generally attracted less attention and was less likely to be recorded in historic shipwreck listings. In order to bridge this data gap, the next phase of the archival research involved a review of cartographic information.

Cartographic Sources

A review of maps, navigation charts, and other cartographic sources is often useful in locating historic landmarks associated with recorded vessel losses and, particularly in the case of navigation charts, the wreck symbols which appear on various editions. Major cartographic sources for this study included the

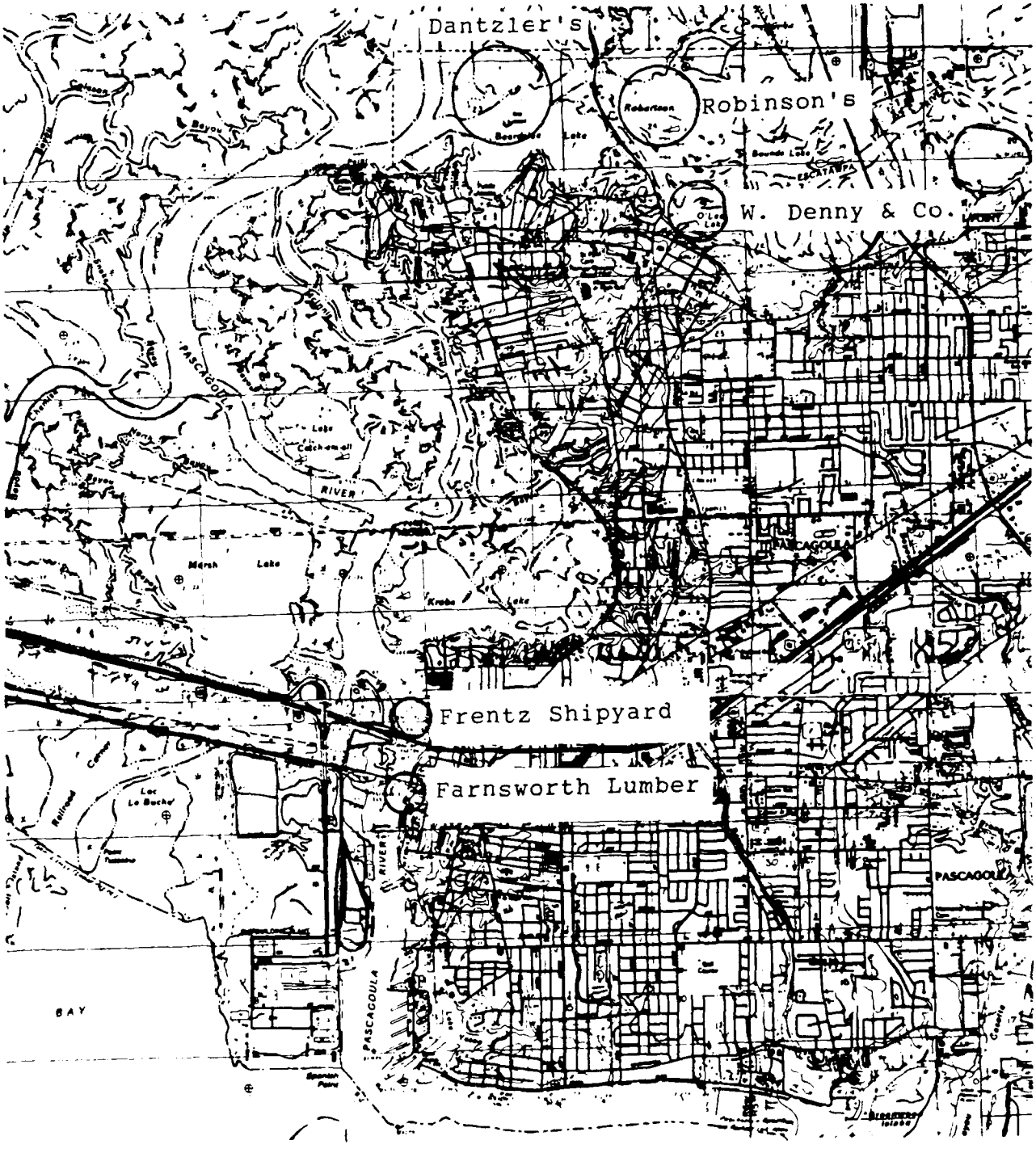


Figure 9. Location of Historic Landmarks in the Study Area.

U.S. Army Corps of Engineer's Technical Library, Mobile; the Geneology Branch of the Mobile Public Library; the map section of the Pascagoula Library; the Map Library at the University of Alabama, Tuscaloosa; and the Rucker Agee Map Collection at the Birmingham Public Library. The primary aim of this effort was to locate wreck symbols on the earliest editions of charts and maps available and then note the presence or absence of these symbols on later editions. Detracting from this approach was the fact that the most valuable source for such information, coastal navigation charts, provided little information on the upper portions of the study area. For these locales, U.S.G.S. quadrangles provided more useful data, although these are somewhat variable in the recording of wreck symbols, particularly in early editions, due to the fact that these maps are topographic, rather than nautical in orientation.

For the purposes of wreck symbol locations, the U.S.C.G.S. Charts 189 and 190 editions covering the years 1876 to 1918, the Chart 1267 editions for the years 1920 to 1973, and the Chart 11373 editions for the years 1974 to present were reviewed. U.S. G.S. quadrangle map editions dating from the 1930s to the present were reviewed. In addition, U.S.C.O.E. project maps of the study area dating to the preliminary surveys of the 1870s were reviewed. More general historic maps reviewed, providing little in the way of shipwreck data, but useful in determining historic landmarks, are listed in Table 8.

Table 8. Historic Maps Reviewed for the Study Area.

Map	Date/Title	Author
1775	Chart of the Coast of West Florida and Louisiana	Jeffreys
?	Spanish Territory	Anonymous
1816	Mississippi Territory	Lucas
1822	Mississippi	Anonymous
1847	Mississippi	S.A. Mitchell
1856	Preliminary Chart of the Sea Coast of Part of Alabama and Mississippi	U.S. Coast Survey
1863	edition of same	ditto
1894	Mississippi	U.S. Geologic Survey

Figure 10 is a composite map illustrating the results of the cartographic review and based on the current edition of the U.S. G.S. quadrangles encompassing the study area. Also included are the reported locations, when available, for those vessel losses discussed previously in the shipwreck list section.

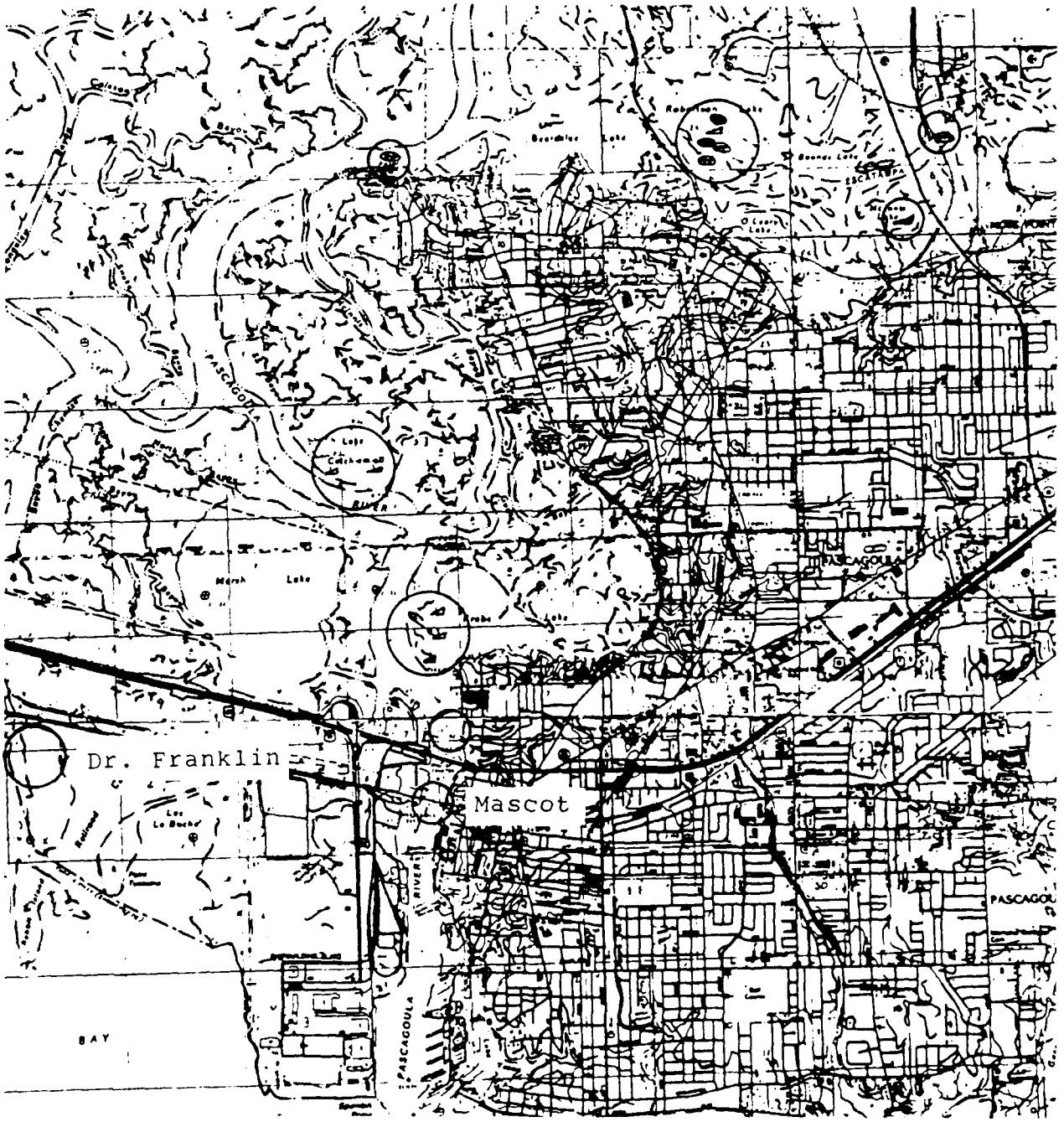


Figure 10. Recorded Vessel Loss Locations in the Study Area.

Beginning with the southernmost portion of the study area, a symbol denoting a visible wreck is shown along the eastern riverfront above the Highway 90 bridge on the 1978 and 1979 versions of Chart 11375. It is not shown on the 1974 and 1989 versions of Chart 11373. This wreck occurred in the active portion of the riverfront docking facilities and is assumed to represent a small craft lost in the late seventies and removed by this year. The visual reconnaissance of the study area (see below) did not find a wrecked vessel in this location.

Three wreck symbols denoting visible hulks are shown within Krebs Lake and two additional ones in Lake Catch-em-all on the 1982 edition of the Pascagoula North U.S.G.S. quadrangle. These are not marked on the 1955 edition of this quadrangle, when wreck symbols first begin to be noted in locations to the north on these maps. Both lakes are to the east and outside of the river navigation channel and thus will not be affected by improvements. There is a good possibility these represent recent storm-loss or abandoned small craft, including the Air Gannet fishing boat listed in Table 7.

A submerged, but dangerous to surface navigation wreck symbol first appears at Griffin Point on the 1965 edition of Chart 1267. This could represent one of several fishing vessels lost in the 1950s and early 1960s, as listed in Table 7. Despite the category of the wreck symbol and its mapped location within the navigation channel, several local informants (see below) were not aware of any obstructions in this stretch of the channel. It is probable that these vessel remains are located adjacent to the riverbank, rather than in the channel itself.

Wreck symbols first appear within Robertson Lake on the 1955 edition of the Pascagoula 15 minute quadrangle. A visible wreck symbol is noted north of the channel and a submerged, but hazardous symbol appears south of the channel. By the 1982 edition of the map, three additional submerged wreck symbols have been added, one to the north of the channel and two to the south. At the time of the visual reconnaissance of the project area in late August, 1989, no vessel remains were visible above the lake level. These symbols appear in the former location of the Robinson Land and Lumber Company log boom and near the former W. Denny and Company log boom. Local informants (see below) attribute these wrecks to the timber boom era of Moss Point's history.

The last wreck symbols noted first appear on the 1982 quadrangle within McInnis Lake (to the south of the channel) and within the navigation channel immediately to the east of the Mississippi Export Railroad bridge. Local informants were unaware of any navigation obstruction in the latter location. This wreck is probably located next to the riverbank, rather than in the channel.

The cartographic review phase of the research revealed a number of wreck symbols within the project area, most of which appear on recent editions of U.S.G.S. quadrangle maps. Most are presumed to be recent small craft, e.g., fishing vessel, losses. This cannot necessarily be assumed, however, due to the fact that the year of appearance on a map does not necessarily correlate with the date of loss. Rather, the marking of these locations is a product of improved cartographic definition and more attention by offices such as the Coast Guard to these more inland navigation areas. As will be discussed below, the wreck symbols within Robertson Lake which first appear on 1955 maps may actually represent vessel remains which have been there since the turn-of-the-century, if not earlier.

Newspaper Archives

In order to provide more definitive information on the shipwrecks encountered during the documentary and cartographic phases of the research, a review of newspaper archives related to the study area was performed. The scrutiny of every newspaper from the last century or more was beyond the scope of this research. Instead, particular dates surrounding the recorded vessel losses presented in Table 7 and dates following major hurricanes in the region were targeted. This research was performed at the Pascagoula Public Library, where a relatively complete microfilm collection of newspapers dating back as far as 1874 is archived.

The loss of the Mount Vernon (1831) and DeSoto (1865) predate available newspaper accounts. The first accounts of value date to the hurricane of October, 1893, when two vessels in our list, the Mascot and the Dr. Franklin were lost. The Pascagoula Democrat of October 6, 1893 notes: "the steam launch Mascot, at Farnsworth's wharf went to the bottom of the river." Another section of the same edition of the paper, however, notes that "The Mascot was raised Tuesday evening, minus her boiler." The charcoal schooner Dr. Franklin is described as "high and dry on the railroad dump several hundred yards below the bridge with cargo intact." No subsequent salvage is noted, but in this case can be assumed to have occurred to some degree. Other ship mishaps noted were the schooner Mary Theresa, left high and dry opposite Irving's Mill on the river; the schooner Webb, capsized in Irving's Lake; the brig Mary C. Mariner, driven into a marsh; the schooner Palos, grounded at Frentz's Shipyard; the pilot boats Mattie George and John DeLestro and the schooners Fairwind, Independence, Dove, Wm.Griffin, and Amelia, all damaged or driven ashore. Timber barges were lost at both Dantzler's and Denny's lumber yards. It is reasonable that salvage of beached vessels occurred within a short time. In fact, the same newspaper notes that the Mary C. Mariner "is being dug out of the marsh on Lowry Island", while the salvage of the Mascot has already been noted. Barges lost at the lumber yards, however, were probably more

easily replaced than salvaged, unless they posed a navigational hazard.

No mention was found of the fate of the tugboat Isabel L., lost in 1896 in the Pascagoula River. The next major storm occurred in 1901. The Pascagoula Democrat-Star of August 16, 1901 carried only a brief note that wharves and bath houses along the beach at Pascagoula were destroyed, and that two dredging contractors' mud scows went adrift and were lost, as well as a bark which drug anchor and was grounded in the bay. Vessel losses, however, were on a much smaller scale than the 1893 storm and inland areas were much less affected.

A more destructive hurricane occurred in late September, 1906. The Pascagoula Democrat-Star of October 5, 1906 describes the devastation to the timber holdings of the large mills, stating "...in many cases the devastation among the tall pine trees was terrific--in fact, the whole country took on the appearance of a barren waste." Extensive damage, including the loss of "boats" is listed for the riverfront operations of the C.T. Irving mill and shipyard, the C.H. Delmas fish house, and the George Frentz shipyard. The vessel Star of the Sea is listed as wrecked at an unspecified location. Virtually every lumber company suffered extensive damage, with loss by the various mills in logs estimated at $20,000 and standing timber damage about $1,000,000. Vessel losses to the storm, on the other hand, appear to have been minimal: "A few vessels in the outer harbor dragged anchor and ran on the island beach during the northeast wind, but vessels in the river harbor road safely through the high water, with the exception of a few small craft" (Pascagoula Democrat-Star, October 12, 1906).

No mention of the loss of the towboat Wasp in the Pascagoula River or the gas screw vessel Mamie M. at Scranton (now Pascagoula), both in 1910, could be gleaned from the newspapers of the period. The next newspaper accounts of interest are again related to a tropical storm, this one occurring in September of 1915. Damage was described as light, however, in the Pascagoula area, with the most serious destruction occurring along the beach front and to the pecan crop (Pascagoula Democrat-Star, October 1, 1915). As far as vessel losses are concerned, the October 8 edition of the same paper stated:

> "The recent storm has demonstrated beyond a doubt that Pascagoula is the safest harbor on the Gulf coast. While in other places scores of boats of all kinds were beached and wrecked, not a single boat was beached here, and practically no damage was done to shipping" (Pascagoula Democrat-Star, October 8, 1915).

References to the schooner Otis, foundered at Pascagoula on September 21, 1917, and to the steamboat Capt. Fritz, lost in the

Pascagoula River in 1930, were not found in newspaper editions of those dates. The September 24, 1926 edition of the Pascagoula Chronicle-Star reported that the hurricane of that year was relatively harmless to the Pascagoula/Moss Point area, with the greatest damage done to the pecan crop and no vessel losses reported.

Finally, there is little mention in area newspapers of the fates of the eight fishing vessels reported lost in the area between the years 1946 and 1974. The single exception to this was a brief mention in The Chronicle of July 6, 1964 concerning the shrimp boat February. It reports the vessel, owned by Roy McRae of Pascagoula, caught fire at a dock at the east end of Ingalls Avenue and was a total loss.

Local Informants

Several residents of the Pascagoula and Moss Point area were interviewed concerning the maritime history of the region and the presence of submerged cultural resources. These individuals fell into two categories: those familiar with the history of the study area and those whose vocations involved regular use of the navigation channel.

Mr. Edward Kayath, a long-time resident and member of the Moss Point Board of Supervisors for 34 years, was aware of only one vessel wreck in the area, a wood barge visible on the right bank of the Pascagoula River, north of the study area. One particularly relevant memory of Mr. Kayath was the salvage of logs in Beardslee Lake during the 1930s. A substantial number of these logs had been left to sink in the lake after the decline in the lumber market after 1910. The economics of the Depression years, however, meant that these pine logs were once more valuable and merited the salvage effort. Salvaging of the logs may have had a detrimental impact on the timber-era vessels lost in Beardslee Lake.

Mr. Thomas S-Wixon, a member of the Pascagoula Historical Society and the author of Jackson County, Mississippi, Photographs from the Past, had no knowledge of historic shipwrecks within the study area. Mr. S-Wixon did relate an incident passed on to him by a former employee of the Dantzler Lumber Company. After the timber market decline, the company issued a final recall for redemption on company brass tokens. Those redeemed, and apparently thousands were, were loaded into canvas bags and thrown into the Pascagoula River at Griffin Point. This occurred in the early 1920s.

Mr. John Colle, Jr. of Colle Towing Company is a third generation towboat captain whose grandfather founded the company in 1878. Mr. Colle has regularly pushed barges and other vessels

through the channel in the study area. He had no knowledge of visible or submerged shipwrecks in or near the channel areas, mentioning sand bars, particularly those at Chammier Shoals, as the only hazards to navigation.

Mr. Don Davis of the U.S. Coast Guard Station at Pascagoula was interviewed as to the experience of the Coast Guard in maintaining the navigational aids in the study area. Mr. Davis had no knowledge of obstructions to navigation within the channel. He predicted that shipwrecks within the channel proper would be well known if they existed, due to the fact that the channel is heavily trafficked, particularly by 110 ft to 120 ft pogie boats traveling to and from the menhaden plants upstream on a daily basis.

Mr. Cliff Cooley and members of the staff at Halter Marine, Inc. of Moss Point were particularly knowledgeable of the channel conditions. Halter Marine builds a variety of vessels for the U.S. Navy and other clients. It is often the case that following launching of a vessel, it is taken downstream with minimum fuel so as to clear the sand bars within the channel, then fitted out at another yard near the railroad bridge in Pascagoula. Halter Marine personnel have performed a number of soundings in the channel in order to better predict channel depths prior to vessel launching and transport. They were unaware of any obstructions in the channel proper which might represent submerged cultural resources. Several older personnel recalled that lumber industry-related wood barges were visible in both Robertson and Beardslee Lakes until recently. They have now deteriorated to the point where they no longer project above water. These are very likely the vessels indicated as wreck symbols on current maps of the area, occurring both north and south of the channel.

Halter Marine provided the tugboat Babe, captained by 23 year veteran Captain Joe Loris, for a visual reconnaissance of the study area. This served to confirm that no shipwrecks are visible in or near the channel. Numerous pilings were noted in Robertson and Beardslee Lakes and in the area of Griffin Point. These are the remains of the extensive docks and wharves associated with the timber industry. Debris from the demolition of the highway swing-bridge which has been replaced by the new Highway 613 bridge was noted along the banks at this locale. Finally, a single dredge spoil pile is apparent on the left bank, descending, at river mile 1.0. According to Captain Loris, the spoil is a result of the fairly recent dredging within Krebs Lake.

Conclusions and Recommendations

Drawing on the data available from the earlier maritime study of Pascagoula Harbor (Mistovich, Knight, and Solis 1983) and adding new information on the Upper Pascagoula and Escatawpa Rivers have resulted in the compilation of a relatively complete maritime history of the study area. Inspection of cartographic sources and newspaper archives has provided new candidates to the listing of recorded vessel losses, as well as providing accounts of later salvage, as in the case of the Mascot, or more definitive wreck locations, as with the Dr. Franklin. More important to this study, it is now possible to predict the occurrence of these submerged cultural resources within those portions of the channels slated for realignment or dredging.

While cartographic sources in particular illustrate several possible wreck locations within the channel, the results of a number of informant interviews indicate that these remains are either outside the channel proper or have deteriorated to the extent that they are not noticeable to the captains of the numerous boats traversing this route on a daily basis (and frequently dragging bottom). In addition, individuals intimately familiar with the channel have no memory of sunken vessels within it. Based on these results, it would appear that dredging for channel deepening would not effect potentially submerged cultural resources.

Channel realignment, on the other hand, does pose a potential adverse effect on these resources, particularly if such realignment occurs within the Beardslee and Robertson Lakes portions of the channel. Both archival and local informant sources have indicated that barges and other vessels associated with Moss Point's late nineteenth to early twentieth century timber industry are submerged both north and south of the current channel route. Given the potential significance of these resources, it is recommended that standard archaeological remote sensing surveys be conducted in these areas should channel realignment be anticipated.

Finally, it should be noted that no properties currently listed on the National Register of Historic Places occur within project boundaries. National Register sites in the Pascagoula region are restricted to the Old Spanish Fort and the Central Fire Station No. 1 in Pascagoula, The Colonel Alfred E. Lewis House in Gautier, and the De Groote Folk House in Hurley.

REFERENCES CITED

Berman, Bruce D.
1972 Encyclopedia of American Shipwrecks. The Mariners Press. Boston.

Borja Medina Rojas, Francisco de
1980 Jose de Ezpelata: Gobernador de la Mobila 1780-1781. Escuela de Estudios Hispanoamericas. Sevilla.

Cain, Cyril E.
1953 Four Centuries on the Pascagoula, Volume 1. State College, Mississippi.

1962 Four Centuries on the Pascagoula, Volume 2. State College, Mississippi.

Carter, Hodding and Anthony Regusin
1951 Gulf Coast Country. Duell, Sloan, and Pearce. New York.

Coastal Environments, Inc.
1977 Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Report to National Park Service, Washington.

Higginbotham, Jay
1967 Pascagoula, Singing River City. Gill Press. Mobile.

Lankford, George E., III
1981 A Documentary Study of Native American Indian Life in the Lower Tombigbee Valley. Volume II of A Cultural Resources Reconnaissance of the Black Warrior-Tombigbee System Corridor, Alabama. University of South Alabama, Mobile.

Lloyds of London
1982 Lloyd's Register of British and Foreign Shipping. J. and H. Cox and Wyman, London.

Marx, Robert F.
1987 Shipwrecks in the Americas. Dover Publications, Inc. New York.

Mistovich, Tim S., Vernon J. Knight, Jr. and Carlos Solis
1983 Cultural Resources Reconnaissance of Pascagoula Harbor, Mississippi. Report to U.S. Army Corps of Engineers, Mobile.

Potter, John S., Jr.
1972 The Treasure Diver's Guide. Doubleday. New York.

Shomette, Donald G.
1973 Shipwrecks of the Civil War. Doric Ltd. Washington, D.C.

Swanton, John R.
1946 The Indians of the Southeastern United States. Smithsonian Institution, Bureau of American Ethnology, Bulletin 137. Washington, D.C.

S-Wixon, Thomas
1982 Jackson County, Mississippi, Photographs from the Past. Parsley Printing Co. Pascagoula, Mississippi.

United States Army, Corps of Engineers
1874-1987 Report of the Chief of Engineers. Government Printing Office. Washington, D.C.

United States Congress
1854-1950 House Documents. Government Printing Office. Washington, D.C.

Winsor, Justin H.
1886 Narrative and Critical History. Houghton and Mifflin. Boston.

Ziglar, William L.
1974 Shipbuilding on the Pascagoula River. Journal of Mississippi History 36:1-15.

Project Maps on file at USCOE, Mobile

D.11.1.19	A.N. Damrell Survey Map, Pascagoula River, 1886
D.11.1.50	Pascagoula River, Communy Bayou to Krebs Lake, 1919
D.11.1.57	Pascagoula River, Communy Bayou to Krebs Lake, 1920
D.11.1.60	Port Facilities at Pascagoula, Mississippi, 1923
D.11.1.62	Existing Project above L&N Railroad Bridge, 1940
D.11.1.64	Pascagoula River Project Map, 1939
D.11.1.68	Planned Dog River Cut-off, 1948
D.11.1.75	Survey of Pascagoula Harbor, 1958
D.11.2.130	Krebs Lake Channel, 1983